

**UNIVERSITY OF NIŠ  
FACULTY OF ECONOMICS**



**SMART AND SUSTAINABLE ECONOMY:  
TRENDS AND PERSPECTIVES**

**Editors:**

**Tadija Đukić**

**Dragana Radenković Jocić**

**Niš, October 13, 2023**

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# SMART AND SUSTAINABLE ECONOMY: TRENDS AND PERSPECTIVES

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## P R E F A C E

International scientific conference entitled “SMART AND SUSTAINABLE ECONOMY: TRENDS AND PERSPECTIVES“ has been held in organized by the Faculty of Economics the fifty-fourth time. The aim of the Conference is exactly to initiate a fruitful debate on various possibilities. The conference was opened with welcome speeches of Professor Tadija Đukić, Dean of the Faculty of Economics. It was our great pleasure and privilege to have Mrs. Draginja Radonjić Petrović, Vice-president of the Serbian Association of Economists. She opened the academic programme of the conference by giving a keynote lecture trying to answer the main theme of Conference from different aspects.

This conference brought together academics from four different countries. The academic programme contained 44 presentations with a much greater number of participants. In this conference proceeding, 41 papers are published. Considering importance of national economy development issues the international conference, held at the Faculty of Economics, University of Niš, on October 13<sup>th</sup>, 2023 is divided into four sessions. The first session includes 10 presentations (9 papers). Following session covers several similar themes (with 10 papers), the third session involves 13 papers, and finally the fourth part is covered by 11 presentations (9 papers).

Topics and participants' views were divergent, which exactly contributed to achieving the objective of the conference – smart and sustainable economy. Main focus of the special issue is how to foster a smart and resilient development and adaptation of urban areas dealing with changes, transformations, or shifts in the social, economic, cultural, and environmental structures and organization. Papers can cover one or more of the following topics: technological transition, infrastructure transition, environmental transition, economic transition, demographic, and cultural transition.

The direct outcomes of this conference are these proceedings and a special volume of edited book series. The content of the proceedings fully portrays diversity of research interests of contributors. Such variety of thematic areas contributed to flourishing debate, interesting for a wider audience. Here, we would like to express our gratitude to all authors and guests. We truly value the authors' support for this conference. Thank you all for the interest you have shown, for coming here from near and far to take part in our discussions. We also like to acknowledge financial support of the Republic of Serbia, Ministry of Education, Science and Technological Development.

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# **SESSION 4**





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**SMART AND SUSTAINABLE ECONOMY:  
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**INSTITUTIONAL CONTEXT AND WOMEN'S  
ENTREPRENEURSHIP\***

**Danijela Stošić Panić, PhD\***

**Aleksandra Anđelković, PhD\***

***Abstract:** Acknowledging the fact that every economic activity, including the entrepreneurial one, is embedded in a specific context, the paper aims to investigate the influence of the elements of the institutional environment on the entrepreneurial activity of women. On the GEM sample of 47 countries, the results show that the national culture which encourages women as equally as men to become self-employed or start a new business does contribute to increasing the number of female entrepreneurs, as well as those women who become entrepreneurs in order to exploit an opportunity to make some difference. On the other hand, the existence of sufficient family support services reduces the ratio of female to male entrepreneurs, indirectly indicating that for a greater number of women, entrepreneurship is still an option chosen out of necessity, in order to reconcile professional and family obligations.*

***Keywords:** female, entrepreneurs, gender, GEM*

**1. Introduction**

All economic activities are embedded in a certain social context (Brush et al., 2009). And so is the entrepreneurship (Micelotta et al., 2017). The entrepreneurship is a phenomenon that is socially constructed and there are various levels in which this phenomenon is embedded. Therefore, in order to explain and understand the entrepreneurship, it is necessary to contextualize its determinants in the specific social,

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economic, cultural, spatial and institutional environment (Brush et al., 2009; Rezaei & Marques, 2021). A full understanding of the entrepreneurship requires knowing the external norms, values and expectations (Brush et al., 2009). It is argued that the institutional theory is adequate for researching the entrepreneurship and its gender aspect. Institutions are the so-called rules of the game, and they can be formal (for example, the law, regulations) and informal (ideas, beliefs, attitudes, values and culture). They shape the set of choices for participants, including the entrepreneurial activity of both women and men and they vary from country to country (Giménez & Calabrò, 2017; Rezaei & Marques, 2021). The external environment influences socialization and the range of decisions that individuals make. Institutional frameworks signal what are acceptable choices and they determine what norms and behaviors are internalized by individuals (Brush et al., 2009).

Of course, like entrepreneurship in general, the entrepreneurial activity of women is embedded in a specific micro, meso and macro environment, which requires a multiple levels analysis design (Deng et al., 2020; Jamali, 2009). For example, women entrepreneurs' motivation cannot be viewed separately from the macro (for example, economic crisis and the need for additional income) and meso (for example, labor market problems) levels, in combination with the micro level (self-realization, ambition and similar).

There is no doubt that we need to identify whether, where, when and how different contexts influence women to establish and develop their business (Baughn et al., 2006; Manolova et al., 2017; Welter, 2020). There is a need to explore the impact of different social, spatial and institutional contexts on entrepreneurship in order to identify affirmative factors and limitations for female entrepreneurs. This study is answering the forementioned call and aims to give an overview of the institutional factors which affect women's entrepreneurial activities in a multicounty setting. After proposing a conceptual framework within the literature review and hypotheses development section, the paper explains the main methodological points of the study which is then followed by presentation and discussion of the results. Finally, certain concluding remarks are offered.

## **2. Literature review and hypotheses development**

Environmental factors affect women's entrepreneurship. It is argued that in the absence of adequate cultural elements and political measures, women will continue to choose small jobs and entrepreneurship out of necessity (Cabrera & Mauricio, 2017). Specific contexts influence success of women both in the motivational and the opportunity identification phases of the entrepreneurial process. If they are favorable, there will be significant chances and resources, and the entrepreneurship will be driven by opportunities. Gender stereotypes underestimate women's business activities and judge them differently compared to men, thus negatively affecting women's entrepreneurial activity. Women or men are more likely to start an entrepreneurial activity if a society admires and respects entrepreneurs (Deng et al., 2020).

Though it is unquestioned, the contextual embeddedness of women's entrepreneurship is insufficiently studied. So, there are calls to investigate how specific institutional contexts shape the entrepreneurial activities of women (Ahl, 2006; Deng et al., 2020; Foss et al., 2019; Giménez & Calabrò, 2017; Welter, 2020). Institutional contexts are sometimes discussed in parallel to the entrepreneurial ecosystems as systems of interconnected and interdependent elements which in interaction create an environment that

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supports (or inhibits) the formation and development of new businesses. Although each ecosystem or a context is unique, Mazzarol (2014) identifies nine more or less universal elements. As argued by Mazzarol (2014), the government policy is the most important element because it significantly affects small businesses in particular. The remaining of the elements include the regulatory framework and infrastructure; the availability of financing sources; the culture in a form of social norms; the availability of advisory and support networks; universities as catalysts of the entrepreneurship which create an entrepreneurial mindset and offer; education and training programs for new and existing entrepreneurs; human capital and workforce; and local and global markets. These nine elements affect everyone, both men and women, but some of them affect women more than men (Elam & Terjesen, 2010; Foss et al., 2019).

Institutional frameworks reflect cultural values that attribute certain characteristics to women which can negatively affect their entrepreneurial activity (Cabrera & Mauricio, 2017). Additionally, these frameworks contain national policies and regulations that may or may not encourage women's entrepreneurial activity and their business success. Within the women's entrepreneurs research field, the visible and measurable institutions are primarily explored, including the themes such as the tax policies; child-caring support infrastructure; property rights; family policies and similar. Various studies find that all the previous affect the time a woman can devote to work, their access to resources, treatment on the labor market, etc. (Love et al., 2023; Welter, 2020). On the other hand, it is proposed that the so-called normative institutions or the dominant gender ideology in a society is even stronger force than regulatory one. For example, even when regulatory institutions are affirmative, norms can direct otherwise and negatively affect women's entrepreneurship.

Gender equality is not only a matter of economic development, but also of the cultural and the institutional environment (Love et al., 2023). Women's chances of becoming entrepreneurs and their entrepreneurial success are influenced by the specific socio-cultural and institutional environment (De Vita et al., 2013). The positioning of women in entrepreneurship reproduces the embedded socio-economic norms and not necessarily women's preferences (Marlow & McAdam, 2013). For example, the business growth is certainly influenced by personal characteristics (ambition), but it occurs in a specific context, so growth can be limited by the market and the institutional environment. Unlike men, when women decide to become entrepreneurs, they do not have full institutional, family and social support (Kamberidou, 2013). Besides the obvious explicit or tangible barriers such as lack of financial or physical resources, women often have to overcome even higher symbolic obstacles which are embedded in the individual and collective sociocultural identities, meanings and values (Wheadon & Duval-Couetil, 2018).

After discussing the previous, it is hypothesized that:

- H1a. A country's institutional context affects women's entrepreneurship intensity;  
and  
H1b. A country's institutional context affects women's opportunity entrepreneurship.

### 3. Methodology

#### 3.1. Data and variables

##### 3.1.1. Dataset

The study is performed on GEM data on women’s entrepreneurial activity for 2021/2022 in total of 47 countries, including the following: Belarus, Brazil, Canada, Chile, Colombia, Croatia, Cyprus, Dominican Republic, Egypt, Finland, France, Germany, Greece, Guatemala, Hungary, India, Iran, Ireland, Israel, Italy, Japan, Kazakhstan, Latvia, Luxemburg, Morocco, Netherlands, Norway, Oman, Panama, Poland, Qatar, Romania, Russian Federation, Saudi Arabia, Slovak Republic, Slovenia, South Africa, South Korea, Spain, Sudan, Sweden, Switzerland, Turkey, United Arab Emirates, United Kingdom, United States of America, and Uruguay.

##### 3.1.2. Dependent variables

Women’s entrepreneurial activity is explored through its intensity and its motivational background. The intensity of women’s entrepreneurship is measured as women-to-men TEA ratio (W/M TEA ratio), where TEA is a relative share of adults (18-64 years old) who are nascent entrepreneurs or owners of new business (younger than 42 months). The so-called opportunity entrepreneurs are captured through a variable measuring the relative share of TEA women respondents who agree that a reason for starting their business is to make a difference.

##### 3.1.3. Independent variables

In GEM methodology, a number of variables are used to measure the institutional context in which women are becoming entrepreneurs and run their businesses. The independent variables values are obtained by asking experts to rate how a certain statement is true or false in their countries (Table 1).

**Table 1. Independent variables**

Independent variable	Statement	Scale
Equal cultural support for women entrepreneurs	In my country, the national culture encourages women as equally as men to become self-employed or start a new business.	from -5 (completely false)
Favorable regulations for women entrepreneurs	In my country, regulations for entrepreneurs are so favorable that women prefer becoming an entrepreneur instead of becoming an employee.	
Equal access to finance	In my country, access to financing is equally granted for male and female entrepreneurs.	to +5 (completely true)
Equal access to procurement	In my country, market and public procurement are equally accessible for male and female entrepreneurs.	
Sufficient family support services for women entrepreneurs	In my country, there are sufficient affordable support services (i.e. childcare, home services, after-school programs, eldercare, etc.) so that women can continue to run their businesses even after they have started a family.	

Source: Elam, A., et al. (2022). *GEM 2021/2022 Women’s Entrepreneurship Report: From Crisis to Opportunity*. London: Global Entrepreneurship Research Association.

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The study controls for the effect of a country's economic development on women's entrepreneurship. The original dataset groups all countries into three income groups: high income, upper-middle income and lower-middle income group. As only five lower-middle and lower-income countries are participating in the used GEM survey, for the purpose of the present study all the participating countries are grouped in two groups, forming a dummy control variable: high-income countries and others.

### 3.2. Methods

For the hypotheses' evaluation, the linear regression analysis is carried out. All the assumptions of the regression analysis are checked and fulfilled. A visual insight into the scatter plots shows the existence of a linear relationship between variables and the box plots indicate that there are no extreme outliers in the dataset. The values of Tolerance (cut-off value of 0.10 or higher) and VIF (cut-off value of 10 or lower) show that there is no problem of multicollinearity, while the Durbin-Watson test value (close to 2) indicates that there is an independence of the observations.

## 4. Results and Discussion

Descriptive statistics results are presented in the Table 2. As it can be seen, globally, there is no cultural support for female entrepreneurs. Moreover, regulation is not adequate for them, and there is no adequate support in family services either. Even those scores that are positive are very low and do not exceed 1.1 out of a maximum of 5. Finally, the result is that the ratio between women and men who are starting or running young businesses is in favor of men. Moreover, less than half of female entrepreneurs start their businesses to exploit some opportunity to make a difference.

**Table 2. Descriptive Statistics**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Equal cultural support for women entrepreneurs	47	-3.10	3.20	-.5872	1.23827
Favorable regulations for women entrepreneurs	47	-3.80	2.20	-1.7468	1.06462
Equal access to finance	47	-1.200	3.400	1.13404	1.221595
Equal access to procurement	47	-1.90	3.10	1.0213	1.17657
Sufficient family support services for women entrepreneurs	47	-3.20	3.10	-.8936	1.43093
Women to Men TEA ratio	47	.40	1.10	.7447	.17914
Opportunity entrepreneurs	47	.50	80.30	48.3404	20.96697

*Source:* Authors' calculations

Table 3 presents the regression models results. As hypothesized, the results show that the institutional context affects women's entrepreneurship, both its intensity and its qualitative structure.

Table 3. Regression models

	Unstandardized Coefficients		Standardized B	Collinearity Statistics	
	B	Standard Error		Tolerance	VIF
<b>Model 1 (W/M TEA ratio)</b>					
Constant	0.772	0.078			
Equal cultural support for women entrepreneurs	0.080	0.039	<b>0.550*</b>	0.247	4.052
Favorable regulations for women entrepreneurs	-0.009	0.042	-0.056	0.279	3.581
Equal access to finance	-0.003	0.042	-0.022	0.220	4.540
Equal access to procurement	0.032	0.053	0.213	0.148	6.765
Sufficient family support for women entrepreneurs	-0.077	0.028	<b>-0.614*</b>	0.343	2.912
Income level	-0.144	0.060	-0.384	0.692	1.444
Model Summary and ANOVA				F(6, 40)=2.76*	R <sup>2</sup> =0.293 Durbin-Watson=2.20
<b>Model II (Opportunity entrepreneur)</b>					
Constant	62.510	9.282			
Equal cultural support for women entrepreneurs	10.905	4.595	<b>0.644*</b>	0.247	4.052
Favorable regulations for women entrepreneurs	-0.755	5.024	-0.038	0.279	3.581
Equal access to finance	-9.127	4.930	-0.532	0.220	4.540
Equal access to procurement	5.287	6.248	0.297	0.148	6.765
Sufficient family support for women entrepreneurs	-4.966	3.371	-0.339	0.343	2.912
Income level	-12.993	7.092	-0.297	0.692	1.444
Model Summary and ANOVA				F(6, 40)=2.50*	R <sup>2</sup> =0.273 Durbin-Watson=2.15

Source: Authors' calculations

Having an equal cultural support for women entrepreneurs raise the share of women entrepreneurs in the total entrepreneurial population. Also, equal cultural support for women entrepreneurs improves the qualitative structure of women's entrepreneurial activity as it contributes to increasing the number of female entrepreneurs who start their business in order to exploit an opportunity to change something in their environment. So, the national culture which encourages women as equally as men to become self-employed do really results in an increase in the relative share of female entrepreneurs, as well as the number of those who start a business to take advantage of a perceived opportunity, not out of a necessity.

On the other hand, the results show that the existence of sufficient family support services reduces the ratio of female to male entrepreneurs. This result is perhaps a counterintuitive one. Nevertheless, it may indicate that increasing support for women to



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perform family work increases women's participation in the labor market in the field of paid employment. This, indirectly, may indicate that for a greater number of women, entrepreneurship is still an option chosen out of necessity, in order to reconcile professional and family obligations. So, the results can suggest that the reduction of family responsibilities of women (through increased support for family services) reduces their motivation to be self-employed. Moreover, increased family support services do not increase the number of female entrepreneurs who start a business in order to make a certain difference, which additionally (albeit indirectly) can be a confirmation of the previous conclusion.

### **5. Conclusions**

Women's entrepreneurial activity is not an isolated island. Like entrepreneurial activity in general, entrepreneurial activity of women is embedded in a specific context. In order to fully understand this phenomenon, as well as to provide adequate support for its development, it is necessary to explore the influence of various macro and meso factors, not only individual and firm level factors. In a sample of 47 countries, this study shows that affirmative cultural norms are important for boosting the entrepreneurial activities of women and for improving its qualitative structure. At the same time, it seems like the existence of sufficient family support services reduces the ratio of female to male entrepreneurs. This can indicate that a decrease of the family related work for women supports their higher engagement in the paid-employed sector. Indirectly, these results may confirm the notion that for women, the entrepreneurship is still an option chosen out of necessity as a more flexible option for balancing their professional and family obligations.

Studies on the wider entrepreneurial environment or ecosystem shed light on the domains and issues that need to be targeted in order to achieve the goals in the field of women's entrepreneurial activity. In this case, the results point to the need to achieve greater social influence towards the creation of an affirmative cultural environment for female entrepreneurs. In other words, in addition to efforts to improve access to resources which are necessary for the entrepreneurship, it is necessary to build and incorporate affirmative cultural norms that will promote entrepreneurship as a socially desirable choice for women. It is necessary to further investigate the broader context in which women's entrepreneurial activity (doesn't) happen, expand the set of the operational measures to capture the context, the intensity and other features of women's entrepreneurial activity, as well as the number of different contexts, that is, countries to be investigated.

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### INSTITUCIONALNI KONTEKST I PREDUZETNIČKA AKTIVNOST ŽENA\*

**Rezime:** Uvažavajući činjenicu da je svaka ekonomska aktivnost, pa i preduzetnička, ugrađena u specifičan kontekst, rad ima za cilj da istraži uticaj elemenata institucionalnog okruženja na preduzetničku aktivnost žena. Na GEM uzorku od 47 zemalja, rezultati pokazuju da nacionalna kultura koja podjednako podstiče žene kao i muškarce da započnu novi posao zaista doprinosi povećanju broja preduzetnica, kao i onih žena koje postaju preduzetnice kako bi iskoristile šansu da promene nešto u svom okruženju. S druge strane, postojanje dovoljnih usluga podrške porodici smanjuje relativni odnos broja preduzetnica prema broju preduzetnika, što indirektno ukazuje na to da je za veći broj žena preduzetništvo i dalje opcija koja se bira iz nužde, kako bi se uskladile profesionalne i porodične obaveze.

**Ključne reči:** žene, preduzetnice, rod, GEM

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13 October 2023

International Scientific Conference  
**SMART AND SUSTAINABLE ECONOMY:  
TRENDS AND PERSPECTIVES**

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**IDENTIFICATION OF KEY WOMEN ENTREPRENEURS'  
PROBLEMS\***

**Marija Radosavljević, PhD\***

**Vesna Janković Milić, PhD\***

***Abstract:** The negative impact of gender-related problems in the field of entrepreneurial is well established in the literature. Although there are strong motives for involvement of women in business through starting their own business, the problems they face significantly hinder their struggling to survive and grow. The following are identified as the most important ones: personal problems, social problems, financial problems, problems with raw materials, marketing problems, problems with human resources, problems with managerial skills, infrastructure problems, problems concerning state support. The research results show that personal problems, financial problems and problems related to human resource management stand out when it comes to the importance and impact on the company's operations, in a negative context. The application of variance analysis indicates a statistically significant difference in observed problems in micro, small, medium and large enterprises.*

***Keywords:** women entrepreneurship, equality, motivation, factors, problems.*

### **1. Introduction**

In light of the growing emphasis on the equality of men and women as a constitutional principle, the development of women entrepreneurship is closely related to this principle. It starts from the assumption that gender inequality is one of the reasons why women do not express a greater interest in entrepreneurial ventures. Gender inequality results in an unequal position of men and women on the labor market, limited participation

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of women and unequal distribution of responsibilities in the sphere of private life, which is also reflected in economic inequality. In addition to gender inequality between men and women, another factor affecting women's entrepreneurship is equality of opportunity. In order for a woman to achieve professional success as an entrepreneur, it is necessary to provide her with the same opportunities as men. The negative impact of gender-related personal problems on women's entrepreneurial careers is well established in the literature (Rey-Marti et al., 2015; Saridakis, Marlow, & Storey, 2014). In accordance with the above, this paper aims to analyze and highlight the problems of women entrepreneurship in developing countries, in order to provide greater opportunities for female entrepreneurs in the entrepreneurial ecosystem and increase the chances of their survival and success.

## **2. Literature review and hypothesis development**

Women's motivation to start their own business often stems from dissatisfaction with their current work status and the perception that they progress more slowly in their careers than men. An important role is also played by the feeling that, based on expertise and other qualities, they cannot reach the position they deserve. Research shows that more than half of female entrepreneurs (53%) rely on their intuition when starting and running a business, while men (71%) more often they make decisions based on logical analyzes (Radović-Marković, 2013). Regardless of the cultural and economic differences of different national environments, the universal characteristic of women's entrepreneurship is the dominant engagement of female entrepreneurs in activities that are traditionally considered feminine, namely: trade and services (Bardasi, Sabarwal & Terrell, 2011). Segregation in occupations is manifested by the fact that female entrepreneurs are engaged in activities with lower entry barriers and, therefore, in activities where the intensity of competition is more pronounced. These are mainly service and consumer products activities characterized by lower capital investments (Vossenber, 2013).

Businesses owned by women are on average younger businesses. The lower number of years of age of companies owned by women can partly be argued by the fact that the entrepreneurial activity of women is a relatively recent phenomenon, but also by the results indicating that the survival rate of these companies is lower, which leads to their lower average age (Bardasi, Sabarwal & Terrell, 2011). Businesses owned by women are smaller in terms of various size indicators – number of employees, size of assets, revenue, profit, size of capital (Coleman & Robb, 2009; Vossenber, 2013).

Risks in women entrepreneurship stem from a number of factors, including the social context and lifestyle of women, but also the different approaches used in female and male entrepreneurship. When we look at the activities of women in entrepreneurial ventures, they tend to focus on sectors that are often associated with small and medium-sized enterprises. These women may be exposed to risks such as economic problems, technical failures, challenges caused by competition, changes in the market, illnesses and injuries at work and other forms of risk (Radović-Marković, 2013).

Petković (2021) highlights the difference between internal and external risks, stressing that internal sources of risk refer to: ineffective management, limited innovation, inappropriate business concept, ineffective allocation of resources, inappropriate target market, undirected marketing, insufficient promotion, ineffective distribution channels,

### **Identification of Key Women Entrepreneurs' Problems**

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inappropriate location, inadequate employee structure and limited range of products or services.

However, there are various ways to protect yourself from the potential risks associated with prepayment. Some of the options include insuring the property through different insurance companies, implementing internal preventive measures to protect against risk and delegating risk costs to other companies. Women often face additional challenges when it comes to financing their business ideas. Namely, they often do not have access to the same sources of capital as men, so it may happen that they do not have their own real estate or start-up capital. In addition, there can also be a fear of starting one's own business, especially when it is necessary to balance business activities with family obligations. Women sometimes have challenges in accepting risks, which can affect their willingness to take the initiative and establish their own business (Žagar, 2010).

Women entrepreneurs' personal problems most often arise from the clash between the family and business spheres (Baughn et al., 2006; Hsu et al., 2016), fueled by work–family conflict. We also find that in mid-level developed countries in transition, work–family conflict and other personal problems are highest (Kaciak & Welsh, 2020). Obstacles to the development of female entrepreneurship can be grouped as follows:

- Social obstacles: lack of self-confidence, lack of vision and aspirations, lack of readiness for action, lack of courage, unwillingness to take risks
- Education and skills: lack of appropriate entrepreneurial skills and qualifications
- Environment: complex administrative procedures, unstable financial support in the form of entrepreneurship development programs from the state, insufficient presentation of positive examples and good practices, insufficient or poor-quality business infrastructure
- Financial: lack of initial capital and other sources of funding for an entrepreneurial venture, inadequate or untimely information on existing state financial programs.

Despite increased awareness and numerous initiatives, women still face significant challenges in the sector that affect all stages of females' career paths and life courses in the digital sphere. These challenges include: (1) Unconscious biases, (2) Tokenism, (3) problems relating to professional and personal life and (4) Low transparency and inclusiveness in business policies. Additionally, there are specific difficulties that women face when it comes to establishing and running a business, like reduced access to financing. Women also face other barriers like: (1) the lack of role models, (2) entrenched stereotypes, (3) weaker business networks, (4) stronger perceived difficulties for reconciling business and personal life and (5) gender differences on the sector of activity (Tarín Quirós, et al. 2018). Based on the literature research authors assume that: Women entrepreneurs are equally affected by different problems they face.

### **3. Analysis of the problems of female entrepreneurs in the Nisava District**

Bearing in mind the idea and goal of the work, an empirical research was conducted, which included female entrepreneurs in the territory of the Nišava district. The sample included 316 female entrepreneurs, who, among other things, identified and evaluated the importance of the problems they face in the realization of an entrepreneurial venture. Since

female entrepreneurs usually indicated more problems that they face or have faced when starting a business, the frequency of occurrence of each of the obstacles to female entrepreneurship was identified.

More than half of female entrepreneurs highlighted self-confidence, finding suitable business contacts, lack of finance and the presence of gender discrimination as key problems. However, by far the most prevalent problem from the point of view of female entrepreneurs is the issue of self-confidence. This problem can be solved by developing the emotional intelligence of female entrepreneurs, organizing workshops on this topic and simulating different situations and roles. Second on the list of priority problems of female entrepreneurs is finding the right business contacts, which again leads to a similar topic, namely social intelligence. Since the two mentioned problems are located in front of the problem of lack of finance, it seems that some of the significant problems of female entrepreneurs can be solved with appropriate educations and workshops. Also, the lack of entrepreneurial and management skills stands out as significant problems. In this domain, educational institutions in this area can play a significant role, primarily secondary vocational schools and faculties of economic orientation. When it comes to problems related to the lack of information (advice), access to business support and gender discrimination, local self-government representatives play a significant role, and with their portals, actions and programs, they can significantly facilitate the business of female entrepreneurs.

Bearing in mind that the problems of female entrepreneurs are the focus of the research, it is important to identify statistical data related to these problems. In this sense, descriptive statistics of the problems of female entrepreneurs are given in Table 1.

**Table 1. Descriptive statistics of the problems of female entrepreneurs**

	Mean	Stand. Dev.
Personal problems	2,3229	0,6289
Social problems	2,0443	0,6838
Financial problems	2,2456	0,6610
Problems with raw materials	2,0987	0,7251
Marketing problems	1,9532	0,7381
Problems with human resources	2,3437	0,7955
Problems with managerial skills	1,8816	0,8308
Infrastructure problems	1,6367	0,6660
Problems of state support	2,2987	0,8504

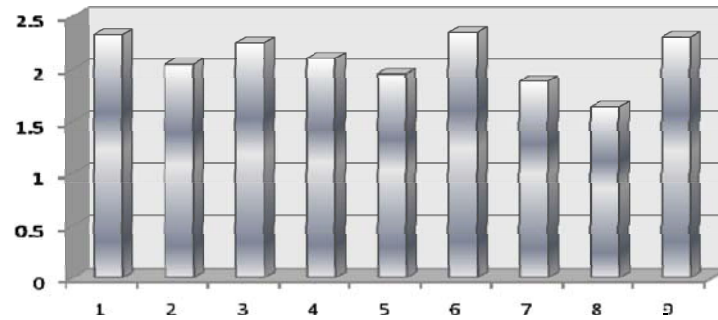
Source: Authors' calculation

Bearing in mind that each of the mentioned problems, i.e. obstacles to female entrepreneurs, can be broken down and analyzed in more detail. The average rating shows how important a certain problem female entrepreneurs consider, while the standard deviation shows the average deviation from the mean value. In this sense, a higher standard deviation indicates a lower degree of agreement between the opinions of female entrepreneurs, i.e. the existence of a distinct difference in their views regarding the observed problems.



## Identification of Key Women Entrepreneurs' Problems

**Figure 1. Schedule of average ratings of problems faced by female entrepreneurs**



Legend:

- 1 Personal problems
- 2 Social problems
- 3 Financial problems
- 4 Problems with raw materials
- 5 Marketing problems
- 6 Problems with human resources
- 7 Problems with managerial skills
- 8 Infrastructure problems
- 9 Problems of state support

Based on the analyzed data, it can be observed that, considered individually, the highest average grades have the following problems:

- Restricted capital – average score 3.0127,
- Lack of self-confidence - average score 2.8510,
- Disinterest of young people in work engagement - average score 2.8418,
- Skilled workers leave the job after gaining experience – average score 2.6460,
- Variations in the prices of raw materials - average score 2.5944.

Based on the previously presented data, it can be seen that female entrepreneurs who run businesses of different sizes have different problems, that is, they do not rate the importance and presence of certain problems equally. In order to statistically confirm that there really is a difference in the representation of the problems of female entrepreneurs depending on the size of the company, it is necessary to conduct an analysis of variance.

**Table 2. Conditionality of the problems of female entrepreneurs by the size of the company**

		Sum of squares	df	Mean square	F statistics	Significance
1	Between groups	2.607	3	.869	2.222	.086
	Within groups	122.011	312	.391		
	Total	124.618	315			
2	Between groups	3.208	3	1.069	2.316	.076
	Within groups	144.091	312	.462		
	Total	147.300	315			

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<b>3</b>	Between groups	3.030	3	1.010	2.341	.073
	Within groups	134.634	312	.432		
	Total	137.664	315			
<b>4</b>	Between groups	3.820	3	1.273	2.455	.063
	Within groups	161.820	312	.519		
	Total	165.639	315			
<b>5*</b>	Between groups	8.655	3	2.885	5.523	.001
	Within groups	162.971	312	.522		
	Total	171.627	315			
<b>6*</b>	Between groups	7.351	3	2.450	3.981	.008
	Within groups	192.007	312	.615		
	Total	199.357	315			
<b>7*</b>	Between groups	12.547	3	4.182	6.368	.000
	Within groups	204.906	312	.657		
	Total	217.454	315			
<b>8</b>	Between groups	3.460	3	1.153	2.640	.050
	Within groups	136.274	312	.437		
	Total	139.734	315			
<b>9</b>	Between groups	2.644	3	.881	1.221	.302
	Within groups	225.156	312	.722		
	Total	227.799	315			

Source: Authors' calculation

Analysis of variance (ANOVA) is one of the most commonly used statistical methods. With this method, the equality of the arithmetic means of three or more sets is tested in a single procedure. The essence of the analysis of variance is to compare the variation between groups (samples) and the variation within groups. Namely, in the analysis of variance, the total variability of the observed phenomenon is divided into two parts:

- Factor variability - created under the influence of controlled factors,
- Residual variability – created under the influence of uncontrolled factors.

In this research, analysis of variance was applied with the aim of testing the significance of the difference in the average importance of certain types of problems of female entrepreneurs, considering the size of the company. According to the results of the variance analysis, there is no statistically significant difference in most problem categories when it comes to representation in companies of different sizes. Namely, the last column of Table 2 shows that the level of significance for six groups of problems is higher than 0.05, which indicates a statistically insignificant difference in observed problems in micro, small, medium and large enterprises. This means that these problems are equally important to female entrepreneurs, regardless of the size of the companies they manage, and therefore require even the smallest adjustments for the mentioned segments.

On the other hand, marketing problems, problems with human resources and problems with managerial skills depend on the size of the companies. This result shows that those problems should be approached in a segmented manner, i.e. paying attention to the specifics of the business of female entrepreneurs in general, but also to problems that are particularly significant for companies of a certain size owned by women.

## Identification of Key Women Entrepreneurs' Problems

**Table 3 Correlation matrix**

		1	2	3	4	5	6	7	8	9
1	PC*	1								
	Sig. (2-tailed)									
2	PC*	.433**	1							
	Sig. (2-tailed)	.000								
3	PC*	.552**	.562**	1						
	Sig. (2-tailed)	.000	.000							
4	PC*	.460**	.329**	.526**	1					
	Sig. (2-tailed)	.000	.000	.000						
5	PC*	.556**	.415**	.563**	.364**	1				
	Sig. (2-tailed)	.000	.000	.000	.000					
6	PC*	.363**	.306**	.455**	.402**	.522**	1			
	Sig. (2-tailed)	.000	.000	.000	.000	.000				
7	PC*	.554**	.254**	.438**	.413**	.570**	.472**	1		
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000			
8	PC*	.297**	.258**	.375**	.249**	.418**	.334**	.402**	1	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		
9	PC*	.373**	.332**	.426**	.389**	.215**	.267**	.338**	.397**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	

\*Pearson Correlation

\*\* . Correlation is significant at the 0.01 level (2-tailed).

In order to check the level of interdependence between problems, correlation analysis has been applied, i.e. Pearson correlation coefficient is calculated. According to the results (Table 3), there is statistically significant correlation between all analyzed problems of female entrepreneurs. The highest level of correlation exist between problems in marketing and sales and problems with managerial skills (0,570), followed by interdependence between problems in marketing and sales and financial problems (0,563), as well as correlation between financial and social problems (0,562).

### 4. Conclusion

When it comes to the groups of problems faced by female entrepreneurs, according to the average ratings, which indicate the importance and impact of certain groups of problems in a negative context on the company's operations, personal problems, financial problems and problems related to human resource management stand out. The application of variance analysis indicates a statistically significant difference in marketing problems, problems with human resources and problems with managerial skills in micro, small, medium and large enterprises. This result shows that those problems of female entrepreneurship should be approached in a segmented manner, i.e. paying attention to the specifics of the business of female entrepreneurs in general, but also to problems that are particularly significant for companies of a certain size owned by women. According to the results of the correlation analysis, it can be concluded that the highest degree of interdependence exists between problems in marketing and sales and managerial problems, followed by relations between problems in marketing and sales and financial problems, as well as relations between financial and social problems. Such results show that the problems that most concern entrepreneurs are actually related, which gives hope that

solving one group of problems can facilitate the solving of another group of problems. Also, this leads to the conclusion that solving the problems of female entrepreneurs should be approached systematically, but taking into account their differences caused by the size of the companies they manage.

Certainly, it is important to determine to what extent there are differences between individual problems within each of the nine categories of problems that are observed, and when it comes to the size of the company.

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## IDENTIFIKACIJA KLJUČNIH PROBLEMA ŽENA PREDUZETNICA

**Rezime:** Negativan uticaj rodnih problema u oblasti preduzetništva je dobro utvrđen u literaturi. Iako postoje jaki motivi za uključivanje žena u biznis kroz pokretanje sopstvenog posla, problemi sa kojima se suočavaju značajno otežavaju njihovu borbu za opstanak i rast. Kao najvažniji su identifikovani: lični problemi, socijalni problemi, finansijski problemi, problemi sa sirovinama, problemi marketinga, problemi sa ljudskim resursima, problemi sa menadžerskim veštinama, problemi infrastrukture, problemi u vezi sa državnom podrškom. Rezultati istraživanja pokazuju da se lični problemi, finansijski problemi i problemi vezani za upravljanje ljudskim resursima ističu kada je u pitanju značaj i uticaj na poslovanje kompanije, u negativnom kontekstu. Primena analize varijanse ukazuje na statistički značajnu razliku u uočenim problemima u mikro, malim, srednjim i velikim preduzećima.

**Ključne reči:** žensko preduzetništvo, ravnopravnost, motivacija, faktori, problemi.





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**QUALITY EDUCATION – SUSTAINABLE DEVELOPMENT  
GOAL IN EUROPEAN UNION AND REPUBLIC OF SERBIA**

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***Abstract:** As a part of the 2030 Agenda for Sustainable Development adopted in 2015 which includes 17 Sustainable Development Goals (SDGs), the Quality Education has been promoted as the number four SGD. Quality education specifically entails issues such as appropriate skills development, gender parity, provision of relevant school infrastructure, equipment, educational materials and resources, scholarships or teaching force., As a goal of sustainable development, quality education is formulated in such a way that it contains seven sub-goals and a total of nine indicators by means of which their realization is monitored. The subject of research in this paper is the achieved level of realization of this goal. Based on United Nations and Eurostat databases, a comparative analysis of the quality education indicators in European Union and Republic of Serbia was carried out in the paper. The analysis covers the period from 2015 to 2022.*

**Keywords:** quality education, indicators, European Union, Republic of Serbia.

## **1. Introduction**

Education plays a key role in providing the knowledge, skills and competencies required for business participation in society and the economy in particular. In addition, education can improve people's lives in areas such as health, civic participation, political interest, and happiness. Studies show that educated individuals live longer, participate actively in politics and the community in which they live, commit fewer crimes and rely

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less on social assistance. Although there has been progress in the field of access to education in recent years, in 2017, 262 million young people between the ages of 6 and 17 did not attend school, and half of children and young people did not reach the minimum criteria for passing in reading and mathematics. Many developing countries still lack the basic infrastructure that would allow unhindered and effective access to education

Achieving quality education for all children confirms the belief that education is the most powerful and proven means of sustainable development. For this reason, quality education is one of the 17 global goals that make up the Sustainable Development Program until 2030.

### **1. Quality education – part of the Agenda for Sustainable Development**

At the summit held in September 2015, the United Nations adopted resolution A/RES/70/1 - Transforming our world: *the 2030 Agenda for Sustainable Development (UN, 2015)*. Agenda 2030 is a universal strategy and signatory countries are expected to mobilize all resources so that the goals are achieved by 2030. Agenda 2030, with 17 goals, includes three dimensions of sustainable development: economic growth, social inclusion and environmental protection. The sustainable development goals (SDG) within the Agenda are (UN, 2015):

- SDG1 - End poverty in all its forms everywhere;
- SDG2 – End hunger, achieve food security and improved nutrition and promote sustainable agriculture;
- SDG3 - Ensure healthy lives and promote well-being for all at all age;
- SDG4 - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all;
- SDG5 - Achieve gender equality and empower all women and girls;
- SDG6 - Ensure availability and sustainable management of water and sanitation for all;
- SDG7 - Ensure access to affordable, reliable, sustainable and modern energy for all;
- SDG8 - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all;
- SDG9 - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation;
- SDG10 - Reduce inequality within and among countries;
- SDG11 - Make cities and human settlements inclusive, safe, resilient and sustainable;
- SDG12 - Ensure sustainable consumption and production patterns;
- SDG13 - Take urgent action to combat climate change and its impacts;
- SDG14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development;
- SDG15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss;



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- SDG16 - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels;
- SDG17 - Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

The 17 goals are interconnected since the key to the success of one goal often lies in looking at the challenges inherent in another goal, and development is inseparable from the balance between social, economic and environmental sustainability aspects and must not be at the expense of these aspects.

The purpose of global goal 4 – Quality education is to ensure inclusive and equal quality education and promote the importance of lifelong learning for all. Improving the quality of education will be realized through the following 7 thematic goals (UN, 2015):

- 4.1 By the end of 2030, ensure that all girls and boys complete free, equal and quality primary and secondary education that leads to relevant and effective learning outcomes.
- 4.2 By the end of 2030, ensure that all girls and boys have access to quality early childhood development, care and preschool education to prepare them for primary education.
- 4.3 By the end of 2030, ensure equal availability of cheap and quality technical, professional and tertiary education, including university education, for all women and men.
- 4.4 By the end of 2030, significantly increase the number of young people and adults who have relevant skills, including technical and professional ones, for employment, decent jobs and entrepreneurship.
- 4.5 By the end of 2030, eliminate gender inequality in education and ensure equal access to all levels of education and vocational training for vulnerable groups, including people with disabilities, indigenous populations and children in vulnerable situations.
- 4.6 By the end of 2030, ensure that all young people and a significant number of adults (both men and women) achieve linguistic and numerical literacy.
- 4.7 By the end of 2030, ensure that all students acquire the knowledge and skills needed to promote sustainable development, including through education for sustainable development and sustainable lifestyles, human rights, gender equality, as well as for promoting a culture of peace and non-violence, belonging to the global community and respect for cultural diversity and the contribution of culture to sustainable development

The realization of each of the mentioned sub-goals is monitored by means of appropriate indicators. The following indicators have been defined to monitor the fulfillment of sub-goals (UN, 2015):

- Share of children and young people: (a) in 2/3 grade; (b) at the end of primary school; and (c) at the end of secondary school who reach at least the minimum level of proficiency in (i) reading and (ii) mathematics, by gender;
- Completion rate (primary education, secondary education);

- Percentage of children aged 24 to 59 months who are healthy (physically, psychosocially), by gender;
- Participation rate in organized learning (one year before the official age for entering primary education), by gender;
- Youth and adult participation rate in formal and informal education and training in the previous 12 months, by gender;
- Share of young people and adults with information and communication technology skills, by type of skill;
- Parity indices (female/male, rural/urban, lowest/highest wealth quintile and others such as disability status) for all education indicators on this disaggregated list;
- Proportion of the population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by gender;
- The extent to which (1) global citizenship education and (2) education for sustainable development are included in (a) national education policies; (b) curricula; (c) teacher education and (d) student assessment.

Monitoring the realization of goals in the countries of the European Union is made possible by the Eurostat database. In this database, the realization of sub-objectives is monitored using the following indicators (Eurostat, 2023):

I Share of the population aged 18 to 24 with at most lower secondary education who were not involved in any (formal or informal) education or training, by sex;

II Share of the population aged 25-34 who have successfully completed higher or higher education (tertiary studies), by gender;

III The share of children aged three years until starting compulsory primary education who participated in early childhood education and care, by gender;

IV Proportion of 15-year-old students who fail to reach level 2 ("basic skills level") on the PISA scale in the three core areas of reading, mathematics and science.

V Proportion of the population aged 25 to 64 who reported having received formal or informal education and training, by gender;

VI Proportion of population aged 16 to 74 with at least basic digital skills. A composite indicator based on selected activities individuals perform online in specific areas: information literacy, communication and collaboration, digital content creation, security, and problem solving.

**Table 1 Indicators of Quality education in the period 2015-2022**

Indicator	Year							
	2015	2016	2017	2018	2019	2020	2021	2022
I	11.0	10.6	10.5	10.5	10.2	9.9	9.8	9.6
II	36.5	36.8	37.6	38.6	39.4	40.5	41.4	42.0
III	92.0	92.5	92.5	92.3	92.9	93.0	92.5	-
IV	20	-	-	22.5	-	-	-	-
V	10.1	10.3	10.4	10.6	10.8	9.1	10.8	11.9
VI	--	-	-	-	-	-	53.92	-

*Source:* <https://ec.europa.eu/eurostat/web/sdi/database>

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The value of Quality education indicators for EU countries in the period 2015-2022 is shown in Table 1. As it can be seen, there are no data about the indicators for the entire observed period. For this reason, it is impossible to gain an adequate insight into the progress in the realization of this goal in the EU countries. Based on the data in the Table 1, it can be seen that share of the population aged 18 to 24 with at most lower secondary education who were not involved in any (formal or informal) education or training has been decreased in EU countries from 11% to 9,6%. Also, share of the population aged 25-34 who have successfully completed higher or high education significantly increased in the observed period (from 36,5% up to 42%), as well as proportion of the population aged 25 to 64 who reported having received formal or informal education and training (from 10,1% up to 11,9%).

### **2. Quality education – Sustainable development goal in the Republic of Serbia**

The Government of the Republic of Serbia directly participated in the development and writing of the Sustainable Development Agenda through the inclusion of citizens in the process through consultations on the post-2015 development agenda and the direct participation of state representatives in global forums where the goals of sustainable development are defined.

The multi-departmental working group for the implementation of the 2030 Agenda for Sustainable Development was established in December 2015 and was composed of high-level representatives of 27 line ministries and other organizations. The working group was chaired by the minister without portfolio in charge of demography and population policy. The main role of the multi-departmental Working Group for the Sustainable Development Goals is to (UNDP, Srbija):

- Monitor the implementation of the 2030 Agenda;
- Unifies and coordinates the positions of the competent ministries in order to achieve the goals and sub-goals of the Agenda;
- Prepares periodic reports on its application.

One of the strategic documents is the *Declaration on the role of national statistical institutions in the measurement and monitoring of the Sustainable Development Goals (SDGs)*, which states that national statistical institutions are committed to contributing their expertise to the measurement of the Sustainable Development Goals in a professional, independent and impartial manner.

In order to monitor the realization of these goals, the Statistical Office of the Republic of Serbia created a database. Realization of the goal Quality education is monitored using 6 indicators, as well as in Eurostat database. However, not all data on all indicators are provided. The only indicator for which there is complete data for the period 2015-2022 is Participation rate of young people (15-24 years old) and adults in formal and informal education and training in the previous 12 months, by gender.

**Table 2 Participation rate of young people and adults in formal and informal education and training in the previous 12 months in the period 2015-2022**

Year	Youth			Adults		
	Total	Male	Female	Total	Male	Female
2015	66.4	61.5	71.6	4.8	4.4	5.1
2016	66.6	62.1	71.3	5.1	4.8	5.5
2017	65.7	61	70.7	4.4	4.2	4.6
2018	65.8	61.4	70.4	4.1	3.7	4.5
2019	66.9	62.4	71.7	4.3	3.8	4.8
2020	66.9	60.3	73.9	3.7	3.3	4
2021	64.4	58.6	70.6	4.8	4.2	5.4
2022	67.4	61.9	73.2	5.2	4.4	5.9

Source: Republički zavod za statistiku, *Ciljevi održivog razvoja*, <https://data.stat.gov.rs/>

Based on the values in the observed period, it can be seen that there was a slight increase in participation, primarily among women. For other indicators, only data for 2019 is available on the website of the Statistical Office of the Republic of Serbia. For this reason, it is impossible to make any representative conclusion about the realization of the fourth sustainable development goal - Quality education in the Republic of Serbia.

### Conclusion

Achieving inclusive and quality education for all reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development. This goal ensures that all girls and boys complete free primary and secondary schooling by 2030. It also aims to provide equal access to affordable vocational training, to eliminate gender and wealth disparities, and achieve universal access to a quality higher education.

Although the goal is well set, the monitoring of its implementation shows shortcomings, both in the countries of the European Union and in the Republic of Serbia. For the EU countries, there is no complete data about the indicators for the previous period. According to data available, in EU countries share of the population aged 18 to 24 with at most lower secondary education who were not involved in any (formal or informal) education or training has been decreased, while share of the population aged 25-34 who have successfully completed higher or high education significantly increased, as well as proportion of the population aged 25 to 64 who reported having received formal or informal education and training.

In the Republic of Serbia, for most indicators, only data for 2019 is available on the website of the Statistical Office of the Republic of Serbia. For this reason, it is impossible to gain an adequate insight into the progress in the realization of this goal.

## Quality Education - Sustainable Development Goal in European Union and Republic of Serbia

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### KVALITETNO OBRAZOVANJE KAO CILJ ODRŽIVOG RAZVOJA EVROPSKE UNIJE I REPUBLIKE SRBIJE

**Abstract:** *Kao deo Agende za održivi razvoj do 2030 usvojene 2015. godine, koja uključuje 17 ciljeva održivog razvoja, kvalitetno obrazovanje je promovisano kao četvrti cilj. Kvalitetno obrazovanje posebno podrazumeva pitanja kao što su razvoj odgovarajućih veština, rodni paritet, obezbeđivanje relevantne školske infrastrukture, opreme, obrazovnog materijala i resursa, stipendija ili nastavnog osoblja. Kao cilj održivog razvoja, kvalitetno obrazovanje je formulisano tako da sadrži sedam podciljeva i ukupno devet indikatora pomoću kojih se prati njihova realizacija. Predmet istraživanja u ovom radu je dostignuti nivo u realizaciji ovog cilja. Na osnovu baza podataka Ujedinjenih Nacija i Eurostata, u radu je sprovedena komparativna analiza indikatora kvalitetnog obrazovanja u Evropskoj Uniji u Republici Srbiji. Analizom je obuhvaćen period od 2015. godine do 2022. godine.*

**Keywords:** *Kvalitetno obrazovanje, indikatori, Evropska Unija, Republika Srbija.*





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**POVEZANOST KAO DIMENZIJA DESI INDEKSA U SRBIJI I  
ZEMLJAMA OKRUŽENJA**

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***Rezime:** Kroz Indeks digitalne ekonomije i društva (DESI), Evropska komisija, od 2014. godine, prati napredak država članica na godišnjem nivou u ključnim oblastima digitalne politike radi identifikovanja prioriteta. Indeks digitalne ekonomije i društva je za Srbiju prvi put obračunat za 2017. godinu. Na taj način je omogućeno pozicioniranje Srbije na evropskoj mapi digitalnih performansi. Od svih zemalja u okruženju Srbija je najspremnija da obezbedi podatke za svih 37 indikatora koji čine sastavni deo ovog indeksa. Takđe, vrednosti indikatora koji su sastavni deo oblasti Povezanost za Srbiju su znatno iznad zemalja u okruženju.*

***Ključne reči:** Indeks digitalne ekonomije i društva, povezanost, Srbija, Zapadni Balkan.*

### 1. Uvod

Informaciono komunikacione tehnologije su u današnjim uslovima postale strateško oruđe i pokretač za inovacije i rast produktivnosti. Digitalne tehnologije omogućavaju vladama da funkcionišu i efikasno i efektivno i obezbeđuju javne usluge koje su više orijentisane na korisnika. Digitalna transformacija, tako, donosi kako veliki broj mogućnosti, tako i mnogo izazova.

Kako bi omogućila praćenje napretka digitalnih performansi i digitalnu konkurentnost u državama članicama Evropske unije (EU), Evropska Komisija (Komisija) kreirala 2014. godine je Indeks digitalne ekonomije i društva (*Digital Economy and Society Index* - DESI) u 2014. Ovaj kompozitni pokazatelj sadrži pet dimenzija, tj. meri pet ključnih oblasti: povezanost, ljudski kapital, korišćenje interneta od strane pojedinaca, integracija digitalne tehnologije od strane poslovnog sektora i digitalni javni servis.

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Najnaprednije digitalne ekonomije u Evropskoj uniji u 2020. godini su Danska, Finska i Švedska, dok su na začelju liste Rumunija, Bugarska i Grčka. Kako je naša zemlja kandidat za članstvo u EU, jedan od zahteva za prijem u članstvo jeste i korišćenja Indeksa digitalne ekonomije i društva za merenje ostvarenog napretka.

## 2. Komponente Indeksa digitalne ekonomije i društva

Indeks digitalne ekonomije i društva sastoji se, kao što je već istaknuto, od 5 dimenzija. Svaka od dimenzija kreirana je tako da meri različite aspekte digitalnog društva. Svih pet dimenzija zajedno odražava glavne politike relevantne za digitalnu ekonomiju i društvo. Struktura Indeksa digitalne ekonomije i društva prikazana je u Tabeli br. 1.

Tabela br. 1 Komponente Indeksa digitalne ekonomije i društva

Dimenzija	Opis
Povezanost (Connectivity)	Prihvatanje <i>broadband</i> pristupa, pokrivenost fiksnom mrežom, prisup mobilnim mrežama, cene pristupa mrežama
Ljudski kapital	Veštine korisnika Interneta i napredne veštine
Korišćenje internet usluga	Korišćenje internet usluga i onlajn transakcija od strane građana
Integracija digitalne tehnologije	Digitalizacija poslovanja i e-trgovina
Digitalni javni servisi	e-uprava

Izvor: Jordanoski, Z., Meyerhoff Nielsen, M. (2021). *Report on the State of Application of Digital Economy Society Index (DESI) in Western Balkan Economies*, Regional Cooperation Council, Bosna i Hercegovina

Pet dimenzija Indeksa digitalne ekonomije i društva dalje je podeljeno na 12 poddimenzija i 37 indikatora. Svaka od dimenzija, poddimenzije i indikatora imaju različitu težinu u konačnom Indeksu digitalne ekonomije i društva, što odražava trenutnu digitalnu politiku EU.

### 2. Dimenzija Povezanost i njene komponente

Kategorija Povezanost predstavlja infrastrukturu potrebnu za digitalnu ekonomiju i društvo i nudi informacije o vrstama i kvalitetu pristupa internetu, kao i njegovoj pristupačnosti. Odražavajući digitalnu politiku EU, Povezanost obuhvata 25% ukupnog ponderisanog rezultata Indeksa digitalne ekonomije i društva, tj. Relativni značaj dimenzije Povezanost u strukturi Indeksa digitalne ekonomije i društva iznosi 25%. Dimenzija povezanost meri starost fiksnog i mobilnog širokopojasnog pristupa, dostupnost i pristupačnost. Ova dimenzija Indeksa digitalne ekonomije i društva se dalje sastoji od četiri poddimenzije. Svaka od poddimenzija dalje ima sebi svojstven indikator ili indikatore. Tako da se dimenzija Povezanost, u suštini, iskazuje pomoću osam indikatora. Struktura dimenzije Povezanost prikazan je u Tabeli 2.



## Povezanost kao dimenzija DESI indeksa u Srbiji i zemljama okruženja

**Tabela 2 Struktura dimenzije Povezanost**

Poddimenzija	Indikator
Prihvatanje širokopojasnog pristupa	a1 - Penetracija fiksnog širokopojasnog pristupa po domaćinstvima
	a2 - Penetracija fiksnog širokopojasnog pristupa po domaćinstvima-najmanje 100 Mbps
Fiksna širokopojasna pokrivenost	b1- Brza širokopojasna pokrivenost (NGA).
	b2 - Pokrivenost fiksnom mrežom veoma velikog kapaciteta (VHCN).
Pristup mobilnim mrežama	c1 – Pokrivenost stanovništva mrežom 4G
	c2 – Broj korisnika mobilnog širokopojasnog pristupa na 100 stanovnika
	c3 – Procena spremnosti za 5G tehnologiju
Cena širokopojasnog pristupa	d1 - Indeks cenE širokopojasnog interneta

Izvor: *DESI Methodological Manual*, 2020,

Svaki od navedenih indikatora mora ispunjavati sledeće zahteve (*DESI Methodological Manual*, 2020):

- Mora se redovno prikupljati – što znači da se indikatori moraju prikupljati na godišnjoj osnovi (ili barem sa unapred definisanim pravilnostima);
- Mora biti relevantan za oblast politike od interesa - svi indikatori u indeksu moraju biti prihvaćeni kao relevantni pokazatelji za datu specifičnu oblast;
- Ne sme biti suvišan - Indeks ne bi trebalo da sadrži suvišne indikatore, bilo statistički ili u smislu interpretacije.

Svi indikatori Indeksa digitalne ekonomije i društva su izvedeni iz različitih statističkih operacija, pri čemu svaka od njih koristi različite metodologije. Generalno, izvori podataka za Indeks digitalne ekonomije i društva se mogu podeliti u dve kategorije:

- Podaci koje su prikupile nacionalne vlasti (28 indikatora) i
- Podaci koje prikupljaju treće strane kroz ad hoc studije (9 indikatora).

Vodeće zemlje u oblasti Povezanost su Danska, Holandija i Španija, dok najslabije rezultate među zemljama EU ostvaruju Grčka, Bugarska i Litvanija.

## 2. Razvijenost dimenzije Povezanost u Republici Srbiji

Indeks digitalne ekonomije i društva se za zemlje Evropske unije obračunava od 2014. godine, dok je za Srbiju prvi put obračunat za 2017. godinu. Na taj način je omogućeno pozicioniranje Srbije na evropskoj mapi digitalnih performansi.

Republika Srbija, kao i zemlje iz okruženja, generalno, ima mogućnosti da obezbedi podatke za izračunavanje većine indikatora uključenih u Indeks digitalne ekonomije i društva. Tenutno je, prema *Izveštaju o stanju primene Indeksa digitalne ekonomije i društva u zemljama Zapadnog Balkana* (Jordanoski & Meyerhoff Nielsen, 2021), Srbija najspremnija zemlja od svih zemalja Zapadnog Balkana da obezbedi podatke za svih 37 indikatora koji čine sastavni deo Indeksa digitalne ekonomije i društva. Crna Gora i Makedonija su u mogućnosti da obezbede podatke za 34 indikatora, a Albanija za 32

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indikatora. Bosna je, u tom pogledu, najnespremnija zemlja Zapadnog Balkana, s obzirom da obezbeđuje podatke za samo 27 indikatora.

U Republici Srbiji, podatke za merenje i praćenje napretka u elektronskim komunikacijama i informatičkom društvu obezbeđuju tri institucije:

- Republički zavod za statistiku,
- Regulatorna agencija za elektronske komunikacije
- Pošta Srbije.

Republički zavod za statistiku obezbeđuje podatke za 27 indikatora Indeksa digitalne ekonomije i društva. Napredak u elektronskim komunikacijama i informatičkom društvu Republički zavod za statistiku prati realizacijom sledećih istraživanja:

- Anketa o primeni informaciono-komunikacione tehnologije (ICT) u domaćinstvima;
- Anketa o primeni informaciono-komunikacione tehnologije u preduzećima,
- Anketa o radnoj snazi;
- Izveštajni podaci o obrazovanju.

Među državama Zapadnog Balkana Crna Gora, sa 35,1 bodom, ima najveći DESI (Indeks digitalne ekonomije i društva) za 2022. godinu. Indeks digitalne ekonomije i društva za Srbiju iznosi 34,9 bodova, Albaniju 32 boda, Severnu Makedoniju 27,4 boda, Kosovo 26,1 bod i Bosnu i Hercegovinu 23,2 boda. Prosek DESI za države Zapadnog Balkana iznosi 29,7 bodova, dok prosek Indeksa digitalne ekonomije i društva na nivou država EU iznosu 52,3 boda.

Srbija, iako nije članica EU, krupnim koracima ide ka digitalizaciji građana i privrede i naprednija je od nekih članica EU, posebno u segmentu eUprava. U anketi koju je sproveda agencija UN (*Department for Economic and Social Affairs*), Srbija je među 10 lidera u svetu po tempu razvoja elektronske uprave, a prema poslednjem objavljenom izveštaju (*E-Government Survey 2022, UN*), svrstana je u grupu zemlja sa veoma visokim EDGI indeksom (*E-Government Development Index*), odmah iza Belgije, a ispred Rusije, Češke i Hrvatske.

**Tabela 3. Vrednosti indikatora za oblast Povezanost u Republici Srbiji**

	Indikator	Vrednost	Minimum	Maksimum
a1	Penetracija fiksnog širokopojsanog pristupa po domaćinstvima	69,6%	50%	100%
a2	Penetracija fiksnog širokopojsanog pristupa po domaćinstvima – najmanje 100 Mbps	18,8%	0%	100%
b1	Pokrivenost domaćinstava fiksnim širokopojsanim pristupom – najmanje 30 Mbps	76,7%	0%	100%
b2	Pokrivenost domaćinstava mrežama vrlo visokog kapaciteta	49,2%	0%	100%
c1	Pokrivenost stanovništva mrežom 4G	96,7%	0%	100%
c2	Broj korisnika mobilnog širokopojsanog pristupa na 100 stanovnika	95	25	100
c3	Procena spremnosti za 5G tehnologiju	n/a	0%	100%
d1	Indeks cena širokopojsanog internet	70,6	0	100

Izvor: Regulatorna agencija za elektronske komunikacije i poštanske usluge, (2021).  
*Pregled tržišta telekomunikacija i poštanskih usluga u Republici Srbiji*, str. 24.

### **Povezanost kao dimenzija DESI indeksa u Srbiji i zemljama okruženja**

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Srbija je u oblasti Povezanost u 2021. godini ostvarila malo bolji rezultat nego u prethodnim godinama, što je uticalo na napredovanje na listi evropskih zemalja u ovoj kategoriji. Naime, u 2017. godini Srbija je za ovu oblast ostvarila 29,9 bodova, dok je u 2021. godini rezultat povećan na 56,3 bodova, dok je prosečan broj bodova za zemlje u okruženju 46,6 bodova. Ipak, značajniji uticaj na poziciju Srbije na rang listi evropskih zemalja u ovoj oblasti imale su metodološke razlike između obračuna za Srbiju i obračuna vrednosti zemalja Evropske unije. Svi indikatori u ovoj kategoriji koji su uporedivi sa prethodnom godinom su u 2021. godine veći nego prethodne godine.

### **3. Zaključak**

Postojanje moderne i robusne digitalne infrastrukture glavni je preduslov za bilo koju veliku digitalnu transformaciju vlada, ekonomija, i društva uopšte. Pristup i korišćenje brze i pouzdane telekomunikacione veze neophodni su kako bi se omogućila onlajn isporuka ključne ekonomske i socijalne usluge. Pristupačnost je takođe još jedan važan faktor. Indeks digitalne ekonomije i društva je kompozitni indeks koji sumira relevantne pokazatelje o digitalnim performansama i prati evoluciju država Evrope u digitalnoj konkurentnosti.

Srbija je najspremnija zemlja od svih zemalja Zapadnog Balkana da obezbedi podatke za svih 37 indikatora koji čine sastavni deo Indeksa digitalne ekonomije i društva. Vrednosti indikatora koji su sastavni deo oblasti Povezanost za Srbiju su znatno iznad zemalja u okruženju. Iako nije članica Evropske Unije, Srbija značajno napreduje u segmentu digitalizacije građana i privrede i naprednija je od nekih članica Evropske Unije, posebno u segmentu eUprava.

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**CONNECTIVITY AS A DIMENSION OF DIGITAL ECONOMY  
AND SOCIETY INDEX IN SERBIA AND SURROUNDING  
COUNTRIES**

*Abstract:* Through the Digital Economy and Society Index (DESI), the European Commission, since 2014, has been monitoring the progress of member states on an annual basis in key areas of digital policy in order to identify priorities. The Digital Economy and Society Index was calculated for Serbia for the first time in 2017. In this way, the positioning of Serbia on the European map of digital performance was made possible. Of all the countries in the region, Serbia is the most ready to provide data for all 37 indicators that make up an integral part of this index. Also, the values of the indicators that are an integral part of the Connectivity area for Serbia are significantly higher than the neighboring countries.

*Keywords:* Digital Economy and Society Index, Connectivity, Republic of Serbia, Western Balkan.



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**CONTRIBUTION OF LEAN PRODUCTION TO IMPROVEMENT  
OF BUSINESS PERFORMANCE IN SMEs\***

**Dina Živković\***

**Bojana Novičević Čečević, PhD\***

***Abstract:** Small and medium-sized enterprises represent important economic entities on a global level. The turbulent environment which they operate in causes changes in their organization and activities. The aim of this paper is to explain in more detail one of the business strategies that this group applies more frequently in order to overcome the obstacles they encounter. It is about lean production. Lean production is identified as a useful tool that can greatly improve the operations of small and medium-sized enterprises and ensure their future growth and development. The work indicates the essence and the importance of this strategy i.e. the demands that must be met in order to successfully implement the main benefits that small and medium-sized enterprises achieve through lean production.*

***Key words:** small and medium enterprises, lean production, performance measurement system*

### **1. Introduction**

Small and medium-sized enterprises (SMEs) play a significant role in the development of a country's economy (Knol et al., 2018; Qureshi et al., 2022). According to the U.S. Small Business Administration, over the past 17 years, small businesses make up 99.7% of all businesses in the country, account for half of all private sector jobs and generate 65% of net new jobs. (Zhou, 2012). Despite the great importance and interest in

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SMEs, there is still no single definition of the phenomenon. The basic determinants for defining the SME phenomenon are quantitative in nature (the number of employees is the most relevant and most common indicator). In addition to quantitative, there are also qualitative indicators which intrigue the author's attention (Mahadevan & Chejarla, 2022). Maintaining a competitive position on the market is becoming an increasing challenge for SMEs in modern business conditions (Qureshi et al., 2022). The modern business environment confronts SMEs with numerous challenges and obstacles. Intensive technological changes, the need for a faster information flow, changes in consumer demand and requirements as well as in the production system, globalization and other internal and external changes negatively affect the efficiency, effectiveness and productivity of SMEs (Aikhuele & Turan, 2016; Karim & Kazi Arif-Uz-Zaman, 2013; Sahoo 2020). In order to preserve their position on the market and improve their operations, SMEs are introducing certain changes in their operations. These changes are reflected in: increased product quality, improved production processes, the usage of new production tools and technologies, faster and more efficient CRM, shorter delivery times (Qureshi et al., 2022; Sahoo 2020).

One of the ways to overcome the aforementioned challenges and improve doing business, the one which shows an increasing number of small and medium-sized manufacturing companies in recent decades, is the application of lean production (Buer et al., 2020; Karim & Kazi Arif-Uz-Zaman, 2013; Mohd Aripin et al., 2023; Österman & Fundin, 2014; Pereira & Tortorella, 2018; Sahoo 2020). The lean system is seen as a strategic option for improving production while reducing operating costs and improving the overall performance of manufacturing companies (Mohd Aripin et al., 2023; Qureshi et al., 2022). The lean concept seeks to develop a value delivery system that continuously evolves, in order to move closer to the ability to provide for the potential demand, regardless of means or time. (Mahadevan & Chejarla, 2022).

The remainder of this article will proceed as follows. The first section of the paper presents the basics of lean production. In addition, it points to certain obstacles and challenges faced by SMEs while implementing the lean concept. The most significant benefits that SMEs generate are presented in the second section. In this section, it is described how lean manufacturing contributes to the improvement of its financial and non-financial performance and ensures future development and growth of the company. Lastly, the "Conclusion" section summarizes the challenges and ways for successful implementation of the lean concept, as well as the numerous advantages of the concept.

## **2. Lean philosophy and key factors for implementation**

Considering that an increasing number of manufacturing companies are showing interest in implementing the lean philosophy in their operations, the attractiveness of this phenomenon is growing rapidly in recent years (Behrouzi & Wong, 2011). Lean production was developed in Japan, specifically in the Toyota company in the 1950s (Aikhuele & Turan, 2016; AlManei et al., 2017; Behrouzi & Wong, 2011; Čečević & Antić, 2021; Dieste et al., 2021; Dinis-Carvalho et al., 2023; Hernandez-Matias et al., 2019; Karim & Kazi Arif-Uz-Zaman, 2013; Maware & Parsley, Panigrahi et al., 2023; 2022; Zhou, 2012). Thus, the history of the lean concept is relatively short, but its importance is growing (AlManei et al., 2017; Dieste et al., 2021). The concept of lean production was developed

### **Contribution of Lean Production to Improvement of Business Performance in SMEs**

by Japanese engineers Taiichi Ohno and Shigeo Shingo. The model was developed on the basis of the Toyota Production System (Hernandez-Matias et al., 2019).

Lean practice is very important for enhancing the traditional way of doing business, organizing production and business activities, which contributes to increased stability and continuous improvement of operations (Dinis-Carvalho et al., 2023; Österman & Fundin, 2014).

The term lean represents a series of activities and measures to minimize waste and activities that do not add value while improving the ones that do. (Karim & Kazi Arif-Uz-Zaman, 2013; Mohd Aripin et al., 2023). There are several definitions of this phenomenon. For instance, Taj & Morosan (2011) define lean concept as a multidimensional approach characterized by: production with minimal amount of waste (just in time JIT), continuous production flow (cellular arrangement), high-quality and functional equipment (total productive maintenance TPM), well-established quality system (total quality management TQM), trained and capable workforce (human resource management HRM), with a positive impact on the business and competitive position of the company (quality, price, quick response and flexibility). This definition stands out because it includes the key factors of lean manufacturing (JIT, TQM, TPM and HRM) (Sahoo, 2020). The essence of many definitions is that the philosophy is based on identifying value, eliminating waste and creating a smooth business flow (Karim & Kazi Arif-Uz-Zaman, 2013), while some authors emphasize the reduction of waste as the main goal of lean production (Zhou, 2012; Rahman et al. 2013).

The key goals of lean philosophy are considered to be increasing product quality, shorter product design and manufacturing time, satisfied customers, greater utilization of production capacity, shorter lead-time, less involvement of human capital, reduction of inventory levels, reduction of costs, elimination of business activities that do not add value, elimination of waste (production with zero defects) increase of business efficiency, flexibility and productivity (Behrouzi & Wong, 2011; Berlec et al., 2017; Buer et al., 2020; Karim & Kazi Arif-Uz-Zaman, 2013; Panigrahi et al., 2023; Pereira & Tortorella, 2018; Zhou, 2012). In practice, these goals are realized through simplified, stable and standardized production processes, downstream-based production, involvement of the employees in the continuous process of performance improvement (Buer et al., 2020), which leads to an increase in product quality minimizing the need for additional processing or rejection of low-quality products (Mohd Aripin et al., 2023).

The literature divides lean concept into two dimensions: hard lean tools (technical tools) and soft lean tools (social tools) (Hernandez-Matias et al., 2019; Sahoo, 2020). Hard lean tools include the methodology, procedures, techniques aimed at improving production processes while reducing waste. On the other hand, soft lean tools are aimed at the involvement and cooperation of management and employees (through training, teamwork, etc.) (Hernandez-Matias et al., 2019). The key hard lean tools are: TQM, TPM, JIT and PSS (production scheduling and systematization) (Behrouzi & Wong, 2011; Dieste et al., 2021; Hernandez-Matias et al., 2019; Knol et al., 2018; Lara et al., 2022; Mohd Aripin et al., 2023; Sahoo, 2020; Taggart & Kienhöfer, 2013) To the greatest extent, TQM contributes to increasing the quality of both the products and the production process itself. This system singles out critical elements, processes and tools that reduce quality, or the ones that, on the other hand, slow down the process of progress and development (Sahoo, 2020). The TPM package contains practices related to preventive and autonomous business maintenance (Dieste et al., 2021; Sahoo, 2020). JIT is an operational methodology that

primarily aims to reduce time flow within the production system, as well as response time from the suppliers to the delivery of products to the customers (Knol et al., 2018). Both hard and lean tools play an equally important role in the implementation of lean production, with a noted difference in focus (Hernandez-Matias et al., 2019; Knol et al., 2018; Sahoo, 2020). For the efficient implementation of lean production, companies also use concepts such as Kanban system, Kaizen, Heijunka, Poka Yoke, SMED (Single Minute Exchange of Dies) (Aikhuele & Turan, 2016; AlManei et al., 2017; Dieste et al., 2021; Hariyani & Mishra, 2022; Iranmanesh et al., 2019; Rahman et al., 2013; Zhou, 2012). It is mainly about production concepts that were developed in Japan, which confirms the fact that the lean philosophy is based on the Japanese organization of work. (Hernandez-Matias et al., 2019).

Based on the literature reviewed, it is concluded that hard lean tools and soft lean tools are equally important for the successful implementation and management of lean production in small and medium enterprises. The reason is assumed to be that these two dimensions as a whole include all the essential elements for the effective management of lean production. That is, they include the necessary technical tools and methods, but also relationships between employees, which turned out to be one of the most important factors for the successful implementation of lean production. More will be said about this and other key factors for the effective adoption of the lean model in the next part of the paper.

At a first glance, the implementation of lean manufacturing seems very simple (AlManei et al., 2017), but numerous examples from practice deny this assumption (Pereira & Tortorella, 2018; Qureshi et al., 2022). In fact, an unsuccessful implementation of lean production can lead a manufacturing company to large losses and threaten its survival (AlManei et al., 2017). The most common challenges faced by manufacturing companies when implementing lean production are inadequate organizational culture, lack of time, lack of budget, reverting to old practices, insufficient involvement of management, poorly conducted training and insufficient understanding of lean philosophy (Maware & Parsley, 2022; Zhou, 2012).

Considering the complexity of adopting lean concept, many authors investigate the key factors for its successful implementation. Zhou (2012) divides factors for the successful implementation of lean production into internal (processes and equipment, production, planning, control, human resources) and external (relationships with suppliers and customers). Key factors for the successful implementation of lean production are also at the same time ways to overcome the challenges faced by companies when adopting this business strategy. Therefore, the effective adoption and application of lean production means change in organizational culture, a change in the way employees think, support from top management, development of key skills and abilities, close ties with key stakeholders (Berlec et al., 2017; Karim & Kazi Arif-Uz-Zaman, 2013; Knol et al., 2018; Maware & Parsley, 2022).

One of the key factors for the successful adoption of the lean philosophy is change of the organizational culture in company (Berlec et al., 2017; Hernandez-Matias et al., 2019; Maware & Parsley, 2022; Mohd Aripin et al., 2023). Detert et al. (2000) define organizational culture as a combination of practices, values, and basic assumptions about appropriate behavior that make up the organization's philosophy and environment. Berlec et al. (2017), Hernandez-Matias et al. (2019); Maware & Parsley (2022), they investigate how the organizational structure needs to be changed. The common opinion of these authors is that the most important thing is to change the relationship between top management and



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employees who will clearly and precisely be presented the essence, goals and benefits that lean production brings. In this context, lean production requires employee training and their education on the lean concept. The commitment and involvement of top management plays a key role in the process of successful adoption of lean manufacturing (Hernandez-Matias et al., 2019)

Another important element for the successful implementation of lean philosophy are the employees, who should be seen as the core of a business organization. Management should take on the role of effectively developing the business strategy and integrating all employees into a functional unity (Sahoo, 2020). This way, joint work is ensured towards developing a new business strategy, developing creativity, increasing productivity and achieving the desired results more efficiently (Hernandez-Matias et al., 2019). Management and employees should go through a process of learning about lean philosophy, which includes education on the basics of this concept, training and the acquisition of the necessary skills and abilities (Berlec et al., 2017). Through adequate training and education, employees develop necessary skills and abilities, change their way of thinking and align individual goals with the ones that correspond to lean philosophy (Iranmanesh et al., 2019; Maware & Parsley, 2022; Taggart & Kienhöfer, 2013).

These are some of the key elements for the successful adoption of a lean strategy. The implementation of lean manufacturing is not a simple process as it requires a certain amount of time, large investments and many changes. The success of lean production depends on the willingness of the company to change its operations and align them with the requirements of lean philosophy. First of all, lean concept requires modification of the organizational culture and change in the behavior and thinking of employees. The time required for the adoption and application of lean concept is not precisely defined. However, some authors emphasize that this depends on the maturity level of the manufacturing company (Aikhuele & Turan, 2016; Mohd Aripin et al., 2023)

### **3. The influence of *lean* production on MSP performances**

Adopting lean concept is an extremely long-term and complex process. In order to achieve the desired results, it is necessary for certain amount of time to pass in order for the company to effectively overcome all the barriers that are characteristic for the adoption of this concept. Many authors investigated the impact of lean manufacturing on the company performance. Their common position is that if adequate conditions are created within the company, lean production contributes to the improvement of the company's overall operations. In other words, this strategy can improve both financial and non-financial performances of the company.

Appropriate performance measurement systems are used to identify the degree and manner of influence of lean production on company performance. The performance measurement system is an essential tool for making correct and rational business decisions. This system is the source of important information about the efficiency and effectiveness of the company's operations. In addition, it facilitates the management of the company to make the right decisions and introduce changes that will ensure further growth and development of the company (Waśniewski, 2021).

### ***3.1. The impact of lean production on the financial performance of SMEs***

Previous research has shown that changing business practices and introducing lean production to SME companies lead to improved business image, higher productivity and better performance (Dieste et al., 2021; Hartini & Ciptomulyono, 2015; Panigrahi et al., 2023). Furthermore, Dieste et al. (2021) point out that lean production should be integrated as a holistic method into the existing business, not independently of other business activities.

Many companies encounter difficulties when measuring the impact of lean manufacturing on financial performance (Aikhuele & Turan, 2016), because the connection between these two categories is hard to be seen (Bhasin 2012). Over the years, various models have been developed for measuring performance in lean production conditions: simulation, graphic, quantitative, qualitative (Aikhuele & Turan, 2016; Behrouzi & Wong, 2011; Karim & Kazi Arif-Uz-Zaman, 2013; Maware & Parsley, 2022; Österman & Fundin, 2014). The most commonly used method was developed by Karlsson i Åhlström (1996); they identified 9 variables (elimination of waste, continuous improvement, zero defects, just-in-time system, pull system instead of push system, multifunctional teams, decentralized responsibilities, integrated functions, vertical information systems) that show the degree of success of the implementation of lean production, both from the perspective of managers and from the perspective of strategic contribution (Karlsson & Åhlström, 1996; Österman & Fundin, 2014).

In order to improve long-term performance through lean production, SMEs should provide flexible resources, quality relationships with suppliers, pull production system, small production batches, quick response to consumer requests, focus on consumers, efficient system for solving problems, flexibility in work (Panigrahi et al. (2023). Conducted research has shown that lean production ensured the greatest impact on reducing production costs, inventory costs and the number of defective products (Iranmanesh et al., 2019).

One of the lean tools that contributes to improving financial performance is the TQM model (Dieste et al., 2021). By applying the TQM business model, the company provides its customers with high-quality products, which ensures their satisfaction, loyalty and long-term success of the company (Doney, 2019). The TQM system affects the reduction of inventory levels and costs, which ultimately has a positive impact on the company's finances (Iranmanesh et al., 2019). However, it is necessary for the management to monitor the inventory level continuously so that there is no shortage of resources. In this case, the company comes to the other extreme as it faces new costs, lack of necessary resources, no ability to respond to customer requests on time, thereby damaging its image and credibility (Mohd Aripin et al., 2023). In addition to these models for measuring the impact of lean production on financial performance, ROI (Return on Investment), ROA (Return on Assets) and the amount of realized profit are also used (a comparison of these indicators is made before and after the implementation of the lean concept) (Dieste et al., 2021). In general, the lean philosophy with adequate implementation and application, provides the company with greater profitability, better sales, greater customer satisfaction and better business results (Panigrahi et al., 2023).

Lean production, through more efficient organization of work and better use of available capacities, ensures the reduction of production costs and inventory costs (Hartini & Ciptomulyono, 2015). This is very significant for the company's overall cost structure,

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because production costs on average make up 12% of the company's total costs, while the share of inventory costs is slightly lower (Mohd Aripin et al., 2023). Panigrahi et al. (2023) conclude that although there are many papers dealing with the relationship between lean production and financial performance, most of the existing papers have a general form. Respectively, there are almost no studies about the direct impact of lean production on the performance of the company and the specifics of this relationship, so far most of the papers have been about the relationship in general.

### ***3.2. The influence of lean production on the non-financial performance of SMEs***

An effective system for measuring performance points out not only certain advantages, but also disadvantages in the company's business behavior and provides guidelines for the future direction and organization of business activities (Karim & Kazi Arif-Uz-Zaman, 2013; Waśniewski, 2021). The relationship between the non-financial performance of the company and lean production is easier to spot than the relationship between the financial performance and lean concept (Dieste et al., 2021). Therefore, some authors believe that the impact of lean production on both the financial and non-financial performance should be considered separately (Behrouzi & Wong, 2011).

The non-financial performance of a company is reflected in the share of defective products in one production series, customer satisfaction in terms of product quality, price and delivery time, quality costs in relation to total revenue, share of on-time deliveries in the total number of deliveries, etc. (Ralph, 2022). The improvement of non-financial performance through the lean concept is reflected in the increase of efficiency and effectiveness of activities that add value during the entire production process, elimination of activities that do not add value, minimization of waste, improvement of product quality, simplified, stable and standardized production processes, minimal interventions, active involvement of employees in business activities (Buer et al., 2020; Iranmanesh et al., 2019; Taggart & Kienhöfer, 2013). In addition, with lean production, the company provides better quality, environmentally sound and better designed products (Iranmanesh et al., 2019).

JIT is a lean tool that contributes to the improvement of a company's operational performance (Panigrahi et al., 2023; Sahoo, 2020). JIT is a production management philosophy based on the production of the right product at the right time and in the right quantity, with minimal consumption of materials, labor and space (Rivera-Gómez et al., 2019). This method improves non-financial performance due to the practices and techniques that characterize it: greater work flexibility, shorter lead time, more efficient organization of business activities, pull production system, small production batches, and adherence to the daily work schedule (Panigrahi et al., 2023; Sahoo, 2020).

Close cooperation and communication with suppliers and customers is important, as it contributes to improving operational performance (Iranmanesh et al., 2019; Sahoo, 2020). By developing such relationships, suppliers are involved in the entire process of designing, developing and manufacturing product. On the other hand, the company is familiar with the demands and expectations of consumers, which facilitates their fulfillment.

#### 4. Conclusion

As previously emphasized, the modern business environment faces SMEs with numerous challenges and encourages them to make business changes. These changes are reflected through reconstruction of organizational culture, constant training and development of employees, use of modern technology, redefinition of relations with stakeholders, development of a new business strategy. The paper points out that one of the effective ways for the survival and further growth and development of the company is the implementation of lean production.

The lean philosophy, which was developed on the basis of the Japanese business organization, proved to be an effective strategic tool for improving business performance and the competitive position of SMEs. As the implementation of the phenomenon is very complex, it has occupied the increasing attention of many theoreticians in recent years. All things considered, the paper points out the factors that are of crucial importance for the successful implementation of lean production, as well as the ways to overcome the barriers faced by SMEs on this occasion and the main benefits that the concept provides.

Two closely related categories are the key factors for the successful implementation of lean method and the ways to overcome obstacles, as these factors at the same time represent ways to overcome the identified obstacles. Some of the changes that lean production requires in an organization are change in organizational culture, better employee cooperation, close relations with suppliers and customers, change in the mindset of the employees, the implementation of training and education, and the application of lean tools. The most common reason for the unsuccessful implementation of lean concept is the lack of understanding of the essence of this business philosophy and the benefits it provides for SMEs on the part of employees. The active involvement of top management and the development of knowledge about the lean philosophy throughout the organization through training and organized learning proved to be an effective way to overcome the issue.

One of the characteristics of the modern business environment is the growing importance of creating a sustainable business. In the literature, it appears as a synonym for this phrase: green business, green economy, sustainable economy. Some authors have noticed a connection between sustainable economy and lean production (Hartini & Ciptomulyono, 2015). By connecting these occurrences, lean production gains even more importance because it is recognized as a tool for realizing business in accordance with the requirements of sustainable economy. Deeper analysis of the connection between these two occurrences may be relevant in future research.

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### **DOPRINOS LEAN PROIZVODNJE POBOLJŠANJU POSLOVNIH PERFORMANSI MALIH I SREDNJIH PREDUZEĆA**

**Rezime:** Mala i srednja preduzeća predstavljaju važne ekonomske entitete na globalnom nivou. Turbulentno okruženje u kome posluju izaziva promene u njihovom organizovanju i aktivnostima. Cilj ovog rada je da bliže objasni jednu od poslovnih strategija koju ova grupa sve češće primenjuje kako bi prevazišla prepreke na koje nailaze. Reč je o lean proizvodnji. Lean proizvodnja se identifikuje kao koristan alat koji umnogome može da unapredi poslovanje malih i srednjih preduzeća i obezbedi njihov budući rast i razvoj. Rad ukazuje na suštinu i značaj ove strategije; na zahteve koje je neophodno ispuniti da bi se uspešno implementirala i glavne benefiti koje mala i srednja preduzeća ostvaruju posredstvom lean proizvodnje.

**Ključne reči:** mala i srednja preduzeća, lean proizvodnja, sistem merenja performansi







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**SMART AND SUSTAINABLE ECONOMY:  
TRENDS AND PERSPECTIVES**

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**OBRAČUN TROŠKOVA PO AKTIVNOSTIMA KAO  
INFORMACIONA OSNOVA ZA UPRAVLJAJE MALIM I  
SREDNJIM PREDUZEĆIMA\***

**Ljilja Antić, PhD\***

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**Rezime:** Uloga malih i srednjih preduzeća za razvoj jedne nacionalne ekonomije je veoma važna, posebno ako se uzme u obzir procenat tržišta koji opslužuju i broj zaposlenih koji zapošljavaju. Veličina ovih preduzeća i njihova povećana inovativnost i fleksibilnost obezbeđuju dovoljni potencijal da unaprede svoj poslovni proces i konkurentnost. Za obavljanje aktivnosti menadžmenta i uspešno upravljanje malim i srednjim preduzećima neophodna je odgovarajuća informaciona osnova. Takvu, informacionu osnovu obezbeđuje upravljačko računovodstvo odnosno računovodstvo troškova kao njegov važan segment. Poseban značaj za upravljanje malim i srednjim preduzećima imaju informacije koje produkuje obračun troškova po aktivnostima (Activity Based Costing – ABC). Obračun troškova po aktivnostima, nastao je, pre svega, zbog potrebe za utvrđivanje pouzdanih informacija o ceni koštanja proizvoda preciznijom alokacijom narasle mase opštih troškova. Vremenom, ovaj sistem obračuna se menjao i prilagođavao različitim organizacijama i uslovima poslovanja. Danas, ABC predstavlja značajnu informacionu osnovu za MSP u procesu donošenja odluka na operativnom i strateškom nivou, kao i za planiranje i kontrolu izvešenja performansi.

**Keywords:** Obračun troškova po aktivnostima, unapređenje performansi, kontinuirana unapređenja

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## 1. Uvod

Preduzetnici i sektor malih i srednjih preduzeća su ključni pokretači ekonomskog razvoja jedne zemlje. Primera radi u USA postoji između 25 i 27 miliona MSP koja zapošljavaju 120 miliona ljudi a to čini 60-80% poslova koji se obavljaju u toj zemlji. U našoj zemlji, mala i srednja preduzeća opslužuju čak 90 % tržišta. Mogućnost za otvaranje novih radnih mesta u kratkom vremenskom periodu, koja zahtevaju male kapitalne izdatke, povećana mogućnost za zapošljavanje žena, visoka fleksibilnost u poslovanju i značaj ličnih kontakata za razvoj preduzeća, nepostojanje potpunog razdvajanja vlasničke i upravljačke funkcije, skroman obim aktivnosti, samo su neke od karakteristika ovih preduzeća. Prema trenutno važećem Zakonu o računovodstvu u mala pravna lica u našoj zemlji svrstavaju se preduzeća koja imaju prosečan broj zaposlenih 50, poslovni prihod 8.000.000 evra u dinarskoj protivvrednosti, a vrednost ukupne aktive na datum bilansa 4.000.000 evra u dinarskoj protivvrednosti. Preduzeća koja imaju proseban broj zaposlenih 250, poslovni prihod 40.000.000 evra u dinarskoj protivvrednosti i vrednost ukupne aktive na datum bilansa 20.000.000 evra u dinarskoj protivvrednosti svrstavaju se u kategoriju srednjih preduzeća.

Da bi u savremenim uslovima poslovanja mala i srednja preduzeća postigla konkurentsku prednost neohodna im je adekvatna informaciona osnova koju obezbeđuje upravljačko računovodstvo. Jedan od koncepata koji se može uspešno primeni u tu svrhu jeste obračun troškova po aktivnostima.

Obračun troškova po aktivnostima je sofisticirani koncept, na osnovu čijih informacija menadžeri mogu da prate troškove proizvoda i usluga, ocenjuju njihovu profitabilnost, uoče mesta na kojima je moguće redukovati troškove i slično. Obračun troškova po aktivnostima nastao je kao posledica napora računovodstvene teorije i prakse da odgovori na informacione zahteve menadžmenta preduzeća u izmenjenim uslovima poslovanja. Prvobitni cilj obračuna troškova po aktivnostima bio je da se prevaziđu slabosti tradicionalnih sistema obračuna troškova u pogledu pronalaženja adekvatnih ključeva za alokaciju opštih troškova. Ovo iz razloga što su novi načini poslovanja i promenjena organizaciona struktura preduzeća doveli do rasta opštih troškova poslovanja, ali i do smanjenja troškova direktnog rada, koji su bili najčešće korišćena baza za alokaciju opštih troškova. U situaciji kada se narasla masa opštih troškova alocira na osnovu troškova direktnog rada, cena koštanja proizvoda utvrđena tradicionalnim pristupom obračuna postaje nepouzdana informaciona osnova za donošenje poslovnih odluka, planiranje i kontrolu. Osnovna novina obračuna troškova po aktivnostima sastoji se i u tome što ovaj koncept prepoznaje da većina resursa u preduzeću nije upotrebljena u direktnoj proizvodnji proizvoda, već u obezbeđivanju aktivnosti podrške proizvodnji i prodaji proizvoda i usluga. Naime, obračun troškova po aktivnostima podrazumeva da troškovi nastaju za obavljanje aktivnosti proizvodnje i prodaje proizvoda. Osnovni zadatak ovog obračuna jeste da opšte troškove alocira na proizvode pažljivim istraživanjem odnosa između proizvoda, aktivnosti koje izazivaju troškove proizvodnje proizvoda i resursa koji se troše za proizvodnju proizvoda.

U tom smislu, rad je podeljen u dva dela. U prvom delu rada se razmatra mogućnosti primen obračuna troškova po aktivnostima u malim i srednjim preduzećima. U drugom delu, dat je okvir za primenu ovog koncepta obračuna troškova sa smernicama za efikasniju implementaciju.

## **Obračun troškova po aktivnostima kao informaciona osnova za upravljanje malim i srednjim preduzećima**

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### **2. Pregled istraživanja o primeni ABC u malim i srednjim preduzećima**

Obračun troškova po aktivnostima promenio je način na koji su akademska javnost i menadžeri posmatrali računovodstveni informacioni sistem. Šta više, mnogi menadžeri su uvideli potrebu da se osmisli novi način upravljanja organizacijama kako bi one bile konkurentne. Osnovna svrha upravljačkog računovodstva i računovodstva troškova je da se obezbede informacije koje su potrebne menadžerima. Menadžeri ove podatke koriste za donošenje poslovnih odluka koje će unaprediti poslovanje i učinak preduzeća. Takođe, informacije računovodstva troškova se koriste za snižavanje troškova i izračunavanje konkurentne cene koštanja proizvoda (Mehmet, Foroughi, Stott, & Manyoky, 2017). Iz ovih razloga posebna pažnja se posvećuje tačnosti podataka koje proizilaze iz računovodstvenog informacionog sistema.

Tradicionalni sistemi obračuna troškova u fokusu su imali troškove materijala i rada dok je alokacija opštih troškova bila neadekvatna. Ovi sistemi obračuna oslanjali su se na jedinstvene osnove za alokaciju opštih troškova. Kako bi zadovoljile rastuću tražnju, preduzeća su proizvodila mnogo različitih proizvoda u različitim količinama, dok su početkom sedamdesetih godina prošlog veka informacione i komunikacione tehnologije omogućile da se prikupljaju i analiziraju informacije o aktivnostima koje su neophodne kako bi se poslovni proces obavio, što je zahtevalo osmišljavanje novog koncepta obračuna troškova.

ABC koncept zasnovan je na premisi da je za proizvodnju proizvoda ili pružanje usluge neophodno obaviti određene aktivnosti, dok je za obavljanje aktivnosti neophodno utrošiti odgovarajuće resurse. U tom smislu, troškovi resursa se alociraju na aktivnosti, a zatim se troškovi aktivnosti alociraju na objekte trošenja. Osnov za alokaciju su uzročnici potrošnje do kojih se dolazilo pažljivim posmatranjem i analizom procesa. Uzročnici potrošnje su bili glavni faktor na osnovu koga se određivao broj aktivnosti potrebnih za proizvodnju proizvoda, a odnosili su se na veličinu proizvoda, složenost, tip i druge atribute proizvoda koji mogu da odrede njihov trošak. Obračun troškova po aktivnostima fokus ima na aktivnosti, a ne na proizvode, što omogućava da se spreči distorzija troškova proizvoda. Preduzeća moraju da se fokusiraju na ključne aktivnosti koje imaju najveći uticaj na performanse (Gunasekaran, Marri, & Grieve, Justification and implementation of activity based costing in small and medium-sized enterprises, 1999).

Obračun troškova po aktivnostima bio je osmišljen za utvrđivanje preciznijih informacija o ceni koštanja proizvoda u odnosu na tradicionalne metode obračuna troškova. Primena velike količine raznovrsnih informacija koje produkuje obračun troškova po aktivnostima proširila se, vremenom, na analizu profitabilnosti, efikasnosti, kontrolu troškova i slično. Vrlo brzo, zbog velike informacione izdašnosti ovaj koncept obračuna je počeo da se primenjuje u zdravstvenim ustanovama, poštama, restoranima i hotelima, osiguravajućim organizacijama, univerzitetima, bankarskom sektoru i slično. Jedna od poznatih kompanija koja je imala velike koristi od primene obračuna troškova po aktivnostima je Chrysler, posebno u domenu upravljanja lancem snabdevanja i obezbeđivanja dobre informacione osnove za donošenje poslovnih odluka. Fladkjaer & Jensen (2011) navode da je metodologija ABC prvenstveno osmišljena za primenu u velikim svetskim korporacijama dok je njegova primena u malim i srednjim preduzećima koja su činila čak 80 % svetskog tržišta stagnirala. Kasnije su učinjeni brojni napori i pokušaji da se ovaj sistem obračuna prilagodi potrebama MSP.

U istraživanju upotrebe obračuna troškova po aktivnostima u MSP u Meksiku od 69 kontaktiranih firmi pokazalo se da je 43% preduzeća koristi sistem obračuna po stvarnim troškovima, 37% koristi standardni obračun, a samo 6% obraču troškova po aktivnostima, dok 14% nije odgovorilo.

Prieto et al (2007) su sproveli istraživanje u logističkom sektoru u Meksiku. Od ukupno 27 preduzeća 22,25% su bile mikrofirme, 22,25% srednje veličine, 25,9% mala i 29,6% velika preduzeća. Zabeleženo je da je obračun troškova po aktivnostima primenjen kod 22,2 % preduzeća. Kao razlozi za primenu ABC u ovim preduzećima navedeni su sledeći: redukovanje troškova; utvrđivanje cene koštanja proizvoda/usluge; merenje i poboljšanje performansi; modeliranje troškova; preciznija izrada budžeta; analiza profitabilnosti klijenata; donošenje poslovnih odluka o postojećim proizvodima ili dizajniranju novih. Kao najčešći razlog za odbacivanje ABC navodi se kod čak 51,9 % ispitanika nepoznavanje njegove metodologije i načina dolaženja do značajnih informacija.

Rezultati do kojih su došli Ríos-Manríqueza & Colominab (2014) pokazuju da 66% menadžera MSP koristi tradicionalne sisteme obračuna troškova jer nema potrebnih znanja, bez obzira na činjenicu da su svi koji su učestvovali u istraživanju imali ili osnovna znanja o računovodstvu ili dugogodišnje iskustvo u obavljanju računovodstvenim poslovima. Takođe, budžetiranje na bazi aktivnosti koje ima veliku informacionu moć i olakšava ostvarivanje dugoročnih ciljeva koristi samo 12 % MSP. Preduzeća koja su primenila ABC svedoče da je došlo do promene organizacione kulture i filozofije poslovanja i da je to umnogome doprinelo da se ovaj sistem obračuna prihvati. all

Rundora et al. (2013) sproveli su istraživanje kod preduzeća koja su primenila i preduzeća koja nisu primenila obračun troškova po aktivnostima. Istraživanje je pokazalo da preduzeća koja su primenila ABC imaju veći broj zaposlenih i da duže postoje na tržištu. Takođe, korisnici ABC su prepoznali i visoko ocenili sledeće koristi koje se postižu njegovom primenom: pomoć u upravljanju i kontroli budžeta, osnova za bolje donošenje odluka i kontrolu i povećana konkurentnost preduzeća na tržištu. Kao ključne barijere za primenu ABC korisnici su prepoznali sledeće: nedostatak znanja o ABC; problemi u definisanju uzročnika troškova; problemi u identifikovanju aktivnosti. Međutim, preduzeća koja su ga primenila navode da su koristi ABC koncepta daleko premašile troškove njegovog dizajniranja i implementacije. Preduzeća koja nisu primenila ABC ističu da je to iz razloga što njegova primena zahteva značajna finansijska sredstva, podrazumeva previše detalja, oduzima dosta vremena i da ne postoje adekvatna znanja za njegovo dizajniranje i implementaciju.

Tran & Tran (2022) istraživali su primeni obračuna troškova po aktivnostima u zemljama u tranziciji koje se bave proizvodnjom farmaceutskih proizvoda. Oni su otkrili tri značajna faktora koji utiču na njegovu primenu i to: struktura troškova preduzeća, izabrana strategija preduzeća i diverzifikacija proizvoda.

Brojna istraživanja pokazala su da od internih faktora koji postoje u preduzeću zavisi uspešnost njegove primene. Uspešnost implementacije ABC zavisi od sledećih faktora (Mehmet et al., 2017):

- ljudski rad zamenjuju se automatizovanom opremom, a opšti troškovi se alociraju na osnovu broja radnih sati,
- indirektni troškovi imaju veće procentualno učešće u ukupnim troškovima,
- za alokaciju opštih troškova koristi se samo jedna ili dve stope opštih troškova,
- koriste se mašine ili se obavljaju operacije koje ne zahtevaju isti broj izvršilaca,

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- mnoge operacije i zadaci se pokreću i obavljaju sa malo ili bez ljudskog napora i
- zaposleni u računovodstvu se ne plaše novih načina rada i beskompromisno žele da pruže relevantne i pouzdane informacije za svakodnevno poslovno odlučivanje.

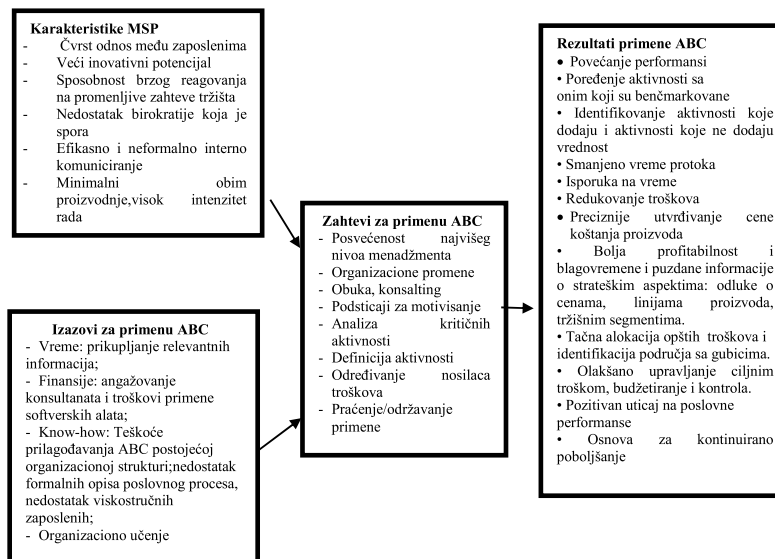
Jedno od prvih istraživanja o primeni ABC u Srbiji sprovedeno je 2010. godine na uzorku od 121 preduzeća svih veličina. Rezultati su pokazali da je petina učesnika u potpunosti upoznata sa osnovama ABC, dok 62 % uopšte ne zna za ABC (Knežević & Mizdraković, 2010). Todorović et al. (2018) su sprovedli istraživanje na uzorku od 84 preduzeća gde su rezultati pokazali da 62 % učesnika nije upoznato sa obračunom troškova po aktivnostima. Ovi podaci ne iznenađuju čude ako se zna da u Srbiji ne postoji dovoljan nivo svesti o značaju računovodstva troškova i informacijama koje produkuje. Takođe, zakonske odredbe i propisi ne predviđaju obavezu obračuna troškova po mestima troškova, već se samo evidentiraju troškovi po objektima troškova.

### 3. Konceptualni okvir za primenu obračuna troškova po aktivnostima u MSP

Neke od karakteristike MSP su samostalno donošenje poslovnih odluka, lični odnosi vlasnika sa ostalim učesnicima u lancu snabdevanja su od visokog značaja, sposobnost brzog reagovanja na promenljive zahteve tržišta, efikasno i neformalno komuniciranje i slično (Gunasekaran, Marri, B., & Grieve, J., 1999).

Menadžeri MSP treba da se fokusiraju na dugoročne strateške odluke uz uvažavanje kvaliteta, fleksibilnosti i održivosti poslovanja. Kako su za primenu ABC koncepta u MSP odgovorni svi nivoi menadženta i svi zaposleni, na osnovu brojnih istraživanja preporučen je okvir za primenu ABC u malim i srednjim preduzećima ilustrovan na Slici 1. (Gunasekaran, Marri, B., & Grieve, J., 1999); (Mehmet, Foroughi, Stott, & Manyoky, 2017).

Slika br. 1. Okvir za primenu ABC u MSP



U procesu primene ABC Karakteristike MSP i Izazovi primene ABC su nezavisne varijable, dok su rezultati procesa primene ABC zavisna varijabla. Ovako postavljen okvir podrazumeva tri dela istraživanja. Prvi se odnosi na to da rezultati primene predstavljaju direktan uticaj karakteristika MSP i izazova primene ABC. Tako, moguće je istražiti uticaj otpora zaposlenih za primenu ABC kao osnova za unapređenje performansi i kontinuirano unapređenje ili uticaj bliskih odnosa zaposlenih na identifikovanje značajnih aktivnosti. Primena ABC koncepta bi trebalo da bude prilagođena konkretnim organizaciono tehničkim uslovima preduzeća i ne bi trebalo da zahteva utrošak velike količine resursa jer je cilj da se redukuju troškovi (Novičević Čečević & Antić, Lj. , 2017). Timovi koji rade na primeni bi trebalo da budu sastavljeni od manjeg broja ljudi. Preporučuje se da tim čine menadžer i asistent. Ovi timovi daju smernice, prate primenu i izveštavaju više nivoe o tome koliko se postigli i da li postoje neki problemi. Kada se uspostavi ABC koncept pristupa se planu izrade unapređenja performansi. Uspeh u unapređenju performansi zavisi od zajedničkih napora zaposlenih i nivoa primene tehnike i tehnologije.

Drugi deo istraživanja podrazumeva ispitivanje kako Karakteristika MSP i Izazovi primene ABC utiču na sam proces primene ABC. Na primer, kakav je uticaj angažovanja eksperata na organizacione promene preduzeća ili kako efikasne i neformalne interne komunikacije utiču na analizu kritičnih aktivnosti tokom procesa primene. Broj aktivnosti koji se obavljaju u organizacijama može biti od 50 do 200, što zavisi od organizacione strukture preduzeća i njegovog poslovnog procesa. Veliki broj aktivnosti će zahtevati više vremena za analizu. Međutim, ključ je ustanoviti koje su to značajne aktivnosti koje se obavljaju i na koji način one doprinose stvaranju učinka preduzeća (Needy, Nachtmann, H. , Roztockic, N., & Colosimo, R., 2003). Sve aktivnosti se mogu podeliti na aktivnosti koje dodaju i aktivnosti koje ne dodaju vrednost. Aktivnosti koje ne dodaju vrednost su one za koje potrošači nisu spremni da plate i iz njihove perspektive ove aktivnosti su suvišne i njih treba eliminisati (Antić, Stevanović, & Novičević Čečević, 2019). Aktivnosti koje dodaju vrednost su upravo te značajne aktivnosti koje će obezbediti najveće mogućnosti za unapređenje poslovanja i redukovanje troškova. Kao pomoć prilikom identifikovanja ovih aktivnosti i njihovog uticaja na učinak organizacije veliki značaj će imati angažovanje eksperata sa teorijskim i praktičnim iskustvima u primeni ABC. Veliku pomoć za primenu ABC mogu imati seminari i radionice. U Velikoj Britaniji je, na primer, osmišljen program podrške MSP u smislu angažovanja univerzitetskih profesora kako bi im pružili osnovne smernice za primenu ABC (Gunasekaran, Marri, & Grieve, Justification and implementation of activity based costing in small and medium-sized enterprises, 1999).

Na kraju, ispituje se uticaj Karakteristika MSP i Izazova za primenu ABC na proces primene, što dalje utiče na rezultate primene koji će se postići. MSP imaju veći inovativni potencijal i spremne su da brzo i efikasno zadovolje promenljive zahteve koji dolaze sa tržišta. U tom smislu, dolazi do izražaja sposobnost menadžementa da sa boljom informacionom osnovom koju pruža ABC obezbedi donošenje strateških odluka o cenama proizvoda, proizvodnim linijama, izboru tržišnih segmenata i slično (Antić & Novičević Čečević, 2020). Menadžeri i vlasnici preduzeća su po pravilu više zabrinuti za svakodnevno poslovanje organizacije, za efikasno korišćenje resursa, praćenje i kontrolu sistema za maksimiranje profitabilnosti MSP. Greška koji menadžeri i vlasnici prave jeste što ne dozvoljavaju zaposlenima da ravnopravno učestvuju u procesu primene novih sistema i koncepata, jer oni poseduju velika znanja i praktično iskustvo. Ono što menadžeri treba da urade jeste da osmisle odgovarajući paket podsticaja i nagrada za zaposlene koji svojim

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idejama i rešenjima unaprede proces poslovanja. Kada zaposleni primaju beneficije u obliku podsticaja i nagrada od svojih poslodavaca, onda će biti motivisani da naporno rade na povećanju produktivnosti. Naime, politika podsticaja za motivisanje zaposlenih igra važnu ulogu u usvajanju i uvođenju ABC-a u preduzećima.

U literaturi su prepoznate brojne koristi koje MSP mogu imati od primene koncepta obračuna troškova po aktivnostima. Ove koristi se mogu sistematizovati na sledeći način (Dubihlela & Rundora, 2014):

- Precizniji obračun troškova proizvoda i obezbeđivanje finansijskih i nefinansijskih mera performansi koje doprinose upravljanju troškovima;
- Tačnije merenje profitabilnosti proizvoda i dobijanje informacija o strateškim odlukama vezanim za cenu;
- Precizna alokacija opštih troškova i identifikovanje potencijalnih gubitaka u poslovanju;
- Redukovanje troškova, efikasnije planiranje i kontrola poslovanja;
- Pozitivan uticaj na poslovne performanse;
- Olakšavanje donošenja odluka, povećanje produktivnosti i identifikacija aktivnosti koje ne dodaju vrednost;
- Osnova za strateško odlučivanje i kontinuirano poboljšanje performansi;
- Ublažavanje zabrinutosti menadžera o tačnosti alokacije troškova zbog adekvatno uspostavljene uzročno-posledične veze između alokacije i potrošenih resursa i
- Blagovremene informacije o troškovima/profitu i sposobnost za ažuriranje sistema.

U preduzećima koja su primenila ABC potrebno je da menadžeri i drugi donosioci odluka razumeju koje informacije može da pruži ABC i na koji način koristiti te informacije u procesu donošenja odluka. Ukoliko se dobro razume i primeni, neiscrpe su moći obračuna troškova po aktivnostima kao informacione baze za obavljanje aktivnosti menadžmenta u malim i srednjim preduzećima.

### **4. Zaključak**

Obračun troškova po aktivnostima omogućava merenje troškova i performansi aktivnosti, resursa i objekata trošenja. Ovaj koncept obračuna troškova povezujući resurse sa aktivnostima i aktivnosti sa objektima trošenja prepoznaje odnos između uzročnika troškova i aktivnosti. Kao takav obračun troškova po aktivnostima omogućava identifikovanje i eliminisanje aktivnosti koje ne dodaju vrednost, a koje povećavaju troškove i vreme neophodno da se proizvod proizvede ili pruži usluga. Ukoliko menadžeri i direktori malih i srednjih preduzeća prepoznaju informacije koje su im potrebne da bi upravljali preduzećem i donosili svakodnevne poslovne odluke, obračun troškova po aktivnostima će im biti pouzdana informaciona osnova.

Efikasna primena obračuna troškova po aktivnostima podrazumeva sledeće: posvećenost menadžmenta i podršku za primenu ABC; svi zaposleni treba da budu uključeni i da razumeju proces primene; sprovođenje treninga za sve zaposlene; postojanje podsticaja za učešće zaposlenih; formiranje manjih timova koji će da vode proces; uspostavljanje procedura za praćenje i održavanje ABC koncepta; pažljivo tumačenje i analiziranje informacija koje se dobijaju iz ABC; vođenje evidencije o troškovima za

interne i eksterne potrebe (ABC nije prihvaćen od strane GAAP); korišćenje softvera kao što je Ekcel podataka za ABC; korišćenje pomoći brojnih kompanija koje nude konsalting i softver za primenu ABC.

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### **ACTIVITY BASED COSTING AS AN INFORMATION BASE FOR MENAGING OF SMALL AND MEDIUM-SIZED ENTERPRISES**

***Abstract:** The roll of small and medium enterprise for development of national economic is very important. This is especially, taking into account percentage of market share and the number of employees that this enterprise serve. The size of these companies, their increased innovation and flexibility provide sufficient potential for these companies to improve their business process and competitiveness. For performing management activity it is necessary an appropriate information base. Such information based provide Managerial Accounting and Cost Accounting as an important part. An Special importance for managing od SME have information that provide activity based costing. Activity based costing was created primarily for a more precise calculation of the cost price and as an aid for the allocation of the increased mass of overhead costs. Over time, this cost accounting system changed and adapted to different organizations and business conditions. Today, ABC represents a significant information base for SMEs for the decision-making at the operational and strategic level, for planning and control of performance.*

***Keywords:** activity based costing, performance, continuous improvements*





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**POTENCIJALI PRIMENE THROUGHPUT RAČUNOVODSTVA<sup>1</sup>**

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***Rezime:** Već nekoliko decenija teorija ograničenja i throughput računovodstvo koje iz nje proističe predstavljaju predmet interesovanja teoretičara i praktičara iz oblasti računovodstva. Istovremeno uslovi poslovanja, kojima su imanentne brze i neočekivane promene, dovode do negativnog trenda rasta i razvoja preduzeća. Upravo u uslovima postojanja problema u poslovanju i potrebe za rešavanjem tih problema primena throughput računovodstva dolazi do izražaja. Njegova usmerenost na kratkoročne rezultate u skladu je sa poslovnom filozofijom akcionara i menadžera koji ističu ostvarivanje maksimalnih rezultata u što kraćem roku kao imperativ svog poslovanja.*

***Keywords:** teorija ograničenja, throughput računovodstvo*

### 1. Uvod

U cilju optimizacije performansi, menadžment donosi određene odluke i preduzima konkretne aktivnosti, pri čemu mora biti svestan da sve donete odluke utiču direktno ili indirektno na ostvarivanje opšteg cilja preduzeća. Takva je situacija i kada je u pitanju konfiguracija računovodstvenog sistema, koji produkuje informacije neophodne za utvrđivanje rezultata preduzeća i stepena ostvarivanja cilja.

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*Throughput* računovodstvo je moderna tehnika upravljačkog računovodstva iz domena teorije ograničenja, koja predstavlja alternativu tradicionalnim metodama upravljačkog računovodstva. Njegov glavni cilj je da identifikuje ograničenja koja mogu da uspore proizvodnju i povezane procese koji, dalje, mogu da uspore i odlože prodaju. Odlaganje prodaje znači odlaganje ostvarivanja profita. Drugim rečima, teorija ograničenja uzima u obzir vremenski faktor i doprinosi minimizaciji izgubljenog vremena po pitanju ostvarivanja profita. "Throughput računovodstvo predstavlja unapređeni način sagledavanja finansija preduzeća, koji je orijentisan na efektivnost sistema" (Antić, Stevanović & Arsenijević, 2022, 325).

Indikatori koje preporučuje teorija ograničenja su *throughput*, zalihe i operativni troškovi. *Throughput* ili dodata vrednost (Anwarul Islam, 2015, 19) se definiše kao brzina kojom sistem generišeufinansijske resurse kroz prodaju. Zalihe predstavljaju finansijske resurse uložene u kupovinu inputa koji će biti u procesu proizvodnje transformisani u autpute. Operativni troškovi su finansijski resursi potrebni za transformisanje zaliha u *throughput*.

Idejni tvorac *throughput* računovodstva je Eliyahu Goldratt. U prvom delu rada ukazaćemo na način na koji je ovaj fizičar po vokaciji predstavio svetu teoriju ograničenja. Njegovo delo čita se i danas sa istom zainteresovanošću kao pre nekoliko decenija kada se pojavilo kao inovativna ideja. Drugi deo rada posvećen je primeni *throughput* računovodstva u praksi. Pojedina preduzeća su transparentna po pitanju primene novih računovodstvenih metoda, pa iz njihovih poslovnih rezultata druga preduzeća mogu da izvuku određene pouke o potencijalima teorije ograničenja. Postoje i druga preduzeća, koja nisu zainteresovana za javno iznošenje svojih podataka radi zaštite od konkurencije, ali koja indirektno, ipak, omogućavaju isticanje značaja primene *throughput* računovodstva.

## **2. Knjiga "Cilj" – osnov osmišljavanja i daljeg usavršavanja teorije ograničenja i *throughput* računovodstva**

Od objavljivanja knjige "Cilj: Proces kontinuiranih unapređenja" (The Goal: A Process of Ongoing Improvement) (Goldratt & Cox, 1984) prošlo je nekoliko decenija. Međutim, ovaj književni rad, čiji su autori Eliyahu Goldratt i Jeff Cox, od samog početka do danas zaokuplja pažnju teoretičara i praktičara iz oblasti računovodstva. Njegova aktuelnost ne jenjava usled kontinuiranih zahteva akcionara za ostvarivanjem što višeg profita u što kraćem vremenskom periodu.

Knjiga "Cilj" objavljena je 1984. godine i prezentuje teoriju ograničenja i *throughput* računovodstvo u kontekstu romana (internet sajt: [www.accaglobal.com](http://www.accaglobal.com)). Glavni lik romana je Aleks Rogo (Alex Rogo), rukovodilac postrojenja u izmišljenoj fabrici "UniCo". Radnja romana počinje tako što Aleks sreće svog starog profesora fizike Džona (Jonah) na aerodromu. U neobaveznom razgovoru o porodici i poslu, Džon pita Aleksa kako posluje njegova fabrika. Aleks ponosno ističe kako je u fabrici izvršena automatizacija proizvodnje koja je dovela do povećanja efikasnosti poslovanja. Naime, u periodu kada je ova knjiga nastala vladalo je uverenje da je uspešna firma ona koja je efikasna, odnosno ona kod koje su troškovi po jedinici proizvoda što niži. Međutim, u daljem razgovoru Džon suočava Aleksa sa pitanjem da li poboljšanja u efikasnosti vode povećanju profita? Drugim rečima, da li se ostvaruje cilj firme? Nakon razmišljanja Aleks shvata da je osnovni cilj firme da zarađuje novac, a ne da automatizacija proizvodnje dovede do visokog nivoa zaliha proizvoda koje fabrika ne isporučuje svojim kupcima na vreme.

## Potencijali primene throughput računovodstva

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Nakon ovog susreta na aerodromu, Aleks vodi svog sina i njegovog druga na planinarenje. Na osnovu prosečnog hoda dečaka isplanirao je da će polovinu puta preći za dva i po sata. Međutim, kada posle dva i po sata nisu prešli polovinu planirane pešake rute, Aleks shvata da dečaci ne pešače jednakom brzinom i da je jedan dečak sporiji od drugog. Takođe, shvata da je brzina kretanja cele grupe uslovljena brzinom hoda najsporijeg dečaka. Drugim rečima, dečak koji sporo hoda predstavlja usko grlo, odnosno faktor koji sprečava grupu da korača brže. Tada Aleks počinje da razmišlja kako da ubrzaju hod sporog dečaka. Da bi ubrzao hod sporog dečaka uzima njegov težak ranac koji ga je, upravo, sprečavao da korača brže. Aleks shvata da je na ovaj način povećao kapacitet uskog grla.

Ova saznanja Aleks odlučuje da iskoristi u svojoj fabrici koja je u finansijskim teškoćama. Naime, fabrika se suočava sa potencijalnim zatvaranjem, osim ukoliko se ne pronađe način da se fabrika koja ima gubitke pretvori u profitabilnu fabriku i to u roku od tri meseca. Tu na scenu stupa Aleks koji spašava fabriku svojim inovativnim idejama. "Teorija ograničenja kombinovana sa razvojnim procedurama svakodnevnih unapređenja ograničenja preduzeća donosi rezultate vrlo brzo" (Wojakowski, 2016, 79). Ono što je evidentno na samom početku upoznavanja sa teorijom ograničenja to je njena usmerenost na ostvarivanje rezultata u kratkom roku.

Interesantan roman o Aleksovim "avanturama" sa idejom o teoriji ograničenja pojavio se u trenutku kada se fizičar Eliyahu Goldratt suočio sa problemima izazvanim proizvodnom logistikom. Tada je iskoristio svoje znanje iz fizike u oblasti koja mu nije bila poznata – poslovanju fabrike. Preciznije, metode za rešavanje problema koje se primenjuju u fizici primenio je za rešavanje problema u proizvodnoj logistici (Anwarul Islam, 2015, 20).

Jedno od prvih istraživanja o primeni *throughput* računovodstva u privrednoj praksi sproveo je teoretičar Noreen (Noreen, Smith & Mackey, 1995, 130). On je početkom 90-tih godina 20. veka posmatrao razvoj računovodstvenih tehnika u kompanija iz SAD-a i kontinentalne Evrope. Utvrdio je primenu više merila *throughput* računovodstva, kao što su: interni mesečni *throughput* izveštaji, *throughput* po zaposlenom, *throughput* po dolaru utrošenog kapitala, itd. Međutim, zaključak njegovog istraživanja je da primena ovih mera nije imala bitan uticaj na donošenje odluka. Iako ovo istraživanje nudi malo podataka o razvoju merila *throughput* računovodstva, njegov značaj se time ne umanjuje, jer je ovo jedno od početnih istraživanja iz ove oblasti.

"Identifikovali smo preko 400 knjiga, članaka, disertacija, izveštaja i konferencija na temu teorije ograničenja i *throughput* računovodstva" (Watson, Blackstone & Gardiner, 2007, 388). Broj zainteresovanih teoretičara i praktičara za teoriju ograničenja i njenu primenu u praksi je u stalnom porastu. To vidimo na osnovu odbranjenih disertacija, objavljenih naučnih radova i sprovedenih istraživanja na ovu temu. Na primer, doktorska disertacija "Merenje uticaja funkcionalne moći *throughput* računovodstva baziranog na teoriji ograničenja u ostvarivanju ekonomskih performansi proizvodnih kompanija" (Measuring the Functional Power of TOC-Based *Throughput* Accounting To Assess Production Companies' Economic Performance), autora Khan Mohammadi-ja iz 2011. godine, istražuje povezanost između tradicionalnih pokazatelja performansi (neto profit, prinos na investicije i prinos na kapital), pokazatelja performansi baziranih na teoriji ograničenja (neto profit i prinos na investicije bazirani na teoriji ograničenja) i pokazatelja performansi baziranih na dodatnoj vrednosti (ekonomska dodata vrednost i tržišna dodata vrednost) sa ekonomskim performansama kompanije – gde se najčešće koristi stopa povraćaja uloženi sredstava (Anwarul Islam, 2015, 20).

Zatim, doktorska disertacija "Planiranje i kontrolisanje sistema proizvodnje i računovodstva troškova: njihovi efekti na odluke menadžera i performanse sistema (Planning and Controlling Production and Cost Accounting Systems: its Effect on Managers' decisions and Institute's Performance), autora Leen Howard-a iz 1999. godine, istraživala je četiri računovodstvena sistema: tradicionalne sisteme obračuna troškova, računovodstvo troškova zasnovano na aktivnostima (*Activity Based Costing* - ABC), računovodstvo troškova zasnovano na direktnim troškovima (*Direct Costing* - DC) i računovodstvo troškova zasnovano na teoriji ograničenja (*Theory of Constraints* - TOC). Rezultati su pokazali da teorija ograničenja doprinosi donošenju boljih odluka i ostvarivanju željenih performansi u komparaciji sa ostalim sistemima (Anwarul Islam, 2015, 20).

Istraživanjem privredne prakse (Dugdale & Jones, 1998, 215) utvrđeno je da su Goldratt-ove ideje najveći uticaj imale na upravljanje proizvodnjom. Veliki broj preduzeća, pri čemu su mnoga lideri u svojim delatnostima, koriste ideje teorije ograničenja u proizvodnim procesima. "Utvrđivanje *throughput*-a po jedinici ograničavajućeg faktora u značajnoj meri pomaže donošenju adekvatnih poslovnih odluka" (Antić, Stevanović & Arsenijević, 2020, 402). Drugim rečima, proističe da loše performanse poslovanja uzrokuju izmenu kako metoda u proizvodnji, tako i paradigmi u računovodstvu.

### 3. Primena *throughput* računovodstva u praksi

Korišćenjem teorije ograničenja moguće je otkriti značajan skriveni kapacitet proizvodnje u preduzećima. Svaki put kada se otkrije i otkloni faktor ograničenja sistema, *throughput* se povećava, a aktivnosti koje ne dodaju vrednost se eliminišu. Te neželjene aktivnosti redukuju se na dva načina: direktno, sa prestankom uticaja ograničavajućeg faktora, a zatim i indirektno, preko drugih aktivnosti i procesa povezanih sa ograničavajućim faktorom.

Na primer, preduzeće "Texas Instrument's" (Institute of Management Accountants, 1999, 10) na osnovu korišćenja teorije ograničenja sprečilo je trošenje 500 miliona dolara otkrivajući skriveni kapacitet svojih mašina. Naime, kompanija je uspela da eliminiše planirane troškove za nabavku i montiranje opreme, kao i za neophodno prilagođavanje sistema, jer je postojeći kapacitet mašina bio dovoljan za ostvarivanje nameranih poslovnih poduhvata. Preduzeće je, na taj način, sprečilo nepotrebno trošenje kako finansijskih sredstava tako i vremena, što je vodilo ostvarivanju značajne prednosti i boljem strategijskom pozicioniranju u odnosu na konkurente.

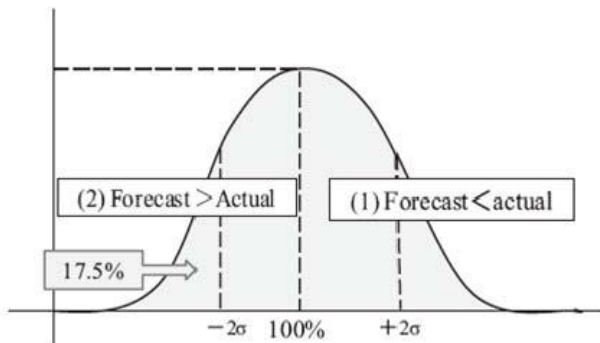
U studijama koje se bave istraživanjem primene *throughput* računovodstva u praksi mogu se naći i informacije o preduzećima koja u realnom svetu postoje, ali kojima se ne navodi tačan naziv radi zaštite poslovnih informacija. Tako je proizvođaču električnih komponenti sa sedištem u gradu Torota dat naziv "Z" (Ohta, 2013, 96). Ovo preduzeće zapošljava 55 radnika i njegov kapital iznosi 98 miliona jena. Da bi povećalo kapacitet procesa koji predstavlja usko grlo preduzeće se odlučilo na imlementiranje nove tehnologije, pri čemu je postavilo sledeća dva cilja za novu tehnologiju: da smanji proizvode sa greškom sa 14,4% na 5% i da smanji vreme proizvodnje jedinice proizvoda na mašini koja predstavlja usko grlo sa 9,6 na 3 sekunde. Ostvarenje ova dva cilja dovelo je do smanjivanja operativnih troškova sa 143.1 na 142 jena po jedinici i smanjivanja

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proizvodnih troškova sa 143.1 na 128.4 jena po jedinici. To znači da je nova tehnologija doprinela ujedno i smanjivanju operativnih troškova i povećavanju *throughput*-a.

Interne fluktuacije u proizvodnji i eksterne fluktuacije u tražnji treba da ublaže ili eliminišu zalihe kako bi u potpunosti bio iskorišćen kapacitet uskog grla. Na primeru preduzeća "Z" videćemo kako ono sagledava varijacije u tražnji. Predviđanje tražnje radi smanjenja uticaja eksternih fluktuacija na proizvodnju i na proces koji predstavlja ograničenje sistema može voditi predviđanju veće ili manje tražnje za proizvodima nego što će se stvarno dogoditi na tržištu. S jedne strane, kada su predviđene vrednosti veće od ostvarenih dolazi do viška zaliha i viška kapaciteta koji su planirani za prilagođavanje većoj tražnji. S druge strane, predviđanje manje tražnje od ostvarene vodi nedostatku zaliha i gubljenju poverenja potrošača zbog neizvršenih porudžbina na vreme. Na prvi pogled, ova druga varijanta izgleda kao situacija koja više šteti preduzeću. Međutim, predviđanje veće tražnje nosi relativno veću štetu za preduzeće, što se pokazalo kao tačno u slučaju preduzeća "Z". Na sledećem grafiku predstavljena je očekivana tražnja za proizvodima ovog preduzeća u periodu od novembra 2010. do aprila 2011. godine. Kao što se može videti, u jednom trenutku najviša predviđena tražnja bila je 17,5% veća od stvarne tražnje.

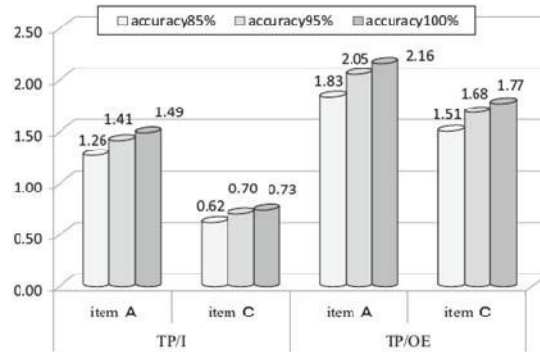
**Grafik 1: Predviđena tražnja nasuprot stvarne tražnje za proizvodima preduzeća "Z"**



Izvor: Ohta, 2013, str. 106.

Ukoliko predviđene vrednosti ne odstupaju značajno od ostvarenih preduzeće može da poveća broj časova rada ili da poveća kapacitet proizvodnje. Međutim, na ponašanje preduzeća mogu značajan uticaj imati eksterni uslovi, poput tržišnih faktora, koji mogu dovesti do teškoća u brzom pronalaženju rešenja. Greške u tržišnim predviđanjima utiču na kalkulaciju direktnih troškova materijala, operativnih troškova i zaliha u *throughput* računovodstvu. Kada je predviđena tražnja veća od stvarne direktni troškovi materijala i operativni troškovi veće proizvodnje su izgubljeni. Ovo ima uticaj na nivo zaliha na kraju izveštajnog perioda u kome je višak zaliha generisan. Sledeća merila se mogu koristiti za sagledavanje uticaja grešaka u predviđanju u *throughput* računovodstvu: *throughput* / investicije (TP/I - vreme proizvodnje) i *throughput* / operativni troškovi (TR/OE - organizaciona i operativna efikasnost). Sledeći grafik predstavlja rezultate komparacije merila TP/I i TR/OE za dva proizvoda preduzeća "Z" kada je verovatnoća ostvarivanja predviđenih vrednosti 85%, 95% i 100%.

Grafik 2: Komparacija merila TP/I i TR/OE sa različitim verovatnoćama



Izvor: Ohta, 2013, str. 107.

Prethodni grafik je pokazao da se sa poboljšanjem u predviđanju tražnje, odnosno sa povećanjem verovatnoće ostvarivanja predviđenih vrednosti poboljšavaju i merila TP/I i TR/OE. Ovo potvrđuje da proizvodne fluktuacije na osnovu eksternih faktora, tj. na osnovu predviđanja tražnje utiču na vreme proizvodnje, operativnu i organizacionu efektivnost u *throughput* računovodstvu. Takođe, verovatnoća u ostvarivanju predviđenih vrednosti može da varira za svaki proizvod, što se i događa preduzećima u praksi.

Činjenica je da tradicionalno upravljačko računovodstvo uživa poverenje kompanija u svetu, što se verovatno neće promeniti u bliskoj budućnosti, ukoliko se ima u vidu značaj informacija koje proizvode za obavljanje aktivnosti menadžmenta. Međutim, treba ukazati na potrebu za izmenama u cilju poboljšanja kvaliteta informacija koje su menadžmentu potrebne za obavljanje aktivnosti u izmenjenim uslovima poslovanja. Autori koji su sprovedili u prethodnim radovima navedena istraživanja smatraju da neprilagođavanje računovodstva dinamičnim promenama predstavlja glavni izvor problema u pomenutim preduzećima iz SAD-a i Velike Britanije. Zato Goldratt ističe da računovođe treba da primenjuju ključne principe i merila teorije ograničenja, ali i da razvijaju svoje sopstvene forme *throughput* računovodstva primenljive u specifičnim okolnostima poslovanja svojih preduzeća. Na taj način "preduzeća će transformisati svoju sreću u poslovanju" (Dugdale & Jones, 1998, 214).

### 3. Zaključak

Aktuelnost i potencijal knjige koja se vezuje za nastanak teorije ograničenja je veliki i posle više decenija od njenog objavljivanja. Naime, iako više teorija ograničenja i *throughput* računovodstvo koje iz nje proističe nisu noviteti u računovodstvenoj teoriji i praksi, novi čitaoci se pronalaze u Aleksovom načinu razmišljanja, tako da i sami smišljaju načine na koje je moguće rešiti savremene probleme poslovanja. Činjenica je da se usled dinamičnih tržišnih promena menja način poslovanja preduzeća. Preduzeća koja žele da opstanu i rastu u turbulentnim uslovima poslovanja treba da se pripreme za negativne promene do kojih mogu kretanja sa tržišta dovesti. Takođe, ubrzanje vremena proizvodnje, povećani zahtevi za preciznom isporukom proizvoda i uvek sve viši zahtevi po pitanju



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profita usloveli su potrebu za kontinuiranom primenom *throughput* računovodstva, koje svoje prave potencijale tek treba da pokaže.

Teorija ograničenja ima široko rasprostranjenu upotrebu. Prednosti primene manifestuju se kroz skraćivanje vremena proizvodnje, smanjenje nivoa zaliha, eliminisanje uskih grla, zatim povećanje kvaliteta proizvoda, profitabilnosti, konkurentske pozicije, kao i unapređenje donošenja strategijskih i operativnih odluka, obezbeđivanje kontinuiranih poboljšanja i upravljanje ograničenjima.

*Throughput* računovodstvo ima brojne prednosti u odnosu na ostale metode upravljačkog računovodstva. Naime, pomaže u generisanju maksimalnog kratkoročnog profita utvrđujući postojanje uskih grla i eliminišući ih. Zatim, teoriju ograničenja lako je razumeti i lako je implementirati u proces upravljanja preduzećem. U uslovima turbulentnih promena na tržištu primena *throughput* računovodstva može da obezbedi informacije koje dovode do donošenja adekvatnih odluka u kratkom vremenskom periodu. Kako Goldratt preporučuje da računovođe treba da razvijaju svoje sopstvene forme *throughput* računovodstva prilagođene specifičnim okolnostima poslovanja konkretnog preduzeća, teorija ograničenja ima potencijal za produkovanje dnevnih i nedeljnih izveštaja o poslovanju. S tim u vezi, omogućena je kontinuirana evaluacija i kontrola, što ovom metodu daje realistični pristup ostvarivanju efektivnosti i efikasnosti poslovanja preduzeća.

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## THROUGHPUT ACCOUNTING APPLICATION POTENTIALS

*Abstract:* For several decades, the theory of constraints and the throughput accounting that derives from it have been the subject of interest of theoreticians and practitioners in the accounting field. In the same time, modern business conditions, which are immanent to rapid and unexpected changes, lead to a negative trend in the growth and development of companies. In the conditions of the existence of problems in business and in the need to solve those problems the application of throughput accounting comes to the fore. Its focus on short-term results favors the business philosophy of shareholders and managers who emphasize the achievement of maximum results in the shortest possible time as an imperative of their business.

*Keywords:* theory of constraints, throughput accounting



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TRENDS AND PERSPECTIVES**

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**PRIMENA EKOLOŠKOG UPRAVLJAČKOG RAČUNOVODSTVA  
U SVETU I SRBIJI**

**Dr Adrijana Jevtić<sup>o</sup>**

**Dr Tatjana Stevanović\***

**Dr Ljilja Antić\***

**Rezime:** Briga o zaštiti životne sredine se tokom poslednjih decenija značajno uvećava. Korporativna svest o značaju integracije koncepta zelenog poslovanja u poslovne strategije, politike i procese, višestruko je uvećana. Efikasno upravljanje strategijom zelenog poslovanja i održivog razvoja zahteva odgovarajuću informacionu podršku. Ekološko upravljačko računovodstvo pojavilo se kao računovodstveno-informacioni odgovor na ovakve zahteve. Značaj ekološkog upravljačkog računovodstva ogleda se u tome da pruža sistematizovane podatke finansijskog i nefinansijskog tipa, koji uključuju i ekološki aspekt. Njegova uloga se sastoji u tome da raznim zainteresovanim stranama upotpuni sliku o poslovanju kompanije, a menadžmentu da olakša proces poslovnog odlučivanja. Cilj rada jeste isticanje značaja postojanja informacija o ekološkim aspektima poslovanja, sagledavanje regulative o ekološkom izveštavanju, kao i stepena prihvatanja EMA koncepta u Republici Srbiji i svetu. Na osnovu istraživanja koje je sprovedeno u ovom radu došlo se do generalnog zaključka da mnoge zemlje širom sveta imaju solidno razvijenu svest o značaju brige o životnoj sredini. Međutim, koncept ekološkog upravljačkog računovodstva, i pored velikog značaja u poslovnom odlučivanju, nije dovoljno primenjen. Kao jedan od ključnih razloga za ovakvo stanje navodi se nepostojanje regulatornih i drugih okvira, čime je njegova primena dodatno otežana.

**Ključne reči:** Ekološko upravljačko računovodstvo, standardi, primena

## 1. Uvod

Uslovi poslovanja na svetskom tržištu su se početkom 21. veka značajno promenili. Globalizacija, ubrzani razvoj tehnike i tehnologije, promene u načinu komuniciranja među

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kompanijama, promene u načinu tržišnog nadmetanja i slično, prouzrokovali su nastanak dinamičnih tržišnih uslova poslovanja u kojima opstaju samo najbolji. Težnja za što profitabilnijim poslovanjem u takvim uslovima prouzrokovala je zanemarivanje i narušavanje prirodnog poretka. Iako prva upozorenja na negativan ishod datiraju još iz druge polovine 20. veka, stiće se utisak da su ga mnoge kompanije zanemarivale dugo vremena.

Ujedinjene Nacije (UN) su bile prva organizacija koja je ukazivala na negativan uticaj čoveka, pa i kompanija, na prirodu. Inicijalni naponi ove organizacije bili su usmereni na čovekov uticaj na životnu sredinu. Međutim, kako su i kompanije imale veliki i često negativan uticaj na okolinu, UN su počele da promovišu koncept održivog razvoja. Najnovija operacionalizacija ovog koncepta usvojena je Agendom za održivi razvoj 2030. godine, čiju srž čini 17 ciljeva održivog razvoja – SDGs (Sustainable Development Goals) (<https://www.un.org/>).

Ovakve drastične promene na svetskom tržištu i sve veći zahtevi ne samo u pogledu profitabilnog već i ekološkog tj. održivog poslovanja nametnuli su menadžmentu kompanija princip društveno odgovornog poslovanja. Kompanije koje se smatraju pionirima u implementaciji koncepta održivog poslovanja, uvidele su mnogućnost boljeg pozicioniranja na tržištu isticanjem poslovnog pristupa korporativne odgovornosti. Za takve kompanije je briga o sebi i briga o okruženju postala poslovna filozofija.

Promene u uslovima poslovanja na svetskom tržištu uslovile su nastanak promena i u računovodstvenoj praksi. Pojavili su se zahtevi za sastavljanje složenijih i detaljnijih izveštaja o poslovanju kompanija. Novi zahtevi uslovili su pomeranje koncepta tradicionalnog upravljačkog računovodstva ka strategijskom upravljačkom računovodstvu, uz sagledavanje uticaja preduzeća na okolinu. Iako neki od zahteva nisu zvanično usvojeni, već su u formi preporuke, mnoge kompanije su ih uvrstile u obavezni deo svog izveštavanja o poslovanju. Zahtev za uključivanje ekoloških posledica poslovanja u oblast računovodstvenog izveštavanja doprineo je nastanku jedne nove grane – ekološkog upravljačkog računovodstva.

Prvi deo rada biće posvećen osnovnim aspektima nastanka i razvoja ekološkog upravljačkog računovodstva - EMA koncepta (EMA - Environmental Management Accounting), dok se drugi deo rada odnosi na prihvatanje i primenu novih zahteva u finansijskom izveštavanju u okviru EMA. Postupak i nivo implementacije EMA koncepta biće analiziran u trećem delu rada.

## **2. Definisane i značaj ekološkog upravljačkog računovodstva**

Efikasno upravljanje strategijom održivog razvoja zahteva odgovarajuću informacionu podršku. S obzirom na to da pitanja zaštite životne sredine imaju sve veći uticaj na korporativne ekološke i ekonomske performanse (Savić et al., 2020), a samim tim i na korporativnu ekološku efikasnost, bilo je neophodno uključiti ih u upravljačko računovodstveni sistem (Antić et al, 2021).

Promovisanje i razvoj EMA vezuju se za poslednju deceniju 20. veka, kada kompanije više nisu mogle da ignorišu negativne uticaje njihovog poslovanja na okruženje. Primeni ovog koncepta doprinele su brojne katastrofalne industrijske nezgode nastale u tom periodu (Jovanović, 2017). Godine 2004. IFAC podržava inicijativu od strane američke Agencije za zaštitu životne sredine, pokrenutu krajem 20. veka, u cilju uspostavljanja formalnog programa za promovisanje i usvajanje EMA. Godine 2005. IFAC objavljuje

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smernice za realizaciju EMA. U literaturi se mogu pronaći i podaci koji govore da je IFAC bio pokretač EMA koncepta još 1980-ih godina. Interesantno je i napomenuti da je među domaćim autorima termin Environmental accounting preveden na više različitih načina. Jovanović (2017) ističe da se javljaju četiri različita termina: ekološko računovodstvo, računovodstvo zaštite životne sredine, zeleno računovodstvo i računovodstvo okruženja.

IFAC koncept ekološkog upravljačkog računovodstva definiše na sledeći način: EMA predstavlja *upravljanje ekološkim i ekonomskim performansama posredstvom razvoja i primene odgovarajućih računovodstvenih sistema i praksi povezanih sa zaštitom životne sredine. Iako to može obuhvatati izveštavanje i reviziju u nekim kompanijama, računovodstvo upravljanja životnom sredinom obično uključuje obračun troškova životnog ciklusa, računovodstvo punih troškova, procenu koristi i strateško planiranje upravljanja životnom sredinom* (IFAC 2005, p. 16).

Ekspertska radna grupa UN objašnjava EMA na specifičan način (UN, 2005). Prema UN, EMA obuhvata *identifikovanje, prikupljanje, analizu i upotrebu dve vrste informacija za donošenje internih odluka: fizičkih informacija o upotrebi, tokovima i sudbini energije, vode i materijala (uključujući i otpad) i finansijskih informacija o troškovima, dobitcima i uštedama u vezi sa zaštitom životne sredine.*

EMA obuhvata *generisanje, analizu i primenu finansijskih i nefinansijskih informacija u cilju optimizacije ekoloških i ekonomskih korporativnih performansi i ostvarenja održivog poslovanja* (Bennett et al., 2002; Bartolomeo et al., 2000). Ovaj koncept kombinuje podatke iz finansijskog računovodstva, računovodstva troškova i bilansa tokova materijala u cilju povećanja efikasnosti upotrebe materijala, smanjenja uticaja/rizika na životnu sredinu i troškova zaštite životne sredine (Wang et al., 2019; Saedi et al., 2018; Schaltegger, 2018). Značajan je doprinos u vidu smanjenja troškova, uštede energije, smanjenja otpada i povećanja proizvodne efikasnosti (Burritt et al., 2009; Dunk, 2007). U okviru ovog koncepta sadržane su dve značajne grupe informacija o okruženju: fizičke i monetarne (Mokhtar et al., 2016; Marelli, 2015). Fizičke informacije odnose se na tokove energije, vode, materijala i otpada (na primer, ukupna količina utrošene vode, ukupna količina utrošene energije, itd.) (International Federation of Accountants [IFAC], 2005; Qian et al., 2018). Monetarne informacije o životnoj sredini odnose se na ekološke troškove i zarade, kao što su materijalni troškovi proizvodnje i neproizvodni troškovi, troškovi kontrole otpada i emisija, troškovi istraživanja i razvoja životne sredine, prodaja otpada i subvencije za reciklažu (IFAC, 2005). I fizičke i monetarne informacije o životnoj sredini olakšavaju identifikaciju stepena uticaja kompanija na životnu sredinu (Schaltegger & Csutora, 2012; Epstein et al., 2015). Ekološki troškovi su troškovi koji nastaju usled niskog kvaliteta životne sredine, kao rezultat proizvodnog procesa kompanije.

Prihvatanjem EMA koncepta upravljačko računovodstvo postaje više od pružanja informacija, tako što dobija značajnu ulogu u upravljanju resursima i njihovom efikasnijem korišćenju, kako sa finansijskog tako i sa ekološkog stanovišta (Radukić & Stevanović, 2011). Kako bi se smanjili negativni uticaji kompanije na prirodu, potrebno je da se isti identifikuju. U procesu upravljanja zaštitom životne sredine, menadžmentu kompanija su od izuzetnog značaja informacije koje pruža ekološko računovodstvo. Zato se može reći da se ekološko računovodstvo pojavilo i razvijalo u korak sa razvojem ekološke svesti.

Problematika zaštite životne sredine, odnosno uticaja preduzeća na životnu sredinu, postaje jedan od dominantnih faktora mogućeg poslovnog rizika u svim oblastima ljudskih aktivnosti, usled stalnog pogoršavanja opšteg stanja životne sredine i jačanja odgovornosti

za nastale ekološke štete (Jovanović & Ljubisavljević, 2017). Prema Shapiro et al. (2000), industrija treba da izmeri uticaj proizvodnih aktivnosti na životnu sredinu, kako fizički uticaj na životnu sredinu, tako i finansijski uticaj kompanije. Putem EMA dobijaju se informacije o protoku materijala ili energije i uticaju na životnu sredinu na osnovu nastalih troškova životne sredine. EMA koncept je razvijen kao sredstvo koje pomaže menadžerima u naporu da poboljša ne samo finansijske, već i ekološke performanse. On sistematično integriše ekološke aspekte poslovanja kompanija u upravljačko računovodstvo i donošenje odluka. Dodatno, EMA olakšava menadžerima prikupljanje, analizu i povezivanje ekoloških, monetarnih i fizičkih informacija (Huseno, 2018).

Polazeći od koncepta društvene odgovornosti preduzeća, uloga računovodstva i korporativnog izveštavanja ogleda se u transparentnom prikazivanju načina na koji je preduzeće svoju odgovornost ispunilo (Malinić & Savić, 2011). EMA služi kao informaciona podrška preduzeću u procesu pružanja informacija o uticaju preduzeća na životnu sredinu i obrnuto. Njegov značaj je u tome što dopunjuje konvencionalne izveštaje koji ne razmatraju pitanja zaštite životne sredine unutar preduzeća, troškove zaštite životne sredine koji su često skriveni u opštim troškovima, i ignorišu potencijalne ekološke koristi (Jovanović, 2017; Papaspyropoulos et al., 2012). Međutim, kako tokom vremena pitanja životne sredine ostvaruju sve veći uticaj na ekološke i ekonomske performanse i na korporativnu ekonomsku efikasnost, ona moraju biti uključena u upravljački računovodstveni sistem. Prema Huseno (2018), ekološki aspekti danas imaju toliko veliki značaj da ih ne treba odvajati od drugih aktivnosti.

### **3. Standardi kao osnov za implementaciju ekološkog upravljačkog računovodstva**

Brojne promene na tržištu uslovile su promene u korporativnom izveštavanju. Prema Malinić & Savić (2011), problem sve složenijih informativnih zahteva stejkholdera moguće je rešiti obelodanjivanjem dodatnih objašnjenja i drugih informacija koje nisu prezentovane u redovnim finansijskim izveštajima. Tako, potreba za uspostavljanjem ekološke komponente upravljačkog računovodstva proizilazi iz nemogućnosti tradicionalnog upravljačkog računovodstva da zadovolji informacione zahteve menadžmenta, i to u pogledu pružanja relevantnih informacija o uticaju koji kompanija ostvaruje na životnu sredinu. Tradicionalno stanovište po pitanju odnosa ekonomskih i ekoloških performansi jeste da unapređenje ekoloških performansi, kroz poštovanje regulative koja obavezuje na ulaganje u opremu za kontrolu zagađenja, tretiranje otpada i druge vidove ekološke zaštite, ugrožava ostvarenje ekonomskih ciljeva, zbog čega su ove dve varijable izložene stalnom trade-off-u (Jugović, 2019).

Pojedine grupe autora ističu da se motivi za implementaciju ekološke komponente sistema upravljanja mogu grupisati u četiri izvora: pritisak regulative, pritisak tržišta, socijalni pritisak i pritisak vlasnika (Darnall et al., 2008, Jugović, 2019). Pritisak regulative podrazumeva da se nepoštovanjem propisanih pravila kompanije sankcionišu u vidu novčanih kazni ili, u ekstremnim slučajevima, u vidu zabrane obavljanja delatnosti. Kada je reč o ostalim pritiscima, usled podizanja svesti o zaštiti životne sredine i porasta informisanosti, potrošači, pa i sami vlasnici vrše selekciju, na osnovu ekoloških kriterijuma, koje kompanije treba izbegavati.

Podaci koji su danas dostupni u literaturi, kada je reč o ekološkoj komponenti upravljačkog računovodstva, mogu se naći u raznim programima i preporukama od strane

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svetskih organizacija, kao što su UN, Svetska Ekonomska Organizacija, ISO (International Organization for Standardization). Za kompanije i organizacije bilo koje vrste koje zahtevaju praktične alate za upravljanje svojom ekološkom odgovornošću usvojena je grupa standarda pod nazivom ISO 14000 – Ekološki menadžment. Serija standarda ISO 14000 pruža okvir za upravljanje životnom sredinom koji je široko prihvaćen u Japanu, nekoliko evropskih zemalja, i manje u SAD (Boje, 1999). ISO 14000 predstavlja seriju dobrovoljnih standarda i smernica za upravljanje životnom sredinom. On nastoji da uspostavi organizacionu ekološku etiku i poboljša sposobnost organizacije da postigne i meri ekološki učinak. Standardi nastoje da usklade praksu u upravljanju životnom sredinom, u reviziji, evaluaciji učinka, označavanju i analizi životnog ciklusa. Ovi standardi se razvijaju od 90-ih godina 20. veka i do danas u okviru ove grupe postoji niz podstandarda. Pregled standarda dat je u Tabeli 1.

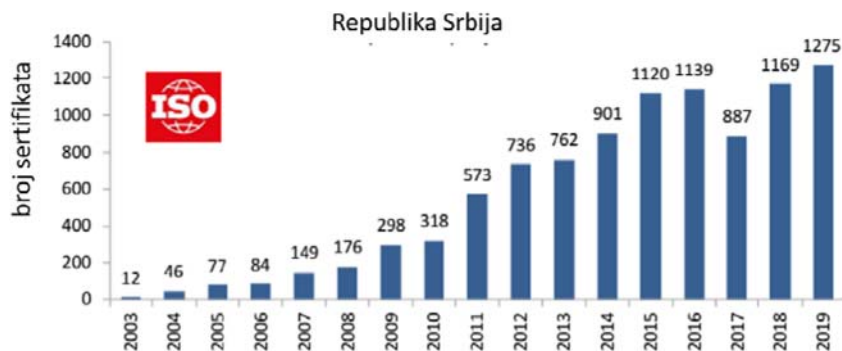
<i>Plan</i>	<i>Akcija</i>	<i>Provera</i>	<i>Delovanje</i>
Implementacija sistema upravljanja zaštitom životne sredine	Sprovođenje procene životnog ciklusa i upravljanje aspektima životne sredine	Sprovođenje revizije i procene ekološkog učinka	Komuniciranje i korišćenje ekoloških deklaracija i tvrdnji
ISO 14050:2009 Upravljanje zaštitom životne sredine - Rečnik	ISO 14040:2006 Upravljanje zaštitom životne sredine – Procena životnog ciklusa – Principi i okvir	ISO 14015:2001 Upravljanje zaštitom životne sredine – Procena životne sredine lokacija i organizacija (EASO)	ISO 14030:2000 Ekološke oznake i deklaracije – Opšti principi
ISO 14001:2004 Sistemi upravljanja zaštitom životne sredine – Zahtevi sa uputstvom za upotrebu	ISO 14044:2006 Upravljanje zaštitom životne sredine – Procena životnog ciklusa – Zahtevi i smernice	ISO 14031:1999 Upravljanje zaštitom životne sredine – Evaluacija učinka u životnoj sredini – Smernice	ISO 14021:1999 Ekološke oznake i deklaracije – Samoproglašene ekološke tvrdnje (ekološka etiketa tipa II)
ISO 14004:2004 Sistemi upravljanja životnom sredinom – Opšte smernice o principima, sistemima i tehnikama podrške	ISO/TR 14047:2003 Upravljanje zaštitom životne sredine – Procena uticaja na životni ciklus – Primeri primene ISO 14042	ISO 19011:2002 Smernice za reviziju sistema upravljanja kvalitetom i/ili životnom sredinom	ISO 14024:1999 Ekološke oznake i deklaracije – Ekološko obeležavanje tipa I – Principi i procedure
ISO/DIS 14005 Sistemi upravljanja zaštitom životne sredine – Smernice za faznu implementaciju sistema upravljanja životnom sredinom, uključujući korišćenje evaluacije ekoloških performansi	ISO/TS 14048:2002 Upravljanje zaštitom životne sredine – Procena životnog ciklusa – Format dokumentacije podataka		ISO 14025:2006 Ekološke oznake i deklaracije o životnoj sredini tipa III – Principi i procedure
			ISO/AWI 14033 Upravljanje zaštitom životne sredine – Kvantitativno okruženje informacije – Smernice i primeri
<b>Bavljenje ekološkim aspektima u proizvodima i standardima proizvoda</b>		<b>Procena performanse gasova staklene bašte</b>	
ISO Vodič 64:2008 Vodič za rešavanje pitanja životne sredine u standardima proizvoda	ISO/TR 14049:2000 Upravljanje zaštitom životne sredine - Procena životnog ciklusa - Primeri primene na ISO 14041 za cilj i delokrug definicija i inventar analiza	ISO 14064-3:2006 Gasovi staklene bašte – Deo 3: Specifikacija sa uputstvom za validaciju i verifikaciju tvrdnji o gasovima staklene bašte	ISO 14063:2006 Upravljanje zaštitom životne sredine – Ekološka komunikacija – Smernice i primeri
ISO/CD 14006 Sistemi upravljanja zaštitom životne sredine – Smernice za ekodizajn	ISO/CD 14051 Upravljanje zaštitom životne sredine - Obračun troškova materijalnih tokova – Opšti principi i okvir	ISO 14065:2007 Gasovi staklene bašte – Zahtevi za tela za validaciju i verifikaciju gasova staklene bašte za upotrebu u akreditaciji ili drugim oblicima priznavanja	
	ISO/AWI 14045 Procena eko-efikasnosti – Principi i zahtevi		
	<b>Menadžment gasova staklene bašte</b>		
ISO/TR 14062:2002 Upravljanje zaštitom životne sredine – Integriranje ekoloških aspekata u dizajn proizvoda i razvoj	ISO 14064-1:2006 Gasovi staklene bašte – Deo 1: Specifikacija sa uputstvom na nivou organizacije za kvantifikaciju i izveštavanje emisija i uklanjanja gasova staklene bašte	ISO/CD 14066 Gasovi staklene bašte – Zahtevi za kompetenciju za validatore i verifikatore gasova staklene bašte	
	ISO 14064-2:2006 Gasovi staklene bašte – Deo 2: Specifikacija sa uputstvima na nivou projekta za kvantifikaciju, praćenje i izveštavanje o smanjenju emisija gasova sa efektom staklene bašte ili poboljšanju uklanjanja		
	ISO/WO 14067-1 Uglenični otisak proizvoda – Deo 1: Kvantifikacija		
	ISO/WO 14067-2 Uglenični otisak proizvoda – Deo 2: Komunikacija		
	ISO/AWI 14069 Gasovi staklene bašte – Kvantifikacija i izveštavanje o emisijama gasova staklene bašte za organizacije (uglenični otisak organizacije) – Uputstvo za primenu ISO 14064-1		

**Tabela 1: ISO 14000 - serija standarda i podstandarda**

*Izvor: ISO, 2009*

Kada je reč o Republici Srbiji, istraživanje koje je sprovelo Ministarstvo poljoprivrede i zaštite životne sredine (Izveštaj o stanju životne sredine u Republici Srbiji, 2020) ukazuje na to da broj preduzeća koja poseduju sertifikaciju za ISO 14001 standard kontinuirano raste. To se može i videti na Slici 1.

Slika 1: Razvoj broja ISO 14001 sertifikata u RS



Izvor: Izveštaj o stanju životne sredine u Republici Srbiji, 2020.

Na osnovu ovakvog trenda, može se zaključiti da se kompanije u RS sve više bave pitanjima zaštite životne sredine, što se može oceniti kao pozitivan pomak u ekološkoj sferi.

Pored ISO standarda koji su najrasprostranjeniji, u literaturi se mogu naći i drugi standardi koji se odnose na ekološki aspekt poslovanja i izveštavanja. Detaljnijom analizom ovih standarda se može zaključiti da se svi oni baziraju na istim zahtevima i pretpostavkama (Boje, 1999).

Imajući u vidu da su standardi koji približavaju način primene EMA koncepta zasnovani najčešće samo na ISO preporukama, kao i da do danas ne postoje razvijeni računovodstveni standardi koji uređuju ovu tematiku, logično je očekivati da su širom sveta zakonodavne regulative, ukoliko postoje, formirane tako da sankcionišu posledice nepoštovanja životne sredine. Postupak i nivo implementacije EMA koncepta biće analiziran u nastavku rada.

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Iako se o EMA konceptu govori već nekoliko decenija, u literaturi još uvek ne postoji dovoljno jasnih smernica za njegovu primenu. Usled toga, pojedini autori (Iredele et al., 2020, Nzama et al., 2022) ističu da je primena ovog koncepta još uvek nedovoljna.

U literaturi se može naći veći broj studija koje se bave analizom primene EMA koncepta u praksi. Najčešće studije obuhvataju analizu podataka dobijenih empirijskim istraživanjima, a tematika je najčešće zasnovana na primeni koncepta EMA, kao i postojanju pritiska od strane raznih interesnih grupa za njegovu primenu.



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Analiza nivoa primene EMA koncepta, razvijene svesti i postojanja pritisaka i regulative obuhvatila je 22 zemlje (regiona i oblasti) u svetu, na osnovu ranijih studija slučaja velike grupe autora na navedene teme (Lee et al., 2005; Jalaludin et al., 2011; Tsui, 2014; Wang et al., 2019; Asiri et al., 2020; Latif et al., 2020; Nzama et al., 2022). Treba napomenuti da su ovo samo neki od slučajeva dostupni u literaturi. Sumirani rezultati istraživanja prikazani su u Tabeli 2.

**Tabela 2: Analiza nivoa primene EMA, postojanja regulativa i svesti o značaju primene EMA**

Država / Region	Ref. godina	Nivo implementacije EMA	Uticaj i postojanje zakonodavne regulative	Uticaj i postojanje standarda i profesionalne regulative	Uticaj društva, vlasnika i ostalih stejkholdera	Postojanje svesti o značaju primene EMA
<i>Austrija</i>	2003	Solidan nivo	Solidan	Postoji	Postoji	Visoko razvijena svest
<i>Argentina</i>	2005	Nizak	Nema regulative	-	Slab	Razvijena svest
<i>Bangladeš</i>	2005	U začeću	Nema regulative	-	Solidan	Razvijena svest
<i>Engleska i Vels</i>	2008	Nizak	Nejasna uloga		Solidan	Razvijena svest
<i>Fidži</i>	2003	Ne postoji	Nema regulative		Nema	
<i>Finska</i>	2008	U začeću	Pritisci EU	-	Solidan	Razvijena svest
<i>Indonezija</i>	2018	U porastu	Nema zakona niti strategija	ISO 14001	Solidan	Visoko razvijena svest
<i>Irak</i>	2021	Nizak	Nema regulative		Slab	Razvijena svest
<i>Japan</i>	2008	Solidan	Jasna regulativa delimično obavezujuća	-	Solidan	Visoko razvijena svest
<i>Južna Afrika</i>	2022	Nizak	Nema regulative niti pritiska	-	Solidan	Razvijena svest
<i>Kanada</i>	2006	-	Nema regulative	Nema	-	Razvijena svest
<i>Kostarika</i>	2005	Nizak	Nema regulative	ISO	Jak	Razvijena svest
<i>Korea</i>	2005	Nejednaka primena	Postoji regulativa	Postoje standardi	Solidan	Veoma razvijena svest
<i>Kina (delta reke Jancekjang)</i>	2018	Solidna primena	Postoji regulativa i ima jak uticaj	-	Solidan	Razvijena svest
<i>Malezija</i>	2016	U porastu	Postoji regulativa, solidan uticaj	Nizak nivo	Solidan	Razvijena svest
<i>MENA (Bliski istok i severna Afrika)</i>	2020	Nizak nivo	Nema regulative	Nema inicijative		Nedovoljno razvijena svest

**Adrijana Jevtić, Tatjana Stevanović, Ljilja Antić**

<i>Nemačka</i>	1998	Solidna primena	Postoji	Postoji	Postoji	Veoma razvijena svest
<i>Nigerija</i>	2018	Nizak nivo primene	Ne postoji	-	-	Niska svest
<i>Pakistan</i>	2020	-	Postoji regulativa, ima solidan uticaj	-	Visok	Razvijena svest
<i>Tajland</i>	2010	Nema primene	Ne postoji	Nema	Nedovoljno informacija	
<i>Češka Republika</i>	2005	U usponu	Postoji	Postoji	Postoji	Razvijena svest
<i>Šri Lanka</i>	2019	Nizak nivo primene	Postoji regulativa, ima jak uticaj	-	Postoji	Razvijena svest

*Izvor:* Autori na osnovu pregleda literature

Na osnovu podataka prikazanih u Tabeli 2, može se uočiti da najveći broj zemalja (analiziranih) ima veoma nizak nivo primene EMA. Očekivano je da razvijenije zemlje imaju i visok nivo primene EMA, ali to nije uvek slučaj.

Kada je reč o regulativama, zakonodavna regulativa, gde postoji, ima najjači uticaj u odnosu na sve ostale. Međutim, u velikom broju zemalja, ova regulativa ili nije jasna ili nije dovoljno razvijena, a samim tim i osnova za primenu koncepta nije ostvarena.

Sa stanovišta uticaja standarda može se reći da postoji solidan nivo uticaja, tj. primene standarda (najčešće ISO 14000). Sa druge strane, profesionalna regulativa, od koje se očekuje mnogo više gotovo da nije aktivna.

Treća grupa uticaja (pritisaka) na primenu EMA, prikazana u tabeli, odnosi se na uticaje stejkholdera, među kojima se ističu vlasnici, zaposleni, okruženje i sl. Na osnovu prikazanih rezultata se može uočiti da njihov uticaj uglavnom postoji, ali najčešće nije dovoljan da pokrene promene.

Poslednji aspekt koji je sagledan u ovom istraživanju odnosi se na nivo razvijene svesti o značaju zaštite životne sredine, što se smatra preduslovom za primenu EMA koncepta. Interesantno je to što u mnogim zemljama postoji razvijena svest i to na prilično visokom nivou, dok je sa druge strane nivo primene u proseku nizak. Takođe, postoje i one zemlje u kojima nema dovoljno razvijene svesti, što se često dovodi u vezu sa nedovoljnom informisanošću.

Kada je reč o Republici Srbiji, istraživanja pojedinih autora su ukazala na to da se informacije o životnoj sredini koriste pri donošenju brojnih poslovnih odluka. Što se tiče same regulative, ekološka pitanja su razmatrana u Zakonu o zaštiti životne sredine, prema kojem kompanije moraju da poštuju određene odredbe, jer u slučaju nepoštovanja slede kazne (Knežević et al., 2014).

Što se tiče odnosa između ekoloških informacija i računovodstva, Jovanović (2017) ističe da ove informacije još uvek nisu našle mesto u računovodstvu, što svojim istraživanjem i dokazuje. Međutim, ne može se generalizovano reći da ne postoji apsolutno nikakva veza između ovih informacija. Na osnovu analize koju su sprovedli Knežević et al. (2014), može se videti da među kompanijama koje se svrstavaju u velike zagađivače u Republici Srbiji ima onih koje poseduju sertifikate o zaštiti životne sredine i koje sastavljaju izveštaje o ekološkim aspektima poslovanja. Ipak, jedina kompanija koja

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primenjuje EMA koncept u RS je NIS, Naftna industrija Srbije. Ova kompanija u svojim izveštajima obelodanjuje podatke koji se odnose na troškove zaštite životne sredine (Više o ovome na: <https://ir.nis.rs/sh/izvestavanje/finansijski-izvestaji/>).

### 5. Zaključak

Ekološko računovodstvo nastalo je iz potrebe za relevantnim informacijama o ulaganjima u prevenciju i unapređenje životne sredine, kao i uticaju preduzeća na životnu sredinu. Ekološko finansijsko i upravljačko računovodstvo obuhvata identifikaciju, alokaciju i analizu materijalnih tokova i novčanih tokova, uključujući i analizu uticaja životne sredine na finansijske performanse kompanije. Koncept ekološkog upravljačkog računovodstva nastao je uključivanjem ekološke komponente u konvencionalno upravljačko računovodstvo. Primenom ovog koncepta kompanije mogu smanjiti negativan uticaj na životnu sredinu i poboljšati ekološke i sveukupne poslovne performanse. Imajući u vidu činjenicu da EMA obuhvata informacije kako finansijskog, tako i nefinansijskog tipa, može se zaključiti da je primena ovog koncepta izuzetno značajna za brojne interesne grupe.

Na osnovu sprovedene analize u ovom radu mogu se izvesti sledeći zaključci. Prvo, na nivou sveta, postoji relativno visok nivo razvijene svesti o značaju zaštite životne sredine kada je reč o razvijenim državama. Sa druge strane, privrede koje se bore za egzistenciju najčešće zanemaruju ovaj koncept. Drugo, kada je reč o postojanju standarda i regulative za primenu EMA, zakonodavstvo u većini zemalja nije dovoljno jasno precizirano, a tek po negde postoje konkretne smernice. Utvrđeno je da su ove smernice ipak najuticajnije, tamo gde postoje. Regulative kojima se regulišu ekološka pitanja najčešće su u okviru zakona o zaštiti životne sredine i sličnih propisa, što je slučaj i u Republici Srbiji. Treće, profesionalna regulativa ne pruža dovoljno smernica i podrške za primenu ovog koncepta. Četvrto, kada je reč o uticaju interesnih strana, istraživanje je pokazalo da on varira od privrede do privrede. Međutim, tamo gde ovakav uticaj postoji, ne ostvaruje očekivane efekte.

Uzevši sve navedeno u obzir, može se izvesti jedan generalni zaključak, a to je da veliki broj zemalja primenjuje pojedine standarde kada je reč o zaštiti životne sredine i da postoji određeni nivo svesti o važnosti ovog pitanja. Međutim, primena samog EMA koncepta je u proseku na niskom nivou, u najboljem slučaju kod pojedinih privreda u začeću. Ipak, ohrabrujuće je to što se za većinu privreda analizirani podaci odnose na period od 2005. godine, pa se može očekivati da se analizirano stanje u svetu značajno poboljšalo do danas. To će pokazati istraživanja koja tek treba da se realizuju, ili ona čiji se rezultati očekuju u bliskoj budućnosti.

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## APPLICATION OF ENVIRONMENTAL MANAGEMENT ACCOUNTING IN THE WORLD AND SERBIA

**Abstract:** *Concern for environmental protection has increased significantly over the last decades. Corporate awareness of the importance of integrating the concept of green business into business strategies, policies and processes has increased manifold. Effective management of the strategy of green business and sustainable development requires appropriate information support. Environmental management accounting appeared as an accounting-information response to such demands. The importance of environmental management accounting is reflected in the fact that it provides systematized financial and non-financial data, which also includes an environmental aspect. Its role is to complete the picture of the company's operations for various interested parties, and to facilitate the business decision-making process for the management. The aim of the paper is to highlight the importance of information on the environmental aspects of business, to review the regulations on environmental reporting, as well as the degree of acceptance of the EMA concept in the Republic of Serbia and the world. Based on the research conducted in this paper, a general conclusion was reached that many countries around the world have a solidly developed awareness of the importance of environmental care. However, the concept of environmental management accounting, despite its great importance in business decision-making, is not sufficiently applied. One of the key reasons for this state of affairs is the absence of regulatory and other frameworks, which makes its application even more difficult.*

**Keywords:** *Environmental management accounting, standards, application*



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**ANALIZA PERFORMANSI POSLOVANJA REVIZORSKIH FIRMI  
U REPUBLICI SRBIJI**

**Dr Ljiljana Bonić\***

**MSc Jovana Milenović\***

***Rezime:** Cilj rada je da pruži analizu performansi poslovanja revizorskih firmi u Republici Srbiji u periodu od 2020. do 2022. godine sa aspekta opštih karakteristika po pitanju broja ovlašćenih revizora i sa aspekta analize prinostnog položaja koja obuhvata analizu poslovnog prihoda i neto rezultata. Analiza je zasnovana na sekundarnim podacima prikupljenim iz finansijskih izveštaja revizorskih firmi registrovanih u Republici Srbiji. U Republici Srbiji je trenutno registrovano 77 revizorskih firmi. Za potrebe rada, revizorske firme su svrstane u tri grupe: „Velika četvorka”, integrisane revizorske firme i samostalne revizorske firme. Rad pruža deskriptivnu statističku analizu performansi merenu poslovnim prihodom, neto rezultatom i brojem ovlašćenih revizora, kao i upotrebu metodologije kompozitnog indeksa koja omogućava lakšu komparativnu analizu grupa revizorskih firmi. Rezultati istraživanja su pokazali dominaciju „Velike četvorke” u odnosu na posmatrane preostale dve grupe revizorskih firmi po visini poslovnih prihoda, ostvarene dobiti i broju ovlašćenih revizora.*

***Keywords:** poslovni приход, broj ovlašćenih revizora, neto rezultat, kompozitni indeks.*

## 1. Uvod

Osnivanje i poslovanje revizorskih firmi na tržištu u Republici Srbiji regulisano je Zakonom o reviziji i Zakonom o privrednim društvima na način koji obezbeđuje da se revizorskom firmom upravlja sa dužnom profesionalnom pažnjom. Revizorske firme se mogu osnovati kao društva lica ili društva kapitala. U Republici Srbiji, revizorske firme su registrovane kao društva sa ograničenom odgovornošću. Na osnovu dozvole za obavljanje

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poslova revizije, revizorska firma se upisuje u Registar preduzeća koji se vodi u Komori ovlašćenih revizora.

Iako je tržište revizorskih usluga u našoj zemlji relativno mlado u poređenju sa revizijom razvijenih zemalja, potrebno je analizirati performanse poslovanja revizorskih firmi kako bi se unapredio kvalitet revizorskih usluga. Performanse revizorskih firmi se mogu meriti različitim pokazateljima, a za potrebe rada, analiza je izvršena sa aspekta opštih karakteristika po pitanju broja ovlašćenih revizora i sa aspekta analize prinostnog položaja koja obuhvata analizu poslovnog prihoda i neto rezultata.

Rad je strukturiran tako da sadrži tri dela. Prvi deo pruža opšte informacije o revizorskim firmama u Republici Srbiji. U drugom delu rada je opisano empirijsko istraživanje analize performansi poslovanja revizorskih firmi u Republici Srbiji kreiranjem kompozitnog indeksa, a koje su klasifikovane u tri grupe: „Velika četvorka”, integrisane revizorske firme i samostalne revizorske firme. Konačno, u poslednjem delu rada, prikazani su rezultati i date zaključne napomene.

## 2. Revizorske firme u Republici Srbiji

Poslednjih dvadeset godina od revizije kao profesije se zahteva da pruža usluge izvan okvira revizije finansijskih izveštaja. Kako bi odgovorila na te zahteve, profesija je morala da izvrši prilagođavanje profesionalne regulative. Razvoj informacionih i telekomunikacionih tehnologija i njihova implementacija u oblasti računovodstva i revizije kao i uticaj globalizacije i računovodstveni odgovor na nju – standardizacija i harmonizacija profesionalne regulative su uticali da danas revizija pored tradicionalne revizije finansijskih izveštaja pruža i usluge: *revizije za specijalne svrhe; pregleda; uveravanja; ugovorenih postupaka; kompilacije finansijskih izveštaja i nerevizijske usluge.*

Revizija se najpre razvila u praksi kao veština, a potom je došlo do razvoja teorije revizije. Ključno merilo kojim se dokazuje kvalitet sprovedene revizije je njena koherentnost i logička usaglašenost sa zahtevima teorije revizije. Kvalitet revizije je zapravo jedan od faktora koji utiče na verodostojnost finansijskih informacija (Davidson & Neu, 1993). Stoga, stabilnost poslovanja revizorskih firmi i sigurnost u kvalitet pruženih usluga revizije su važni za funkcionisanje tržišta kapitala, imajući u vidu da je revizija finansijskih izveštaja uslov za kotiranje hartija od vrednosti emitenata na ovom tržištu (Jovković et al., 2021).

Revizorske firme se osnivaju u skladu sa Zakonom o privrednim društvima uz ispunjavanje dodatnih uslova iz Zakona o računovodstvu (član 18): *ovlašćeni revizor ili preduzeće za reviziju kao osnivači revizorske firme imaju većinsko pravo upravljanja; da ima dozvolu za obavljanje poslova revizije; da ovlašćeni revizori osnivači revizorske firme i ovlašćeni revizori zaposleni u revizorskoj firmi nisu pod kontrolom bilo kog lica ili grupe, u skladu sa Kodeksom etike za profesionalne računovođe; da imaju u radnom odnosu propisan broj ovlašćenih revizora koji poseduju licencu i da je član Komore ovlašćenih revizora.*

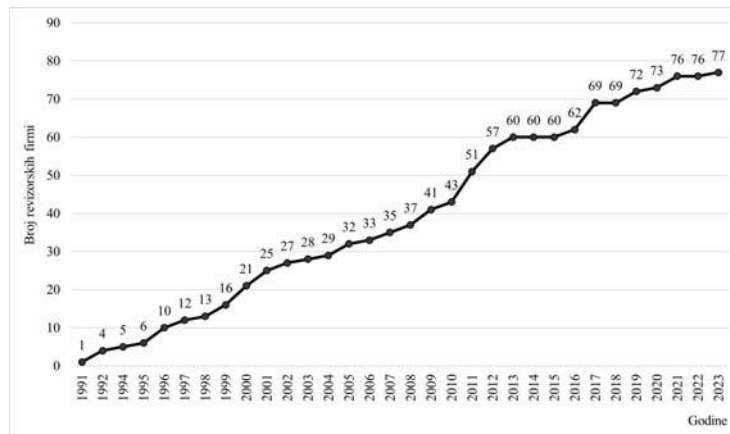
U Republici Srbiji prva revizorska firma je osnovana 1991. godine (Deloitte & Touche) sa sedištem u Beogradu. Registrovana je kao mešovita firma za računovodstveno-revizorske i menadžment-konsalting usluge. Godine 1996. je prvi put zakonski propisana obaveza i način sprovođenja revizije finansijskih izveštaja. Iz godine u



## Analiza performansi poslovanja revizorskih firmi u Republici Srbiji

godinu, broj revizorskih firmi se postepeno povećao, što je rezultovalo da danas u 2023. godini imamo 77 revizorskih firmi registrovanih u Republici Srbiji. Značajan porast broja revizorskih firmi je prisutan u periodu od 2007. godine, dok je u periodu od 2019. do 2023. godine osnovano pet revizorskih firmi. Glavni razlog osnivanja novih revizorskih firmi je osnivanje Komore ovlašćenih revizora Zakonom o računovodstvu i reviziji 2006. godine i početak rada Komore 2007. godine u domenu organizovanja ispita za sticanje zvanja ovlašćeni revizor (Mijić et al., 2013). Porast broja revizorskih firmi je praćen i porastom stope zaposlenosti u ovom sektoru. Pored osnivanja, pojedine revizorske firme su likvidirane jer u sve izraženijoj konkurenciji nisu uspele da se izbore za svoju poziciju, kao i zbog oduzimanja dozvole za obavljanje poslova revizije usled neispunjavanja uslova postojanja ovlašćenog revizora kao zaposlenog u revizorskoj firmi (Jakišić et al., 2012), što je izazvalo brigu za opstanak kod ostalih revizorskih firmi. Trend rasta revizorskih firmi u periodu od 1991. do 2023. godine prikazan je na Grafikonu 1.

**Grafikon 1. Broj revizorskih firmi u periodu od 1991. do 2023. godine**



*Izvor:* Izrada autora

Ukoliko kao kriterijum posmatramo veličinu revizorske firme, na tržištu Republike Srbije u 2023. godini su prisutne četiri firme srednje veličine i to su zapravo članovi „Velike četvorke” (Deloitte, KPMG, Ernst&Young i Pricewaterhouse Coopers), a ostale revizorske firme su male i mikro revizorske firme. Međutim, jedna od mogućih opcija za opstanak i razvoj revizorske firme je strategija povezivanja sa stranim revizorskim firmama (Chen, & Wu, 2010). Postoje različiti načini povezivanja, od integracije preko vlasništva stranih revizorskih firmi do plaćanja naknada za korišćenje naziva revizorske firme. Pomenuti pristupi nude mnogo prednosti, ali nose i određene rizike. Pored „Velike četvorke”, koje su zapravo nacionalne kancelarije međunarodnih revizorskih firmi (Dedoulis & Caramanis, 2007), uočen je i trend saradnje sa stranim revizorskim firmama kroz različite pravne aranžmane (Briggs & Šor, 2007). Broj revizorskih firmi u Republici Srbiji koje su deo globalnih revizorskih mreža u 2023. godini je 21, dok 52 revizorske firme posluju samostalno.

Imajući sve ovo u vidu, kao i istraživanje koje su sproveli Bonić i saradnici (2015), gde su uočili da revizorske firme koje posluju kao deo neke od međunarodnih mreža revizorskih firmi imaju bolje ostvarene rezultate na revizorskom tržištu Republike Srbije u odnosu na samostalne, kao i to da revizorske firme „Velike četvorke” u periodu od 2008. do 2010. godine su bile dominantne na tržištu Republike Srbije (Jakšić et al., 2012), čini se opravdanim sprovesti istraživanje kako bi se utvrdilo poslovanje ove tri grupe revizorskih firmi u Republici Srbiji u periodu od 2020. do 2022. godine upotrebom metodologije kompozitnog indeksa. Na taj način, izvešće se zaključak o performansama poslovanja revizorskih firmi u Republici Srbiji, ali i ispitaće se da li „Velika četvorka” ima i dalje dominantan uticaj na tržištu revizorskih usluga.

### 3. Metodologija istraživanja

Predmet istraživanja rada je analiza performansi poslovanja revizorskih firmi u Republici Srbiji. Analiza je zasnovana na sekundarnim podacima prikupljenim iz finansijskih izveštaja revizorskih firmi registrovanih u Republici Srbiji i po ugledu na Bonić i saradnike (2015), sve revizorske firme u Republici Srbiji su razvrstane u tri grupe:

- Grupa 1 – „Velika četvorka”
- Grupa 2 – revizorske firme integrisane u međunarodnu mrežu (osim velike četvorke) i
- Grupa 3 – revizorske firme koje su samostalne.

Performanse revizorskih firmi se mogu izraziti kroz niz različitih indikatora. U radu su korišćeni sledeći indikatori za merenje performansi poslovanja revizorskih firmi (Bonić et al., 2015): *visina poslovnog prihoda*, *neto rezultat* i *broj ovlašćenih revizora* (Certified Public Auditors – CPA). Prikupljeni sekundarni podaci su posmatrani u periodu od 2020. do 2022. godine. Za odabrane indikatore izvršena je korelaciona analiza kako bi se utvrdilo da li pojedinačni indikatori odražavaju iste karakteristike revizorskih firmi. Rezultati korelacione analize obrađeni su korišćenjem statističkog paketa IBM SPSS i prikazani su u Tabeli 1.

**Tabela 1. Korelaciona analiza indikatora performansi revizorskih firmi**

<b>Indikatori</b>	<b>Poslovni prihod</b>	<b>Neto rezultat</b>	<b>Broj ovlašćenih revizora</b>
Poslovni prihod	1	0,576	0,782
Neto rezultat	0,576	1	0,444
Broj ovlašćenih revizora	0,782	0,444	1

*Izvor:* Obračun autora

Rezultati korelacione analize su utvrđeni primenom Spirmanovog koeficijenta (uzorak nema normalan raspored što je potvrđeno Kolmogorov–Smirnov testom normalnosti) i pokazuju da ne postoji jaka korelacija između odabranih varijabli što znači da indikatori ne objašnjavaju identično performanse revizorskih firmi, pa se za dalju analizu odabrani indikatori mogu zadržati. Rezultati deskriptivne statistike definisanih grupa revizorskih firmi prikazani su u Tabeli 2.

**Analiza performansi poslovanja revizorskih firmi u Republici Srbiji**

**Tabela 2. Poslovni prihod, neto rezultat i broj CPA u periodu od 2020. do 2022. za grupe revizorskih firmi**

<b>Indikator/Grupa</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>AS</b>	<b>SD</b>
<i>Poslovni prihod</i>					
1-„Velika četvorka”	4	710.348	3.122.168	1.515.869	670.917
2-Integrirane revizorske firme	21	10.582	467.085	86.029	98.807
3-Samostalne revizorske firme	52	1.793	101.435	20.017	18.498
<i>Neto rezultat</i>					
1-„Velika četvorka”	4	(260.761)	296.991	54.632	12.9213
2-Integrirane revizorske firme	21	26	33.534	4.621	6.713
3-Samostalne revizorske firme	52	(2.336)	43.839	2.078	4.765
<i>Broj ovlašćenih revizora</i>					
1-„Velika četvorka”	4	6	14	10	3
2-Integrirane revizorske firme	21	1	11	5	2
3-Samostalne revizorske firme	52	1	12	3	2

*Napomena:* Poslovni prihod i neto rezultat su iskazani u hiljadama dinara, N – broj revizorskih kuća, Min – minimum, Max – maksimum, AS – aritmetička sredina, SD – standardna devijacija

*Izvor:* Obračun autora

Analiza poslovnog prihoda revizorskih firmi pokazuje da integrirane revizorske firme imaju bolju tržišnu poziciju od samostalnih revizorskih firmi, ali da su i dalje daleko iza „Velike četvorke”. Analiza prosečnog neto rezultata pokazuje da sve grupe revizorskih firmi imaju pozitivan neto rezultat. Najveću prosečnu neto zaradu ima „Velika četvorka” (54.632 hiljade dinara), zatim integrirane revizorske firme (4.621 hiljada dinara) i samostalne revizorske firme sa prosečnom neto zaradom od 2.078 hiljada dinara (Tabela 2). Poređenje broja ovlašćenih revizora sugerise da „Velika četvorka” zapošljava najveći broj CPA (u proseku 10), zatim slede integrirane revizorske firme koje zapošljavaju u proseku pet CPA i na kraju samostalne revizorske firme sa prosečno tri CPA.

Spajanjem pojedinačnih indikatora u jedan indeks, na osnovu modela, formira se kompozitni indeks. Cilj kompozitnog indeksa je da se izmere višedimenzionalni koncepti koji se ne mogu obuhvatiti jednim indikatorom. Zapravo, korisni su kao alat za sumiranje informacija koje pružaju osnovni indikatori prilikom opšte procene i omogućavaju rangiranje grupa. U literaturi je na raspolaganju mnoštvo tehnika za izgradnju kompozitnog indeksa, jer je kreiranje kompozitnih indeksa veoma složen proces i obuhvata određene korake koje treba ispoštovati. Faze kreiranja nude različite alternative koje određuju kvalitet i tačnost dobijenih rezultata. Prema OECD (2008), kreiranje kompozitnog indeksa obuhvata sledeće korake: *Formulisanje teorijskog okvira; Izbor podataka; Tretman nedostajućih podataka; Multivarijaciona analiza podataka; Normalizacija podataka; Ponderisanje; Agregiranje; Analiza osetljivosti; Ispitivanje povezanosti sa drugim indikatorima i Interpretacija rezultata.*

Navedene korake treba uskladiti, izvršiti normalizaciju podataka ukoliko postoje razlike u vrednostima indikatora u pogledu mernih jedinica. Kako je u uzorku bilo različitih mernih jedinica normalizacija je izvršena pomoću min–max transformacije koja omogućava transformaciju vrednosti na identičan raspon vrednosti. Normalizovane vrednosti će se kretati u rasponu od jedan do sedam po ugledu na metodologiju Svetskog ekonomskog foruma (World Economic Forum – WEF). Na ovaj način podignuta je komparativna sposobnost indikatora. Kako u analizi odabrani indikatori imaju pozitivan uticaj na ostvarene performanse revizorskih firmi, prilikom transformacije je primenjena formula 1 (WEF, 2016, p.241).

$$TI_{ji}=6*\frac{I_{ji}-I_j^{\min}}{I_j^{\max}-I_j^{\min}} \dots\dots\dots (1)$$

gde je:  $TI_{ji}$ -transformisana vrednost j-tih indikatora u indikatoru;  $I_{ji}$ -vrednost j-tog indikatora u i-toj kompaniji  $I_j^{\min}$ -minimalna vrednost j-tog indikatora u kompanijama;  $I_j^{\max}$ -maksimalna vrednost j-tog indikatora u kompanijama.

#### 4. Rezultati istraživanja i diskusija

Opravdanost primene faktorske analize se proverava uz pomoć Kaiser-Meyer-Olkin mere i Bartlet testa. Vrednost Kaiser-Meyer-Olkin mere se kreće u rasponu 0 – 1 (Haier et al., 2010) i potrebno je da bude veća od 0,5 što je u ovom radu potvrđeno za tri analizirane grupe revizorskih firmi (1 – 0,689; 2 – 0,585; 3 – 0,594). Ukoliko vrednost nije veća, onda korelaciona matrica nije odgovarajuća za faktorsku analizu, dok Bartlet test meri adekvatnost uzorkovanja za svaku varijablu u modelu, ali i za ceo model. Uslov je da realizovani nivo značajnosti bude manji od 0,05 jer to ukazuje da korelaciona matrica podataka ima značajne korelacije između indikatora (Pallant, 2009, p.138). Realizovani nivo značajnosti testa iznosi za prvu grupu 0,028, druga grupa 0,000, treća grupa 0,000. Sve vrednosti su manje od 0,05 čime se opravdava korišćenje faktorske analize (Tabela 3).

Tabela 3. KMO i Bartlet test

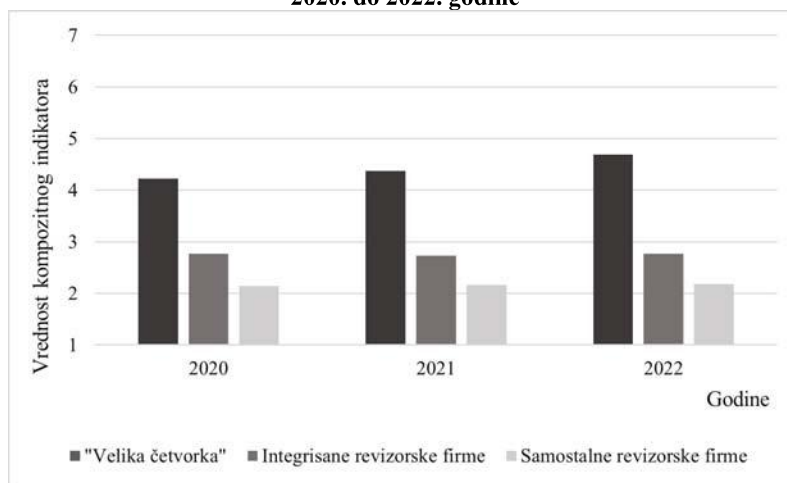
Mere/Grupa	1-„Velika četvorka”	2-Integrirane revizorske firme	3-Samostalne revizorske firme	
<i>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</i>	0,689	0,585	0,594	
<i>Bartlett’s Test of Sphericity</i>	Approx. Chi-Square	9,077	67,798	175,997
	Df	3	3	3
	Sig.	0,028	0,000	0,000

Izvor: Obračun autora

## Analiza performansi poslovanja revizorskih firmi u Republici Srbiji

Nakon ponderacije (pomoću component matrice dobijeni su ponderi koji su potom prilagođeni za kreiranje kompozitnog indeksa), sledi agregiranje ponderisanih vrednosti indikatora kako bi se dobila vrednost kompozitnog indeksa. Na osnovu pondera moguće je kreirati formulu za izračunavanje indeksa koji obuhvata tri varijable za svaku grupu revizorskih firmi. U radu je korišćen metod linearne agregacije, jer su svi pojedinačni indikatori izraženi u istim mernim jedinicama, poštujući matematičke osobine (Nardo et al., 2008). Prilikom normalizacije indikatora je primenjen model transformacije kojim su se vrednosti indikatora svele na skalu od jedan do sedam, pa se vrednosti kompozitnog indeksa kreću u tom rasponu. Na taj način dobijeni su parcijalni (subindeksi) kompozitni indeksi za svaku firmu po grupama koji su potom integrisani u jedan kompozitni indeks za svaku grupu revizorskih firmi po godinama. U drugom krugu za kreiranje kompozitnog indeksa korišćeni su jednaki težinski koeficijenti (jedan se podeli sa brojem komponenti koje se agregiraju). Dobijeni kompozitni indeks omogućava lako poređenje i rangiranje grupa revizorskih firmi u posmatranom periodu (Grafikon 2).

**Grafikon 2. Vrednost kompozitnog indikatora grupa revizorskih firmi u periodu od 2020. do 2022. godine**



Izvor: Izrada Autora

Analiza dobijenog kompozitnog indeksa revizorskih firmi pokazuje da integrisane revizorske firme imaju bolju tržišnu poziciju od samostalnih revizorskih firmi u posmatranom periodu (2020–2022. godine), ali da su i dalje daleko iza „Velike četvorke”. Ukoliko uporedimo poziciju grupa revizorskih firmi na osnovu pojedinačnih varijabli (Tabela 1) i poziciju na osnovu kompozitnog indeksa, može se primetiti da je odnos identičan. Dakle, predložena upotreba metodologije kompozitnog indeksa pokazuje da indeks sumira korporativnu održivost, omogućava poređenje u vremenu i interpretaciju dobijenih rezultata (Hudrlíková, 2013).

## 5. Zaključak

Analiza performansi poslovanja revizorskih firmi u Republici Srbiji izvršena je sa aspekta opštih karakteristika po pitanju broja ovlašćenih revizora i sa aspekta analize prinostnog položaja koja obuhvata analizu poslovnog prihoda i neto rezultata, tako što su razmatrane performanse revizorskih firmi koje su svrstane u tri grupe: „Velika četvorka”, revizorske firme integrisane u međunarodnu mrežu i samostalne revizorske firme.

Istraživanje i analiza performansi poslovanja revizorskih firmi u Republici Srbiji izvršena je deskriptivnom statističkom analizom i upotrebom metodologije kompozitnog indeksa. Analiza poslovnog prihoda revizorskih firmi pokazuje da integrisane revizorske firme imaju bolju tržišnu poziciju od samostalnih revizorskih firmi, ali da su i dalje daleko iza „Velike četvorke”, što pokazuje i analiza neto rezultata. Poređenje broja ovlašćenih revizora sugerise da „Velika četvorka” zapošljava najveći broj CPA (u proseku 10), zatim slede integrisane revizorske firme koje zapošljavaju u proseku pet CPA i na kraju samostalne revizorske firme sa prosečno tri CPA.

Primenom metodologije kompozitnog indeksa dobijen je jedan novi indeks koji obuhvata sve tri prethodno navedene varijable i koji nam pruža određivanje položaja posmatranih grupa revizorskih firmi. Istraživanje je pokazalo da sve tri posmatrane grupe imaju dobre performanse. U periodu od 2020. do 2022. godine, analiza kompozitnog indeksa pokazuje da integrisane revizorske firme imaju bolju tržišnu poziciju u odnosu na samostalne revizorske firme, ali i da je primetna dominacija „Velike četvorke”. Dobijeni rezultati su u saglasnosti sa sprovedenim istraživanjima drugih autora (Bonić et al., 2015; Jakšić et al., 2012; Mijić & Rađo, 2021; Radojević, 2022).

Na osnovu prethodno navedenog, možemo primetiti da kompozitni indeksi mogu biti koristan alat za donošenje odluka. Upotreba kompozitnih indeksa pruža celokupnu ocenu poslovanja i vrlo lako se može koristiti u svim oblastima. Ono što se može navesti kao ograničenje je da ne postoji opšteprihvaćena metodologija za kreiranje kompozitnog indeksa, već je metodologija vrlo fleksibilna i prilagođava se konkretnim situacijama u praksi (Saisana & Tarantola, 2002). Ispravnost kreiranja kompozitnog indeksa je povezana sa njegovim načinom kreiranja, jer zahteva od kreatora indeksa donošenje metodoloških odluka. Koraci koji treba da se ispune prilikom kreiranja indeksa imaju svoje prednosti i nedostatke. Konkretno, u ovom slučaju, kao nedostatak se može navesti to što je u drugoj iteraciji za izračunavanje pondera korišćen metod jednakih težinskih koeficijenata, a njegova upotreba može dovesti do gubitka informacija. Međutim, bez obzira na nedostatke može se zaključiti da poslednjih decenija postoji sve veće interesovanje za razvoj i unapređenje metodologije kompozitnih indeksa i da metodologiju treba podsticati i u budućem periodu.

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## ANALYSIS OF BUSINESS PERFORMANCE OF AUDIT FIRMS IN THE REPUBLIC OF SERBIA

**Abstract:** *The aim of the paper is to provide an analysis of the performance of audit firms in the Republic of Serbia in the period 2020 - 2022 from the point of views of general characteristics in terms of the number of certified auditors, as well as in terms of the analysis of operating income and net results. The analysis is based on secondary data collected from the financial statements from all audit firms registered in the Republic of Serbia. There are currently 77 audit firms registered in the Republic of Serbia. For paper purposes, audit firms are classified into three groups: "Big Four", integrated audit firms and independent audit firms. This paper will provide a descriptive statistical analysis of performance measured by operating income, net result and the number of certified auditors, as well as the use of the composite index methodology, which enables an easier comparative analysis of groups of audit firms. The results of the research suggest dominance of the "Big Four" in relation to the observed remaining two groups of audit firms in terms of operating income, net result and the number of certified auditors.*

**Keywords:** *operating income, number of certified auditors, net result, composite index.*



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