

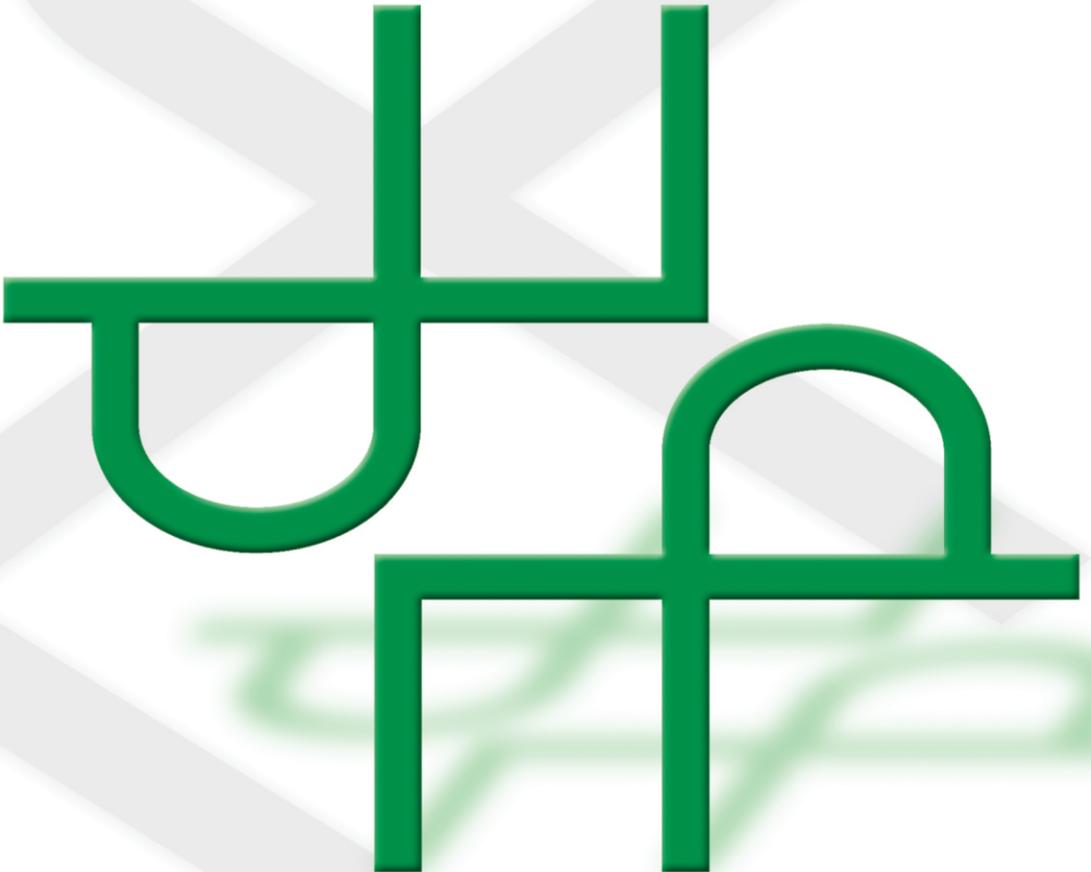
ISSN 0350-137X

UDK: 338 (497,1)

# ЕКОНОМИКА

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LXVI

NIŠ, 2020

МЕЂУНАРОДНИ ЧАСОПИС  
ЗА ЕКОНОМСКУ ТЕОРИЈУ И ПРАКСУ И ДРУШТВЕНА ПИТАЊА



# ЕКОНОМИКА

Часопис излази четири пута годишње

Година LXVI, I-III 2020, број 1

ИЗДАВАЧ: Друштво економиста "Економика" Ниш

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Жиро рачун: динарски 160-19452-17

Штампа:

“MEDIVEST”

18000 Ниш

Тираж: 300 примерака

INTERNATIONAL JOURNAL  
FOR ECONOMIC THEORY AND PRACTICE AND SOCIAL ISSUES



# ЕКОНОМИКА

The Journal is issued four times a year.

Year LXVI, I-III 2020, Vol. 1

PUBLISHER: Society of Economists "Ekonomika", Nis

COPUBLISHERS: Institute of agricultural economics - Belgrade, Faculty of Economics - Subotica, Faculty of management - Sremski Karlovci, Economic Association of Nis, Faculty of Applied Economics and Management Finance MEF - Belgrade

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Bank Account: 160-19452-17

Printed by:

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ORIGINAL SCIENTIFIC ARTICLE  
doi:10.5937/ekonomika2001001P  
Received: December, 17. 2019.  
Accepted: January, 21. 2020.

## ACCOUNTING-BASED VALUATION METHODS OF INTANGIBLE ASSETS: THEORETICAL OVERVIEW

### Abstract

*Intangible assets are fundamental generators of companies' competitive advantage. While the tangible assets were the most important company's resources in the past, nowadays, the intellectual resources determine the success of a company. Intangible resources represent the non-physical substances, which are difficult to define, measure and value. Thus, the purpose of the paper is to analyze the valuation methods of intangible assets in the area of the traditional accounting framework. The paper addresses the importance of the intangible assets in management literature, and links various valuation methods of intangible assets to the context of economics, business and strategic management.*

**Key words:** *Methods, Intangible assets, Valuation, Value*

**JEL classification:** *M41, L25, O34*

## РАЧУНОВОДСТВЕНО-БАЗИРАНЕ МЕТОДЕ ЗА ВРЕДНОВАЊЕ НЕМАТЕРИЈАЛНИХ УЛАГАЊА: ТЕОРИЈСКИ ОСВРТ

### Апстракт

*Нематеријална улагања представљају фундаментални генератор компанијске конкурентске предности. Док су материјална улагања била најважнији компанијски ресурс у прошлом периоду, данас, интелектуални ресурси детерминису успех једне компаније. Нематеријални ресурси представљају не-физичку субстанцу, која се тешко дефинише, мери и вреднује. Према томе, сврха овог рада је да анализира методе за вредновање нематеријалних улагања у делу традиционалног рачуноводственог оквира. Овај рад адресира значај нематеријалних улагања у менаџмент лијератури, и повезује различите методе за вредновање нематеријалних улагања у контексту економије, бизниса и стратегијског менаџмента.*

**Кључне речи:** *Методе, Нематеријална имовина, Вредновање, Вредности*

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## Introduction

Adam Smith's book of 1776 "The Wealth of Nations" (see newer edition of Smith, 2009) was seen as a classical school of economic theory. Author stated that the wealth of a nation comes from tangible and physical assets only, or to be more precise, from production factors such as labor, land and capital. Nowadays, in the modern knowledge-based economy, this "theory" is no longer meaningful (Wang, 2008). Global economy has dramatically changed during the last thirty years. The transition from industrial capitalism to knowledge-based capitalism represents a revolution in the corporate world. Tangible assets no longer represent the core of knowledge-based economy. Key resources for knowledge economy era are knowledge resources or intellectual resources. These resources are intangible assets, which are visible in the assets side of the balance sheet and, mainly, invisible at the assets side of the balanced sheet.

Three main structural changes appeared in the knowledge-based economy (MERITUM project, 2002, p. 6):

- 1) Knowledge is seen as an object of a potential trade;
- 2) Interrelation between different knowledge resources has been improved;
- 3) Information and communication technologies (ICT) enable higher diffusion of knowledge by allowing development of new and sophisticated networks between subjects of knowledge.

These three changes completely altered the global business model of companies that was available in the previous industrial revolution. Based on the huge development of the Internet and advanced technology, data, information and knowledge are widely spread and available. In the process of sharing and collecting necessary knowledge, companies improve their businesses much more easily.

Technology, which is based on knowledge, lies at the core of the development of each company. In such company, information management represents the input, and knowledge management represents the production process of the final output. Companies face many difficulties in the process of identification and measurement of intangible assets (Rađenović & Krstić, 2017). To prevent these problems from arising in the following years, research efforts should be focused on understanding how knowledge is produced and used to generate a future value. In addition, the development of new accounting practices that identify indicators of intangible assets more precisely is necessary in order to improve financial reports regarding a company's intangible assets. In the field of management sciences, the lack of identification of outcomes stemming from intangible assets results in the loss of business opportunities. In that way, managers and decision makers in companies stop investing in intangible assets, because of the lack of visibility of final outcomes (MERITUM project, 2002).

Intangible resources can also be analyzed in very dynamic terms. Companies more often take initiatives to develop internally, or acquire existing, intangible assets in order to improve their efficiency (Rađenović & Krstić, 2017b). These kinds of activities are very often followed by high costs. The high costs come from the difficulty to align these dynamic activities with concrete economic benefits. The main goal is to establish the system for the adequate performance monitoring of each intangibles (Sánchez et al., 1998). Hence, the aim of this paper is to investigate the most relevant accounting-based valuation methods of intangible assets from the available literature.

The paper is organized as follows. Section 2 provides conceptualization of intangible assets among accounting-standards setters and numerous well-known authors from academia. Section 3 describes the most important characteristics of intangible assets. Section 4 presents valuation methods of intangible assets, whereas Section 5 concludes the paper.

## Concept of Intangible Assets

The knowledge-based economy has changed the way companies are valued (Hall 1992; Nakamura 2003). The changes are coming from the global influence of information and technological trends through favoring globalization of economy and innovation as key factors of global competition. It is interesting that, nowadays, the total market value of a company is almost 90% composed of intangible assets value, mainly because current accounting frameworks do not provide an adequate system for a company to make long-term decisions. From the agricultural age to the industrial age, there were a lot of changes. The best proof for that is the proportion evolution, starting from 1978 when intangible assets constituted only 5% of total assets, then in 1998 when it was 72%, and finally recently when this proportion improved even more and the interval is between 75% and 85% (Ciprian et al., 2012). As the knowledge economy gained dominance, the value of tangible assets was decreased and replaced by the value of intangible assets, reflecting around 80% of market values by the year 2000 (Lev 2001; Sullivan & Sullivan 2000). The significant gap between the total market value and total book value has invited a wide research on explanation of hidden reserve or hidden value together by the accounting reporting standards-setters and different authors from academia (Lev & Daum 2004; Edvinsson & Malone 1997; Lev 2001; Nakamura 2003; Harrison & Sullivan 2000).

International Accounting Standard (IAS) 38 defines intangible assets as an “identifiable non-monetary asset without physical substance” (IFRS Foundation, 2010). An asset is a potential resource if it can be adequately controlled based on the past events and based on which future economic benefits are expected to flow into the company (IFRS Foundation, 2010). According to FASB (2001), an intangible asset is defined as a “non-current, non-financial claims to future benefits that lacks a physical and financial term”. Based on both previous accounting standards, the control of intangible assets is similarly explained. A company has control over an intangible only if there is a power to obtain future economic benefits stemming from the usage of that asset, and if it can also restrict future benefits at the same time (Zéghal & Maaloul, 2011). In certain occasions, a company may not include intangible assets in the balance sheet, even though they meet all the demanded requirements. Based of IAS 38 and FASB, one of the very important requirements is the possibility to “measure asset cost”. This requirement raises another accounting problem because this requirement would be easily met if that asset was acquired or obtained from a business combination. In that way, it would be easier to separate it and identify the value. The main problem lies in all intangible assets that are internally developed, such as computer software, brands, patents and results of research and development activities (Upton, 2001). Entities can very often expand their activities onto new acquisitions, research and development, maintenance, scientific or technical work, implementation of new processes, licenses, intellectual property, market

knowledge, trademarks, computer software, customer lists, market shares and rights, etc. If an item based on the definition above does not meet the requirements of definition, expenditures to acquire or all expenses for internal development are seen as an expense. If an item is acquired through a business combination, then it will be recorded partly as the goodwill on the day of the acquisition (IFRS Foundation, 2010).

At the same time, many different authors from academia tried to define intangible assets as well. According to Hall (1992) intangible assets represent a generator of advantage that transforms productive resources into property with added value. Smith (1994) defined intangible assets as all relevant components of business entity that exist with current and non-current assets. Those are components that, together with current assets and non-current assets, allow functioning of a company, and often contribute to the profit of a company. Their existence depends on the presence or expectations of future incomes. The definition by Gu and Lev (2001) says that the intangibility can be defined as a generator of value (research and development, promotions, information technology and capital expenditures and practice in human resources). Lev (2001) defines intangible assets as the rights of future benefits that do not have physical or financial substance. Also, Kristandl and Bontis (2007) state that intangible assets represent a company's strategic portfolio of resources that will enable a company to create a sustainable value.

There are dilemmas both in professional and theoretical sphere which relate to the meaning and the main notion of the term “intangible”. The term “intangible” is very often wrongly interpreted as some other non-tangible form, such as intangible investments, intangible capital and intellectual capital. Moreover, the literature review throughout different disciplines emphasizes several other concepts that can be seen as synonymous with the terms “intangible capital”, “intellectual capital”, “immaterial capital”, “knowledge capital” or “goodwill” (Zéghal & Maaloul, 2011).

According to the book “Unseen Wealth – Report of the Brookings Task Force on Intangibles” published by Blair and Wallman (2001) that was based on the study by Bontis (1998), there is a much more comprehensive distinction between three major categories of intangibles (p. 63):

1. There are two main sub-categories of intangibles for all intangible assets for which the market already exists and property rights are clear, and those are: first of all, patents, brands, copyrights, and second of all, contracts, databases, licenses and business agreements;
2. When there are no legal and well-defined rights, a group of intangibles for all intangibles that are controlled by a particular company is composed of: R&D in process, reputational capital, business processes and business secrets;
3. When both market and legal and property rights do not exist or are very difficult to identify for all the other intangibles, a group of intangibles consists of human, structural and relational assets. All of these assets belong to intellectual capital as its main components.

Ashton (2005) gives further explanation of the guiding principles for Blair and Wallman's (2001) classification of intangibles. His classification shows the level of difficulty to record them in official financial reports and to treat them properly not only for accounting standard-setters, but also for managements of companies. The last third category causes the biggest problems mainly because there are no accounting standards for them yet, whereas the first and second group of intangibles are already well-determined.

## Characteristics of Intangible Assets

Intangible assets have two main characteristics, which, at the same time, differentiate them from tangible (physical) and financial assets, and those are (Warfield et al., 2008, p. 556):

1. The lack of physical existence. – Intangible assets possess only legal rights and privileges granted to a company to use them. Based on these rights and privileges, a company generates benefits;
2. They are not financial instruments. – Financial assets also do not represent physical substance, but when compared to intangibles, financial instruments have the value because they can claim or have the right to receive cash or cash equivalents in the future.

Intangible assets can be purchased or developed internally. Intangibles bought from another organization are recorded in financial statements as cost. Cost includes all costs of acquisition and expenses necessary to make intangible assets ready for usage. Typical costs are legal fees, purchase price and other expenses.

Internally created intangible can be both expensed and capitalized. From the financial accounting perspective, the crucial aspect is to elucidate whether to expense or capitalize. If it is expensed, all the expenses will be recorded in the profit and loss account. If it is capitalized, an item must fulfill several restrictive requirements; notably, it must be separable and reliably measurable. Intangible assets can have limited life or indefinite life. Limited-life intangibles have a precise period when they can be used. These assets must be amortized or systematically allocated to the costs of intangible assets. After that period, intangible assets must not be used anymore, and should be excluded from the property and annual report of a company. On the other side, indefinite-life intangible assets are all intangible assets without legal, regulatory, contractual or any other factor that limit the useful life cycle. There is no foreseeable limitation period for these intangible assets over which the asset will provide cash (Warfield et al., 2008).

Items seen as intangible assets are included in the balance sheet together with long-term assets or non-current assets and further explanations are given in the notes of financial statements. However, there are no further explanations even in the notes of financial statements as to how these assets have been produced, made or acquired. There is no evidence of expenses in profit and loss account that is related to some of the intangible asset internal development. There is nothing else inside the balance sheet apart from the intangible assets that already meet all the necessary criteria. So, here is one very problematic part for all those individuals who want to follow the investments in intangible assets and their outcomes (Caddy, 2000; Harvey & Lusch, 1999).

Based on the study published by the Center for Excellence in Accounting and Security Analysis in 2009, there are two main preliminary points regarding intangible assets (Penman & May, 2009, p. 11).

- 1) *Intangible assets have a speculative characteristic.* Intangible assets are not only without physical substance, but they are also not identifiable, such as contracts or customer lists which can help a company generate benefits. Legal rights, patents and copyrights or brands are exceptional because of that. However, the difficulty is seen in “customer relationships”, “organizational

capital”, “human capital”, “knowledge assets”, and similar because they are not specific and conceptualized enough, which makes it hard for their market to be defined. The market price of these assets is highly speculative, subjective, and non-realistic. The market price is usually formed based on the personal perspective of an owner. When a speculative value enters the financial statement, problems happen because a non-realistic value can create imbalance in the reports.

- 2) *Intangible assets are used jointly.* Most of the intangible assets generate inflow of cash or cash equivalents, and they do so jointly with some other tangible or intangible assets. Different intangible assets, such as brands, marketing campaigns, distribution networks work together with other assets, and it is impossible to imagine their work independently. For instance, “knowledge capital” works together with productive machines and processes, marketing and management, but the cash flow streams only one cash inflow. Also, “organizational capital” makes it possible for many different company’s assets to be used jointly. An organization can be seen as one big asset composed of these several smaller tangible, intangible and financial assets that coordinate together and that are a source of future value.

According to Lev (2005), intangible assets differ from other types of assets, tangible and financial, in two major aspects: partial excludability and non-marketability.

When an individual owns a building or share, he/she can completely collect all related benefits from it without any difficulties. On the other side, owners of some intangible assets are in a completely different situation. Even though an individual owns an intangible asset and it expires in 20 years, competitors may explore and develop similar patents or an intangible asset before that. That is problematic from the cash and income perspectives because it is necessary to have stable cash inflows in the company in order to value intangibles. The consequence of unstable cash flows is not tightly regulated property rights over intangibles as they should be.

Most of the tangible and financial assets can be easily traded on a market, which is not the case with intangibles. There are transactions in some of the intangibles, precisely licensing and sales of patents, but generally, these transactions are not transparent and disclosed publicly. The reason for not being publicly presented is seen in not resolved and precisely defined property rights. The non-tradability of intangible assets represents a serious issue for investors and decision-makers because there are no particular valuation methods. The valuation process is only possible when comparing values between highly similar intangible assets, and, even then, it is not correct enough. This characteristic of intangibles created problems to accountants mainly because they cannot be seen as assets in the balance sheet.

Taking into consideration that intangible assets are highly risky, with uncertainty in cash incomes, why are they so important today? The answer can be found in two main explanations, and those are: intensity of business competition and commoditization of physical assets. The global market created competition all around the world. Companies from different sectors operate and compete with similar companies throughout the world. In such a global environment, it is of high importance to be continuously innovative. Innovations are allowed and necessary not only in product and service matters, but also

in cost-efficiency mechanisms. The necessary level of innovation can be achieved through investments in intangible assets, such as research and development focused on creating a new product, training employees, developing new brands or marketing campaigns, etc. As the competition pressure gets stronger, innovations should get better.

The second answer is the commoditization of physical assets. Commoditization of physical assets means that all competitors can allow themselves to have equipment, production machines, tools or advanced technology. Technology and equipment are widely available to all competitors who have the possibility to pay. This is one of the most important differences between intangible and tangible assets. Tangible assets are not so unique today as they used to be in the industrial era when only the biggest companies could afford themselves the most sophisticated tools and equipment. Now, the situation has changed, and they are available more or less to all. The biggest advantage can be achieved through intangibles (Lev, 2005).

The attention to intangible assets and their importance is paid mainly by the following constituencies (Lev, 2001, p. 1):

- 1) Managers and their shareholders. – Investments in intangible assets are associated with high cost of capital. Managers are interested in alleviating the excess cost of capital.
- 2) Investors and capital market regulators. – Investors are interested in information obtained from insiders and outsiders of a company.
- 3) Accounting standard setters. – The lack of accounting standard regarding intangible assets results in financial statements that do not follow changes in the current business environment.
- 4) Policymakers. – The lack of standards and financial statements demand public policy makers to assess fiscal policy, support innovations, or protect intellectual property.

Lev and Daum (2004) addressed two main issues about intangible assets. First, intangible assets by themselves cannot create value or generate profit. They need to be combined with other production factors. They need efficient support and system in order to create future value. Corporate performance reports must provide much more efficient view that will allow investors and managers to follow the value creation process. Second, the value of intangible assets is related to future, not to present. Intangible assets represent a possibility for future potential growth and profitability. It is achievable only with a more dynamic system of reporting that will replace the current, traditional performance management system.

## **Methods of Intangible Assets Valuation**

The use of intangible assets is increasing, the methods of valuation of intangible assets are a matter of considerable interest to investors, decisions-makers, managers, and accounting-standard setters. Unfortunately, important decisions are not easy to make because of a missing adequate valuation system. Due to the lack of these valuation tools and increasing importance of intangibles, company's performance cannot be evaluated realistically based only on financial performance measurement systems. Calculating the

value of intangible resource value as a difference between the total market value and total book value is not sufficient because of two reasons: there is no necessary mispricing in capital and markets and the balance sheet value is historically oriented and limited (Gu & Lev, 2003).

Based on the paper published by Russell (2016) intangible assets are valued quantitatively by three main groups (p. 484):

- 1) Cost group of methods;
- 2) Market group of methods;
- 3) Income-based group of methods.

In the cost group of methods are all methods focused on all relevant expenditures coming before the final performance appears that will develop further particular intangible asset. The cost group of methods consists of all relevant expenditures linked to the company's intangible assets. These expenditures are capitalized and reported at the company's accounts. Some studies estimate the value of intangible assets by capitalizing R&D expenditures (Chan, Lakonishok, & Sougiannis, 2001; Lev, Baruch & Sougiannis, T., 1996). But, (Holthausen & Watts, 2001) proved that the valuation models using input expenditures on intangible assets lack theory for asset valuation. Lagrost et al. (2010) proposed cost method for intangible asset valuation that is applied when the cost-based analyses are based on the economic principles to ignore the amount, timing, duration of future economic benefits, and also to avoid performance risk in the competitive environment. Historical cost should be used in order to estimate the real value of a developed asset. (Damodaran, 2006) explored the topic of valuation of company's intangible assets by capitalizing expenditures. At first, expenditures in company's income statements must be re-categorized into operating and capital expenses. All expensed that can be capitalized, expecting to bring benefits on a longer-period of time are seen as capital expenses. On the other side, all expenses without benefit expectations that last for maximum one year are seen as operational expenses. By him, not only R&D expenses can be capitalized, but also and other expenses, such as advertising, selling, general and administrative expenses. The capitalization process will further develop recognizable intangible asset that will generate benefits in the upcoming years for a company.

In the market group of methods by Lagrost et al. (2010) are all market-based transactions of similar intangible assets recently exchanged on the market. Publicly traded information is usually a market capitalization of a company, not particular intangible asset. (Barth & Clinch, 1998) explored the topic of valuation of intangible assets based on their value relevance on the market. They defined the model of market value of a firm by using the valuations of intangibles for company with the added controls for book value and revenues coming from the stock prices and the number of outstanding shares. In order to control the scale effect and heteroscedasticity, the study deflates the regression variables in the given model by the number of outstanding shares and by the market value of equity (Barth & Clinch, 1998; Easton & Sommers, 2003).

In the income-based group of methods are revenues, benefits and discounted cash flows that will be allocated to the particular intangible asset. By Lagrost et al. (2010) the income method is applied when an intangible asset produces income or when an asset generates future benefits. This approach converts future benefits to a single, discounted amount as a result of increased turnover or cost savings.

The most well-known valuation methods based on the benefit allocation are given by Lev (2005). According to Lev (2005), there are three methods that are used to value intangible assets, and those are: *benefit allocation*, *stand-alone valuation* and *comprehensive valuation of enterprise intangibles* (p. 303).

*Benefit allocation method* can be used only when it is easy to allocate benefits to individual intangibles under certain circumstances. It is necessary to evaluate the benefits and costs by taking into consideration return on investment. Research and development costs and expenditures on brands are all recorded in financial statements. The question is how the collective cash inflow can be separated and divided into particular and precise intangibles. A brand charges its customers with premium prices. That price will be higher than the competitors' price. Based on that price, a company's revenue can be attributed to that brand, and the rest remains as research and development revenues. In order to facilitate the benefit allocation, there are some recommendations given by Vaughan (2009, p. 127):

- First, it is important to estimate operating incomes before depreciation, amortization, income taxes or interest charges. In that way, the pure and total value of the operating income of a company will be seen;
- Second, the allocation of the depreciation amount must be done only for fixed assets;
- Third, ascertainable intangible assets must be isolated, and the amortization required to compare it with investment over the remaining value of each asset must be computed. Then it will be necessary to subtract all the annual depreciation and amortization from operating income in order to calculate a return on investment;
- Fourth, result from available income should be subtracted in order to calculate the income assigned only to goodwill;
- Finally, it is required to capitalize the remaining income at an appropriate rate to come to the value of goodwill.

*Stand-alone valuation method* is for all those intangible assets with legally protected ownership and pre-specified stream of benefits. These assets can be valued on a stand-alone basis by easily computing the present value of the expected benefit stream.

*Comprehensive valuation of enterprise intangibles method* is the most sophisticated approach because it will place a combined value on all different company intangibles. There is a methodology for such a comprehensive valuation of intangibles (Gu & Lev, 2003). The basis of this study is an economic production function, or to be more precise, total earnings related to the assets of a company. All assets are divided into three groups of assets: physical, financial and intangible. The valuation starts with the calculation of “normalized earning” or total earnings of one company. Then it is mandatory to calculate earnings that come from physical and financial assets based on industry-wide data. The rest of the total earnings belongs to intangible-driven earnings that can be discounted in order to produce the final expected stream of intangible-driven earnings.

## Conclusion

Intangible assets represent a substantial part of one company. They are invisible and non-physical substances that are difficult to measure, understand and define. It is without a doubt that intangible assets are a source of a competitive advantage and future value. However, they do not influence value creation directly, but rather indirectly. Two major forces have led them to that position over the past few decades: globalization and advanced information technology. Understanding the valuation of intangible assets is the basis of management decision processes.

The purpose of the paper is to present traditional valuation methods of intangible assets given by Russell (2016). All three groups are quantitative and accounting-based.

The problematic part with the valuation of intangible assets lays in the fact that financial information linked to intangible assets are very often not visible in the company's accounts. Information about the development of intangibles, their investments or benefits that they generate are hard to follow. In this context, when it is about choosing the valuation methods of intangible assets, which are related to the company's knowledge, it is believed that these financial information could bring profits to the organization, as well as facilitating their management.

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ORIGINAL SCIENTIFIC ARTICLE  
doi:10.5937/ekonomika2001013T  
Received: December, 07. 2019.  
Accepted: January, 30. 2020.

## POTENTIAL NEGATIVE IMPLICATIONS OF LIBRA CRYPTOCURRENCY

### Abstract

*Cryptocurrencies have been in the center of interest of both scientific and professional public for over ten years. Due to the volatile exchange rate against convertible currencies, investors predominantly use cryptocurrencies as an instrument of speculative investment, while their use in the payments is at a negligible level. On June 18, 2019, the Internet giant Facebook announced the creation of a consortium of financial and technology companies aimed at establishing a global cryptocurrency with stable value called Libra. It is planned to create an open blockchain through a new programming language, which will serve development teams in the future for creation of smart contracts. The subject of research in the paper will be the potential operational performances of Libra concept. The basis for the research will be a white paper published by Facebook and knowledge about the functioning of other cryptocurrencies, notably Bitcoin. The aim of the paper is to highlight the expected economic and security implications of Libra concept.*

**Keywords:** Facebook, Libra, stablecoin, blockchain, smart contracts, reserve fund

**JEL classification:** E42, O33

## ПОТЕНЦИЈАЛНЕ НЕГАТИВНЕ ИМПЛИКАЦИЈЕ СИСТЕМА ЛИБРА

### Абстракт

*Криптовалути се налазе у средишњу интересовања научне и стручне јавности њених десет година. Услед променљивог курса према конвертибилним валутиама, инвеститори користе криптовалути као инструменти спекулативног улагања, док је њихова употреба у платном промету на занемарљиво ниском нивоу. Интернет гигант Фејсбук је 18. јуна 2019. године објавио стварање конзорцијума финансијских и технолошких компанија, чији ће циљ бити успостављање глобалне криптовалути стабилне вредности под називом Либра. Планирано је стварање отвореног блокчејн кода кроз нови програмски језик, који ће у будућности служити развојним тимовима за стварање њихових уговора. Такође, најављено је формирање фонда резерви у виду конвертибилних валутиа и најликвиднијих хартија од вредности, који Либри треба да омогући релативно стабилну вредност. Предмет истраживања у раду ће бити потенцијалне оперативне карактеристике*

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*концепција Либра. Основу истраживања ће чинити бела књига коју је објавио Фејсбук и знање о досадашњем функционисању других криптиовалути, у првом реду Биткоина. Циљ рада је да се укаже на очекиване економске и сигурносне импликације овог концепција Либра.*

**Keywords:** Facebook, Libra, stabilna kripto valuta, blokčejn, pametni ugovori, fond likvidnih rezervi

## Introduction

Since the advent of Bitcoin in January 2009, cryptocurrencies have been in the focus of interest of the academic public. Their infrastructure is based on blockchain, cryptographical technology that enables the decentralized government of large databases (Nakamoto, 2008). A decentralized management system and the opportunity for large profits from speculative transactions have attracted a large number of investors. Over the ten years of their existence, more than 1,000 different forms of cryptocurrencies have been registered, with a total market capitalization exceeding US \$ 300 billion (coinmarketcap.com). Notwithstanding the above, cryptocurrencies do not take a significant share in the modern payment system.

On June 18, 2019, the Internet giant Facebook published a white paper outlining the company's strategic commitment to developing a new cryptocurrency called Libra (libra.org). Two key differences over Bitcoin and the largest number of other cryptocurrencies were announced. First, the coin emission will not be controlled by a pre-programmed algorithm, but by a central institution. Second, the goal is to make Libra a stablecoin, or cryptocurrency that will have a relatively stable value against the basket of convertible currencies. A stable value would help it avoid frequent speculative transactions, which affect the capricious movement of the value of other cryptocurrencies. The above should make Libra more attractive for use in payment transactions.

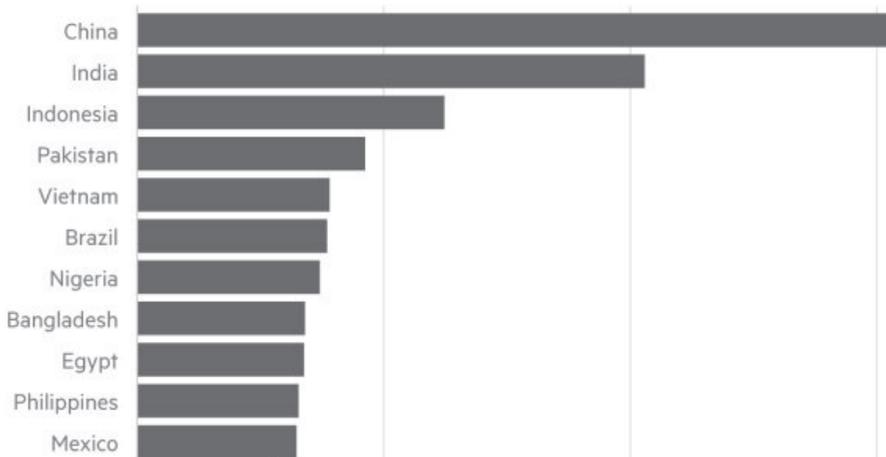
The subject of this paper is potential operational performances of the Libra concept. The basis for the research will be a white paper published by Facebook and knowledge about the functioning of other cryptocurrencies, notably Bitcoin. The aim of the paper is to outline the expected economic and security implications of Libra concept. The first section of the paper will analyze the technological basis of the future system. In the second section, based on the existing knowledge of cryptocurrencies, some conclusions will be drawn about possible economic effects. The negative implications for personal security and data privacy will be presented in the third part of the paper.

## The technological basis of Libra concept

The White Paper was signed by 53 authors, including a significant number of academics in the fields of information technology, artificial intelligence and payment systems. Its primary statement is about the insufficient and unequal financial inclusion in the world, which affects about 1.7 billion adults. It is an underdeveloped part of the world, where basic payment services are unavailable or more expensive than in the developed parts. As can be seen in Figure 1, the availability of financial services in the mentioned

countries is lower than the availability of internet and mobile telephony, so it is clear that the technological infrastructure can be used to increase financial inclusion.

Figure 1: Number of adults with access to mobile telephony which do not possess a bank account (in millions, data from 2017)



Izvor: Demirgüç-Kunt et al., 2018

It is proposed to create a single payment system that will enable fast and cheap transfer of global electronic money based on blockchain technology. The system was named Libra and it is expected to become operational in the first half of 2020. The three pillars should underpin the functioning of the overall concept:

1. System is governed by independent Libra Association, whose mission is the initiation and development
2. Blockchain technology is the basic of the system
3. Money value is backed by the liquid asset reserve fund

1) Libra Association will be a non-profit organization based in Geneva. Its members are recognizable companies from different business sectors. At the time White Paper was published, the Association had 28 founding members, with a goal to have 100 by the start of the system. Alongside Facebook, the founding members are Visa, MasterCard and PayPal from payment institutions, Vodafone from telecommunications companies, eBay and Lyft from the internet megastores, Coinbase and Xapo Holdings from blockchain companies, Spotify and Uber from service companies, Thrive Capital, Union Square Ventures and Adressen Horowitz from venture capital funds, etc.

The founding members have an obligation to bring together new members of the Association, to provide a sufficiently large market through merchant-oriented acceptance programs for Libra, and to provide funding for the system initiation. Each founding member was required to pay at least \$ 10 million through the purchase of the so-called investment token. Once the system is up and running, the members of the Association will play the role of nodes in the blockchain network, which means they will control and

validate the transactions. The principle that each investment token gives one vote in the validation process will apply, with limitation of maximum votes that an entity can hold. This will prevent the concentration of controlling power, so neither Facebook nor any other institution could have a privileged position. The aim is to create conditions within five years for participants who have not purchased an investment token, but who own a larger amount of Libra coins, to be included in the validation process. Consequently, the algorithm would become open proof-of-stake (Li et al. 2017).

The Association will make all key operational decisions through the Council, in which, similar to the validation process, each member will pose votes in proportion to the investment tokens it owns, with a limited maximum votes. All technical decisions and decisions concerning reserve fund will have to be made by a two-thirds majority, while other decisions will be made by a majority vote. The operational management of the Association will be taken over by a board, which will consist of between four and eighteen representatives of the members of the council in addition to the elected executive director.

2) Blockchain is a cryptographically authenticated database (Zheng et al. 2017). Based on one of the consensus protocols, authorized participants - nodes - can modify its content. In the case of cryptocurrencies, the database refers to the ledger of all transactions - it contains a list of all participants and the amounts of coins in their possession. The new transaction  $T_p$ , occurring at one point in time, must be in accordance with the previous records  $S_i$  in the sense that the payer has sufficient funds in his account. If the nodes confirm the validity of the transaction, the changes it creates will become part of the new state of the ledger  $S_{i+1}$ .

The basis of Libra blockchain technology is the Move programming language. It is a new programming language, enabling open source smart contracts to be created (Nelaturu, 2019). For the purpose of its creation, previous experience with smart contracts has been used, especially situations where programming failures have occurred. Move will allow the creation of digital assets under the same principles that applies to physical assets: an object has only one owner, it can be consumed only once, and cannot be duplicated. Only certain entities (Association) have the ability to create new copies of assets.

Each account address will be a 256-bit record. Opening an account and signing transactions will be based on a pair of public key (pk) and a private cryptographic key (sk). Applying the hash function SHA3-256 to the public key  $a = H(pk)$  gives the account address (Group of authors, 2019). The EdDSA private key digital signature method will be used for signing transactions. Account addresses are pseudonyms and cannot be linked to customer's real identity. It will be possible to open more than one account with no direct link indicating that the owner is the same customer. A transaction fee is charged for the execution of the transaction to prevent the network from being exposed to DDoS attacks (Constine, 2019).

Byzantine fault tolerance (BFT) approach will be used to reach consensus between nodes. With BFT, consensus on transaction validity can be reached even in situations where up to one-third of the nodes behave maliciously - whether it is a hacking attack or a hardware malfunction (Lamport, Shoshtack, & Pease, 1982, p. 383). The basic idea when choosing a protocol was the ability to expand the base of nodes in the later stages of system functioning and scalability in terms of the number of transactions. Proof-of-

work protocols have not been considered at all because of the high energy consumption of validation (Todorović & Tomić, 2019, p. 52).

3) Libra is planned to be a global cryptocurrency with a stable value, fully covered by reserves in financial assets. The existence of real cover is a fundamental difference from all previous cryptocurrencies. At any time, customers will be able to sell their Libra stock for the desired convertible currency at a pre-known exchange rate. However, this rate will not always be fixed, as Libra will not adjust to any particular currency, but rather a basket of stable and liquid assets. In addition to the most stable currencies in the world, the basket will also contain treasury bills and certificates of deposit from the same countries. The change in the value of these assets will change the exchange rate of Libra. The revenue generated by the assets in the reserve fund will be used to cover the costs of developing and upgrading the system or paid as dividends to the early investors. The revenue sharing scheme will be known and announced in advance.

There are two sources of reserve funds: the purchase of investment tokens and the purchase of new Libra coins. In order to create a new quantity of Libra coins, it is necessary that customers buy them with their convertible money, thus increasing the reserves. The number of coins in circulation decreases, when customers sell their Libra coins to Association. At the same time, the liquid assets in Libra Reserves also decrease. In that manner, the Libra Reserve will serve as the “buyer of last resort”. The Association will not conduct monetary policy through the Libra Reserve, nor will it create new quantities of Libra coins that are not backed by reserves.

### **Potential economic effects**

The realization of the mentioned plans would bring certain economic advantages. This primarily refers to the financial inclusion of clients from developing countries. The clients from countries that do not have a sufficiently extensive banking network due to large territories, such as India and Nigeria, would particularly feel the benefits. In a number of countries the internet is more accessible than banking services. The users without access to banks would thus be able to send and receive money internationally. To fully grasp the potential effects of the Libra concept, it needs to be understood not just as a new cryptocurrency, but as an entire economic ecosystem. Libra will offer more than global electronic money, primarily through the provision of open source to create and execute smart contracts.

Smart contracts are contracts that are self-executing on the basis of the terms entered in the program code (Szabo, 1997). Terms are visible through the code on the public blockchain network. Their use enables automatic execution of the transaction at the moment of fulfillment of the set conditions, without verification and confirmation by the central institution. Transactions are public and non-refundable. The implementation of smart contracts will be possible not only in business, but also in medicine and transportation. Their full implementation requires a large amount of digital data, which will be provided by the Internet of Things (IoT) in the future. Facebook and other members of the Association hope that by creating a reliable and open platform for smart contracts, it will attract a large number of users, who will use Libra to execute smart contracts.

Unlike Bitcoin, Libra will have centrally controlled issuance and relatively stable value. Both solutions have already been seen in some cryptocurrencies and are no surprise, but the way they are implemented is innovative. First of all, the institution that controls the system is not an anonymous technology company without reputation. Facebook itself, including Instagram and WhatsApp, has 2.38 billion active users (Noyes, 2019). The analysis of the founding member list shows that they were carefully selected in order to maximize the number of users of different profiles. The obvious motive is to highlight recognizable companies in key market niches where prospective customers should be sought. This could solve the basic problem of all electronic money systems since the mid-1990s - the formation of a critical mass of customers.

The idea that the value of Libra is not tied to a single currency, but a basket of liquid assets solves the problem of the optimal currency area that other stablecoins have encountered (Mundell, 1961). The real novelty is the reserve fund, which enables full coverage of coins in circulation with liquid assets. This will be the first case that cryptocurrency will have intrinsic value. It is believed that the Libra Reserve could contribute to customer confidence and a willingness to hold Libra stocks for longer periods. Therefore, by properly approaching the problem of centralization and currency stability, the Association will first be able to quickly form a large customer base and provide a high amount of cryptocurrency in constant circulation.

Provided that these two conditions are met, a large amount of convertible currencies could be paid into the reserve fund in the short term. The longer the average customer is willing to hold Libra coins, the more it will be possible to hold assets in liquid securities that create revenue. Buyers of the investment token will earn an annual dividend on this basis. So, while the Association itself is a non-profit organization, the companies that make it are primarily oriented at making profit. It is clear that companies that buy an investment token want to make a profit, but it raises the question of compliance with the mission of the project. The authors of the White Paper emphasized at the outset that the mission of Libra is the financial inclusion of clients from less developed parts of the world. Consortium members will endeavor to charge on a continuous basis for enabling inclusion. The first problem that arises is of an ethical nature: why are multinational companies, each worth billions of US dollars, hiding behind helping the underdeveloped population of the world in a new project, when it is clear that generating profit is the goal?

The following problem is closely related to the first one. The White Paper stated that the Libra Reserve would not trade directly with customers, but would transact through special resellers authorized by the Association. There is no further information on who will be authorized resellers or what criteria they should meet. Since there are companies that have the capacity to perform payment services among the founding members (Visa, MasterCard, PayPal), will the role of resellers be entrusted to them? Who will be able to contest for the license, if resellers should be brand new institutions? How much fee will resellers charge for their own services? Is this a way for founders, or some of them, to make additional profits that will actually be shown as operating expenses? These questions do not have an answer, but they provide a basis for looking at the whole concept from a different perspective.

Assuming Libra is widely used in developing countries, the question of the ability of central banks to implement monetary policy arises. The topic of the impact of electronic money on monetary policy is not new, but past considerations have led to the conclusion that central banks are not yet endangered. The first isolated example of the impact of

electronic money on real economic flows was recorded in 2013, when introducing state control of bank deposits in Cyprus (Cohan, 2013). A more striking example was noted in Venezuela in 2018, when a large number of citizens were buying cryptocurrency Petro due to hyperinflation (Osborne, 2018). Therefore, it is possible that once Libra becomes operational, a large number of developing country citizens transfer their liquid assets to the new cryptocurrency. The motives for this act may be volatility of the domestic currency, an underdeveloped network of banking services, the desire for frequent cross-border payments without the high fees and costs of currency conversion, or hiding from regulatory authorities. The consequence will be the inability of central banks to influence economic developments by monetary policy measures, since the measures will refer to currencies used by too few citizens. These risks do not threaten one country or countries in one region, but practically the whole world. The possibility of losing monetary control is far lower with the Fed or the ECB than with African or Asian central banks, but there is already an opinion among politicians and experts that the institution that governs Libra should be registered as a bank.

The authors of White Paper stressed that the Association has no ambition to conduct monetary policy. As such statement is not legally binding, there is no guarantee that the ambition will not arise in the future. However, there are already two fundamental problems with this statement. Firstly, the fact that the Association forgoes the opportunity to conduct monetary policy in advance means that there are already plans for such growth that will give it the ability to conduct monetary policy. Secondly, the question is how the Association defines monetary policy. If the payment system of one or more states relies heavily on Libra so that national central banks lose the ability to influence the economy by their own measures, then any decision coming from the Association will actually have monetary policy effects.

The great financial potential will create the danger of transforming Libra Reserve into a huge shadow bank (Hamilton, 2019). The White Paper does not explicitly state the future relationship with credit activities, which does not mean that the Association does not think about it. If, based on the financial potential gained by issuing Libra coins, the Association starts lending, it would directly influence the growth of money supply of those currencies in which the loans would be denominated. Moreover, this would actually be a form of monetary policy. Knowing that the profit is the sole motive for members of the Association, it is difficult to expect that in the future the funds will not be directed to achieve higher yields than those made by treasury bills.

In recent years, cryptocurrencies have been considered risky in terms of money laundering and terrorism financing. The fact is that cryptocurrencies have been used to fund illegal activities due to the high level of anonymity they provide. In October 2013, the FBI raided Silk Road, an internet stock market of weapons, narcotics, stolen credit cards and other illegal goods, which was using Bitcoin as a mean of payment (Van Hout & Bingham, 2013, p. 387). Following the shutdown of the site, several copies were created, on which the most commonly was used cryptocurrency Monero in addition to Bitcoin (Greenberg, 2017). It is also recorded that the distribution of computer viruses known as ransomware, which lock the operating system of the victims until the ransom is paid in cryptocurrency, most commonly Bitcoin, becomes more frequent (Armerding, 2019).

However, it is not possible in practice to measure the extent of the use of cryptocurrencies for criminal purposes. The mere fact that they are suitable for money

laundering and terrorism financing does not necessarily mean that this will be the primary sphere of their use. Based on some estimates, the use of cryptocurrencies for criminal purposes is far lower than their use for speculative investments. It is believed that Libra would simplify the infrastructure for a large number of criminals. There is growing concern in Europe and the US about the use of electronic money for criminal purposes. The European Parliament has adopted the Fifth Anti-Money Laundering Directive (Directive 2018/843), which deals specifically with cryptocurrencies and pre-paid cards. Electronic exchanges and digital wallet companies are required to be able to identify users. Through the 2001 Patriot Act, the United States made mandatory the identification of payment service clients and abolished banking secrecy in a number of cases. Facebook has previously stressed that the plan for Libra is to comply with all existing regulations. The problem is that there will be no financial inclusion in this case, as compliance with customer identification and anti-money laundering laws prevent the inclusion of people who do not have access to the banking infrastructure for any reason - geographical, legal or cultural (Coppola, 2019). For the full financial inclusion already discussed, Libra would have to circumvent certain legal solutions.

### **Privacy and security implications**

When discussing contemporary payment trends, the possibilities of ending the use of cash and developing electronic money that will become the standard in transactions are often emphasized. There are different opinions about whether one or more countries will develop their own national electronic currencies, or whether a consortium of corporations will try to introduce a single global electronic currency. The Libra is precisely the realization of the second concept. While the economic arguments regarding fast and global transactions are undeniable, there are numerous uncertainties and potential issues with regard to customer security.

There are two misconceptions that cause most customers to be overtly open to new technology. The first is the belief that new technology necessarily brings higher efficiency and security and lower costs of use. The second refers to the view that technological development is linear, so that it is necessary to adopt all available innovations to create a society of the future. Both assumptions are wrong. The factors listed in the first assumption often have inverse relation. There are numerous examples of technologies that truly deliver higher efficiency and/or security, but never experience commercial application due to high costs. Those that reduce costs or speed up process execution can increase the instability of the environment. Even with the unchanged likelihood of an adverse event occurring, the higher amount of potential loss makes the application of new technology socially undesirable. Technological progress is chaotic and unpredictable, so abandoning one innovation does not diminish the possibility of progress in other areas. Examples are the old South American civilizations that have developed astronomy more advanced than any Eurasian civilization, although they did not have a developed monetary system or know the wheel technology.

The previous can be applied to contemporary payment trends. The use of cash has numerous disadvantages, such as the cost of transportation, safekeeping and storing, the physical damage of the banknotes, the use of it in criminal activities, the inappropriateness for long-distance payments, and the transfer of bacteria. Nevertheless,

all these shortcomings are known in advance. Users and regulatory authorities have more or less ready mechanisms to combat deficiencies and are prepared for their emergence. A cashless world offers some economic benefits as well as a number of potential problems. The authorities have no answer to these problems, nor are customers ready to face them. For this reason, their effect can be devastating, not only on economic flows, but also on personal freedoms. Demolishing the institutional foundation built over centuries, with the establishment of an untested and unreliable system, can lead to unprecedented consequences. Global electronic moneys would give complete control over economic life to states (if they were national cryptocurrencies) or multinational corporations (if Libra or some similar private cryptocurrency would become globally acceptable).

It is stated in the White Paper that accounts will be pseudonyms, and that it will not be possible to link them with the customer's real identity. So Libra will reportedly be anonymous. One could rightfully doubt the truth of this claim. Earlier cryptocurrency experiences indicate that anonymity is only viable in the case of isolated transactions within a smaller circle of customers (Hodgson, 2018). With increasing frequency and number of partners in transactions, the chances of losing anonymity grow exponentially. Given that the ledgers of most cryptocurrencies are publicly available, the regulatory body or any interested party can easily track all accounts with which a disputed account has performed transactions. It is sufficient to anyhow identify only one of those participants, after which others can be identified by monitoring his transactions. Thus, the anonymity offered by cryptocurrencies is not one hundred percent, and its disruption depends on the persistence of the government identify the transactors. In the case of Libra, it may even be easier and faster to identify customers.

Facebook has announced the creation of an official digital wallet called Calibra, designed to execute Libra-denominated transactions. While it is emphasized that the Calibra wallet will be available as a separate application, unrelated to social media accounts, an opportunity install it as an add-on to WhatsApp or Messenger has also been left. This is the information that creates more doubt than the topic of monetary policy management. Facebook is known for monetizing its users' data. On social networks, companies can pay to use demographic information of users in advertising management, for more accurate targeting in marketing campaigns. Little less is known that Facebook sells users' data to analytics companies, which can later use it for any purpose (Newton, 2018). The fact that a company entrusted by users with a piece of personal information for entertainment purposes makes money from the sale of that information sounds unacceptable by itself. Even if data buyers only intend to market their own products, the problem persists. Users will receive advertisements that they did not want, for products they are not interested in. Data buyers' desire to influence users' political attitudes or to create discriminatory profiles on any basis, are also realistic options. In addition to the fact that Facebook was not interested in the purpose of the data sold, the absence of accepting responsibility in the situation when the sale became publicly known should be added. In July 2019, Facebook, Instagram, and WhatsApp became temporarily unavailable for adding new photos and viewing existing ones. After eliminating the problem, the management in no way wanted to comment on the reasons for its occurrence (Vaughan-Nichols, 2019). This indicates that this company should not be trusted, nor social responsibility should be expected. Facebook is a perfect example of a company which does not address its growing reputation risk (Tomić & Sedlarević, 2014, p. 170).

If Libra becomes a global payment system, Facebook will be able to add through Calibra the latest set of information that has not been collected through social networks - its users' payment history. Facebook has promised not to link users' network profiles to payment accounts, but the promise is not legally binding. This is why the claim of account anonymity seems completely unconvincing - transactions may be anonymous to everyone else, for Facebook it certainly won't be. Since it is previously known that it often made available information to government agencies, this means that the US government will be able to track users' payments on demand. At the same time, Facebook will receive another segment for monetizing data.

Determining the difference between the potential benefits and losses of the application of new technology is particularly difficult in a contemporary context, when privacy losses outweigh financial losses. The question is not whether the user has anything to hide from others, but whether others, having complete information about him, will be able to harm him. Aggressive promotional campaigns daily marketed to compulsive buyers are just one option. The system can temporarily or permanently block funds for politically ineligible users, and on the basis of payment history, form patterns of persons posing a security threat. Of course, it is quite by chance that such patterns can identify individuals who pose no threat. If Libra becomes a global mean of payment, it will be possible for a company with a rich history of information abuse could also make lists of non-eligible persons.

## Conclusion

Previous considerations include available knowledge of cryptocurrencies and Facebook's business model, but they generally represent no more than assumptions of future development. In order to discuss the future of the Libra concept, it first needs to become operational. Certain blockchain experts tested the code they received from Facebook and proved that it still does not work. So the Libra concept may not become operational in the near future. In the event that this does happen, there are three possible outcomes.

The first one refers to the situation where Libra would become just another part of the cryptocurrency mass. Its stable value would make it unsuitable for speculative investments, which currently make up by far the largest percentage of all cryptocurrency transactions. Facebook's previous irresponsible behavior would make it undesirable for conservative customers. Cryptocurrency supporters would turn even further to Bitcoin and its surrogates, rejecting fully centralized and controlled cryptocurrency. Under these conditions, Libra would not have a significant market share.

The second one relates to the situation in which Libra would take the lead among on cryptocurrency market. Recognizable founding members would implement programs to support the Libra's early adoption. Companies would reward customers for certain marketing activities with Libra coins which cannot be exchanged for convertible currencies but only spent. Members would begin to offer certain services exclusively for Libra payments. Many online retailers would begin to accept Libra payments, considering them competitive advantages. In this case, too, Libra would not become a truly global mean of payment. Residents of developing countries would have nowhere to

spend Libra, so they will only serve as a means of transferring money among separated family members, as the transfer will be cheaper than through Western Union. Residents of developed countries would lack one final stimulus for full acceptance. Amazon and Alibaba would never accept Libra, which would permanently make it less competitive than PayPal in e-commerce.

The third outcome relates to the global use of Libra. Influenced by the virality of mass use, all the largest online retailers would integrate into its ecosystem. Before starting, Amazon and Alibaba could become part of the Association. In developing countries such as India, Indonesia, Pakistan and Nigeria, a large number of retailers would accept Libra through mobile phone application. The expansion of smart contracts in the future would give an additional impetus to the use of Libra.

In the second or third case scenario, countries would have to respond by regulating the system. The fact is that Libra does not aim to crowd out the dollar or the euro, because it needs those currencies to have a stable value. Without strong convertible currencies, the Libra has no value. However, it is also clear that the motives of the Association are not well-intentioned as claimed in the white paper. The goal is not to influence the monetary policy of developing countries either, but it should not be expected that the Association will endeavor to avoid this situation for ethical reasons only. The only goal that members of the Association follow is profit. In line with the high investments that the whole concept will require, one should expect that the founding members are prepared on anything just to make a desirable profit. That is why the users are the ones who have the ability to prevent the implementation of a mechanism for global control of payment information.

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ORIGINAL SCIENTIFIC ARTICLE  
doi:10.5937/ekonomika2001025K  
Received: November, 22. 2019.  
Accepted: December, 21. 2019.

## THE ANALYSIS OF THE REGIONAL DISPROPORTIONS IN THE LABOR MARKET IN THE REPUBLIC OF SERBIA

### Abstract

*The subject of research are regional disproportions in the labor market in Serbia. The purpose of this study is: 1) to identify Serbian low-paid industrial sectors, as well as 2) to examine regional differences in wages of workers. To achieve these goals, we were used official data of the Statistical Office of the Republic of Serbia on employment and wage distribution by sector of activity. Based on methodology suggested by Nestić et al. (2018), we were identified 7 low-paid industrial sectors in Serbia. Paired-Sample T Test results indicate significant disproportion in wages of workers according to regions. The results obtained indicate the necessity of giving more space to issues of regional disproportions by economic policy-makers.*

**Key words:** low – paid industrial sectors, low - wages, minimum wages, regional differences in wages

**JEL classification:** J21, J31

## АНАЛИЗА РЕГИОНАЛНИХ ДИСПРОПОРЦИЈА НА ТРЖИШТУ РАДА У РЕПУБЛИЦИ СРБИЈИ

### Апстракт

*Предмет истраживања су регионалне диспропорције на тржишту рада у Србији. Циљ рада је: 1) идентификација слабо плаћених индустријских сектора у Србији, као и 2) истраживање регионалних разлика у зарадама радника. Ради реализације ових циљева коришћени су званични подаци Статистичког завода Републике Србије о запослености и дистрибуцији зарада према сектору делатности. На основу методологије коју су предложили Нестић и сарадници (2018), идентификовали смо 7 слабо плаћених индустријских сектора у Србији. Резултати ујареног t - теста указују на значајну диспропорцију у зарадама радника према регионима. Добијени резултати указују на неопходност давања већег простора истраживањима регионалних диспропорција од стране креатора економске политике.*

**Кључне речи:** ниско плаћени индустријски сектори, ниске зараде, минималне зараде, регионалне разлике у зарадама.

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## Introduction

Regional inequality is a phenomenon that characterizes most countries. Serbia is no exception in this respect (Molnar, 2013, p. 179). Differences in development between regions in Serbia, but also differences in development between districts within the region, are very pronounced. Gross domestic product per capita, expressed in PPS (Purchasing Power Standard), in 2017 was only 38.7% of the EU-28 average. At the same time, the most developed region in Serbia (Belgrade) is at a level of development of 65.0%, while the least developed region (South and Eastern Serbia) is at a level of development of only 24.6% of the EU-28 average (Statistical Office of the Republic of Serbia, 2019, p. 13).

Regional disproportions in general, and inter-regional differences in the labor market in particular, are of increasing importance in Serbia. Growing regional disproportions brings many economic, social and political risks, indicating need for economic policy makers to address this problem in a timely manner. The problem of unemployment in Serbia should be viewed from a regional perspective for three reasons. First, the scope of labor market variation across regions in Serbia is very large. Second, macroeconomic studies do not explain why there are differences in regional labor markets. Also, labor market institutions (for example: employment and dismissal rules, negotiation of wages, social security, retirement rules and the tax system) do not differ between regions. Third, excessive and persistent differences in the regional characteristics of the labor market, especially wages and unemployment rates, are a sign of inefficient allocation of labor as a basic economic resource (Arandarenko, 2006, pp. 5-6).

The level of wages and their dynamics are important for the economic development and social stability of both a particular country and its regions. Economically speaking, the imbalance in wage growth relative to production and productivity trends can have negative consequences. Low-wages can be a constraint on a country's economic growth, while high wages can weaken a country's competitive position. From a social perspective, wages are the most important source of income for the largest number of individuals in each country. Consequently, the living standard of the population largely depends on the level and dynamics of wages, which all have an impact on social cohesion in the country (Anić, & Vuksanović, 2019, p. 64). Based on these facts, the purpose of this research is twofold. First, we try to identify low-paid industrial sectors in Serbia, and second, we try to examine regional differences in workers' wages. This analysis is based on method suggested by Nestić et al. (2018) and by available statistical data. The paper is organized into seven parts. Following the introductory presentation in the first part, the second part presents a brief overview of the literature relating to minimum wages and regional disproportions. The third part defines the research methodology. The fourth part identifies 7 low-paid industrial sectors most affected by minimum wage policy. In the fifth part, regional differences in the workers' wages in Serbia are examined. The sixth part presents the indicators of the labor market in Serbia. The seventh part concludes the paper.

## Literature review

In recent years, in some countries, regardless of their level of development, low-wage employment increases, while in others reduces (McKnight et al., 2016, p. 3). McKnight et al. (2016) find a positive relation between wage inequality and frequency of low-wage countries

with greater inequality tendentious have greater participation of employees in low-paid work than in countries with greater equality. The incidence of low-wages in some industries is more frequently than others, for two reasons: 1) low-paid workers do not work in some industries that are open to global competition and 2) a significant proportion of low-paid workers working in the public sector, where the government has more direct control over the level of wages (The Poverty Site, 2010). Earnings inequality is large and growing in many countries.

Different countries use different instruments for market regulation in an attempt to alleviate inequalities in the labor market, including minimum wage (Boeri et al., 2019). Minimum wage is the minimum amount paid to the worker per working hour. According to the methodology of Eurostat, it is related to a gross income – or net income with taxes and contributions (Eurostat, 2019). Minimum wage is a guaranteed amount that the employee receives, as the basis of work, and in other cases, such as, for example, sick leave. Empirical results of individual studies suggest that generally minimum wages reduce inequality in earnings (e.g. Rubery, 2003; Manning, 2003), while results of other studies suggest that effects of minimum wage are higher in sectors of low-wage (e.g. Di Nardo et al.1996; Lee, 1999; Butcher et al., 2012). Dickens et al. (1994, p. 28) find that minimum wages “have compressed the distribution of earnings and probably raised employment”. The growth of minimum wage may have contradictory effects on income inequality. On the one hand, “people at the bottom of the distribution” achieve higher earnings; on the other hand, it can lead to people “being excluded from employment” (Garnero et al., 2015, p. 116-117). Minimum wage policy aims are to increase the earnings of low-paid workers and guarantee living standard to their families, reduce inequality (Xing, & Xu, 2016, p. 2), and protection of workers in low-wage sectors through “a combination of collective agreements and the statutory minimum wages” (International Labour Organization, p. 15). Some countries apply minimum wage uniform policy across the country, and others for different regions, industries, and for employment according to the age, gender and education (Rani et al., 2013; Xing, & Xu, 2016). As one of the proposal to reduce inequality, Atkinson (2015) said that a national pay policy, in addition to a minimum wage should be introduced rules for determining wages above the minimum through arrangements within the Social-Economic Council.

According to Anić and Vuksanović (2019, p. 73), Serbia has among the lowest minimum wage per hour, expressed both in current euros and euros in the same purchasing power compared to European countries. However, the analysis of minimum and median and minimum and average wages ratios gives a different picture. The ratio of minimum and average gross wages in Serbia compared to other countries is relatively high and amounts to almost 50%. Minimum and median gross wages ratio is 63% in the first half of 2019. Compared to OECD countries, this ratio is among the highest.

Researchers of regional perspectives, in recent decades, „have led to academic and policy debates on the state of regional economies“ globally, primarily focused “on ideas of regional aspects of economic and institutional forms, inequality and the spatiality of power” (Donald & Gray, 2018, p. 297). Regardless of the fact that there is no generally accepted and consistent definition of regional disproportions (disparities), it can be said that regional disproportions are differences in socio-economic development between regions, which arise as a result of some inequalities (Tvrdon & Skokan, 2011). In relation to regional differences, regional disproportions are a broader term because they cover not only the existence of unbalances between individual regions, “but also the convergence and polarization of regions” (Ibid, p.2). Although there is no universal synthetic indicator for measuring regional

disproportions within the EU member states and candidate countries, on the basis of a comparative analysis of individual socio-economic indicators can be considered that Serbia marking perhaps the greatest regional disproportions, both among Balkan neighbors and all over Europe (Vukmirović, 2013, p. 39, Manić et al., 2017). The spatial aspect of development is almost completely ignored in our public policies (Molnar & Manić, 2018, p. 8). In terms of institutions, regional development is now „down“ to the level of responsibility of the minister without portfolio (Ibid). The level of economic development, regional characteristics and opportunities in the labor market lead to significant differences in wages by Serbian regions. In april 2019, the average level of wages in the region of Šumadija and Western Serbia amounted to 69.13% of the average wage level of employees in the Belgrade region.

In the extensive literature on disproportions in regional labor markets, two main strategic approaches have been applied mainly to explain differences in unemployment rates and other aspects of the labor market: theoretical (based on abstract economic models) or empirically (based on indications taken from data) (Arandarenko, 2006, p. 10).

## Research Methodology

“When defining methodology of research, it is important to determine indicators which will provide all relevant aspects pertaining to the problem“ (Stanković, 2016, p. 592) of regional disproportion in the labour market. The first group of indicators relate to employment in the labour market. The second group of indicators relate to workers' wages in the labour market.

The subject of research are the regional disproportions in the labor market in Serbia. The purpose of this research is to: 1) identify Serbian low-paid industrial sectors, as well as 2) examine regional differences in wages of workers. In order to achieve these goals, official data of the Statistical Office of the Republic of Serbia on employment and wage distribution by sector of activity, were used.

To realize the first purpose of this research we followed the methodology which was first applied by Nestić et al. (2018) to identify low - wage sectors and regions in Croatia, and then, Majchrowski & Strawiński (2019) to identify low - wage regions in Poland. Nestić et al. (2018, p. 1985) defined criteria for the selection of low-paid industrial sectors: minimum wage in that sector receive more than 8% workers; the total number of workers for minimum wage in this sector need to be at least 1%; the proportion of minimum wage to the sector median wage must be higher than 60%, and to the sector average wage must be higher than 50%. Due to the unavailability of data, the third criterion which relates to median earnings was not applied.

Starting from second research purpose of research, hypothesis was tested:

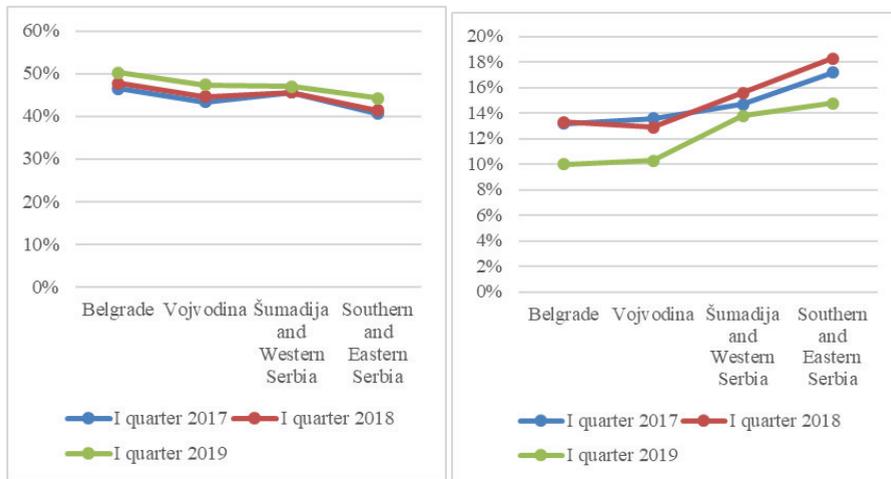
$H_1$ : There is a statistically significant difference in wages of workers in Belgrade region and wages of workers in region of Vojvodina, Šumadija and Western Serbia, and Southern and Eastern Serbia.

In accordance with defined hypothesis  $H_1$  Paired-Sample T Test was used. Statistical package SPSS IBM Statistics Version 17 was used for data processing.

## Labor market in Serbia

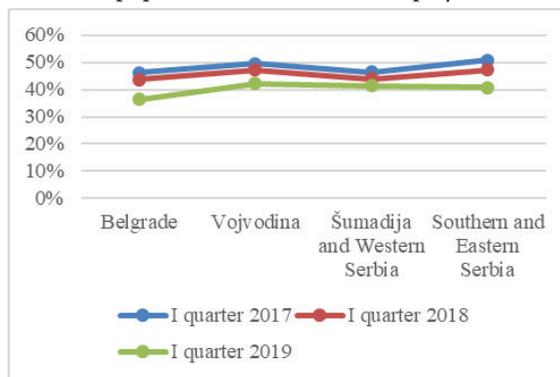
In the population structure by work status (Figure 1), in the observed period (I quarter, 2017 - I quarter, 2019), regions have different distribution. The highest employment rates of the working-age population (15 and over) were recorded in the Belgrade region, while the lowest in the region of South and East Serbia. Otherwise, employment rates in the Belgrade region have increased by about 6% over the whole observed period compared to the region of South and Eastern Serbia. Unemployment rates are higher in the Southern and Eastern Serbia and the Šumadija and Western Serbia regions, compared to the unemployment rates in the Belgrade and Šumadija and Western Serbia regions. The inactivity rates of the working-age population are lower in the Belgrade and Šumadija and Western Serbia regions, compared to the inactivity rates in the Vojvodina and Southern and Eastern Serbia regions.

Figure 1. Main labor market indicators by regions in Serbia, I quarter: 2017, 2018, 2019 (in %)



a) Employment rate of population

b) Unemployment rate of population



c) Inactivity of population

Source: Statistical Office of the Republic of Serbia, Labour Force Survey in Serbia (communications), I quarter: 2017, 2018, 2019

As we can see, according to the Labor Force Survey, significant changes have been made in the labor market of Serbia. In the observed period there were an increase in employment and a decrease in unemployment, as well as a decrease in the inactivity rate in all regions. However, regional disparities remain high.

## Identifying low-paid industrial sectors and wage dynamics

To identify low-paid industrial sectors the methodology applied by Nestić et al. (2018) was followed. In accordance with the proposed methodology, the first step was to examine the share of employees with low wages by sectors, and industrial sectors in which less than 8% of workers achieve low wages were eliminated. In the next step, it was checked whether employees in these sectors make up at least 1% of the total number of employees with low wages, and based on that sectors in which employees are at low wage level, but their number is less than proposed level were eliminated. Then, it was checked whether minimum wage of the sector accounts for more than 50% of average earnings in the sector, so as to excluded sectors where in some areas of employment, the employees have low wages, but at the level of the whole sector average wages are high.

Based on the applied methodology 7 low-paid industrial sectors in the Republic of Serbia, or sectors in which wages of employees are a little bit higher than minimum wage were identified and there are: manufacture of clothing, retail trade, expect of motor vehicles the activity of preparing and serving food and drinks, security and investigation activities, services to buildings (cleaning etc.), repair of computers and items for personal use, and other personal service activities (Table 1). The share of low-paid workers across all industrial sectors is 20.94%. In the sector manufacture of clothing the earning realized by employees makes 71.14% of the average wage sector; retail trade, expect of motor vehicles 82.32%; in the sector the activity of preparing and serving food and drinks 91.54%; security and investigation activities 78.75%; services to buildings (cleaning etc.) 75.24%; repair of computers and items for personal use 78.19%; and in the sector other personal service activities 77.98% of the average wage.

Table 1. Low-paid sectors in Serbia (I quarter, 2019)

Sector	Share of low-wage workers in the sector	Share of low-wage workers in total number of low-wage workers	Low to average wage in net terms (in april, 2019)
Manufacture of clothing	8.19%	1.79%	71.14%
Retail trade, expect of motor vehicles	59.09%	44.76%	82.32%
The activity of preparing and serving food and drinks	80.20%	3.14%	91.54%
Security and investigation activities	27.95%	6.54%	78.75%
Services to buildings (cleaning etc.)	16.93%	3.96%	75.24%
Repair of computers and items for personal use	19.01%	1.76%	78.19%
Other personal service activities	51.18%	1.03%	77.98%
Serbia – all sectors	20.94%	100%	64.17%

Source: Authors' calculation based on data of the Statistical Office of the Republic of Serbia

Minimum wage is legally prescribed amount of money that can be paid to the employee for his work, after work during a certain period. Minimum net salary in Serbia in April 2019 amounted to 155.30 RSD per hour of work, that is 27.332,80 RSD per month. In April 2019, minimum monthly net wage was recorded in the sector the activity of preparing and serving food and drinks, and amounted to 31.242 RSD, which is about 14.3% higher than minimum net wage and makes a little bit more than 91% of the average wage sector. Remaining sectors where wages of employees are about minimum wages are: other personal service activities (32.445 RSD), repair of computers and items for personal use (32.531 RSD), manufacture of clothing (35.009 RSD), services to buildings (cleaning etc.) (37.212 RSD), retail trade, except of motor vehicles (38.060 RSD), and security and investigation activities (38.947 RSD). This means that these sectors are most affected by policy of minimum wages, particularly sectors: the activity of preparing and serving food and drinks, in which the share of employed with low income in the sector for the whole reference period is greater than 80%, and sectors retail trade, except of motor vehicles, and other personal service activities in which the share of employed with low income is greater than 50%. Low-paid sectors and estimation of average net wage are presented in Table 2.

Based on the data presented in Table 2 may also be noted that earnings in identified low-paid industrial sectors during 2017, 2018 and 2019 were a little bit above the level of minimum wage and below the average wage at the state level. During the period, there was an increase for workers' wages in low-paid industrial sectors on average of about 8%, while minimum wage increased by about 31%. In the period 2017 - 2018 there was a reduction in average wages by 1.04%, while in the period from 2018 - 2019 the average wage increased by 11.25%.

*Table 2. Low-paid sectors and estimation of average net wage*

Sector	Average net wage (in RSD)			Change in average	
	April			2017	2018
	2017	2018	2019	- 2018	- 2019
Manufacture of clothing	29.113	31.592	35.009	8.52	10.82
Retail trade, except of motor vehicles	31.031	35.366	38.060	13.97	7.62
The activity of preparing and serving food and drinks	26.417	28.953	31.242	9.60	7.91
Security and investigation activities	31.062	35.167	38.947	13.22	10.75
Services to buildings (cleaning etc.)	36.679	34.567	37.212	-11.13	10.77
Repair of computers and items for personal use	25.917	30.301	32.531	16.92	7.36
Other personal service activities	28.125	30.075	32.445	6.93	7.88
Serbia – all sectors	49.635	49.117	54.645	-1.04	11.25

*Source: Authors' calculation based on data of the Statistical Office of the Republic of Serbia*

## Examining regional differences in workers' wages

Table 3 shows that there are significant differences in outcomes that realized workers in Serbian regions, and wages of workers in Belgrade region are higher than realized wages by employees in other regions. On regional basis, employees in the region of Belgrade and

the region of Vojvodina, achieve higher wages in relation to wages in the region of Šumadija and Western Serbia and the South and East Serbia. Employees in the region of Šumadija and Western Serbia achieved the smallest wage.

Table 3: Average gross wage by regions in april, 2017, 2018 and 2019 (in RSD)

Year	Region			
	Vojvodina	Belgrade	Šumadija and Western Serbia	Southern and Eastern Serbia
2017	67.344	84.840	56.346	59.001
2018	64.408	82.755	58.977	60.325
2019	71.167	93.389	64.556	66.541

Source: Authors' calculation based on data of the Statistical Office of the Republic of Serbia

Hypothesis  $H_1$  is tested by applying Paired-Sample T Test. The result (Table 4) indicates that the difference in workers' wages in Belgrade region and region of Vojvodina is statistically significant. Realized value of the test statistic is 13.308, while the realized level of significance 0.006. The difference in workers' wages in Belgrade region and region of Šumadija and Western Serbia is statistically significant. Realized value of the test statistic is 16.571, and the realized level of significance is 0.004. The difference in wages of workers in Belgrade region and region of Southern and Eastern Serbia is statistically significant. Realized value of the test statistic is 18.733, and the realized level of significance is 0.003. These results decidedly indicate significant disproportion in workers' wages in favour of workers in Belgrade region.

Table 4. Paired-Sample T Test results

Category	Paired Differences			t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean			
Belgrade - Vojvodina	19355	2519.091	1454.398	13.308	2	0.006
Belgrade – Šumadija and Western Serbia	27035	2825.733	1631.438	16.571	2	0.004
Belgrade – Southern and Eastern Serbia	25039	2315.098	1336.623	18.733	2	0.003

Source: Authors' calculation in SPSS

Thus, it can be concluded that the hypothesis  $H_1$ : there is a statistically significant difference between wages of workers in Belgrade region and wages of workers in region of Vojvodina, Šumadija and Western Serbia, and Southern and Eastern Serbia, is confirmed.

## Conclusion

The existing regionalization of Serbia has so far failed to deliver the expected results, both in reducing regional disproportion in the labor market and in intensifying the development of less developed parts of the country. Therefore, the issue of appropriate regionalization in Serbia remains open and seems crucial to its future economic and social development (Molnar & Manić, 2018).

The unemployment problem in regions of Serbia is inherited from the pre-transition period and deepened by the transition process and global recession waves. During the observed period (I quarter: 2017 - 2019), unemployment decreased in all regions, but remained high. At the heart of economic policy and social protection should be job creation and all activities that will lead to employment.

Starting from the fact that the level of wages and their dynamics are important for the economic development and social stability of a country, and its regions, the aim of this research was to: 1) identify Serbian low-paid industrial sectors, as well as 2) examine regional differences in wages of workers. Based on the methodology applied over the official data on employment and earnings by the sector of activity of the Statistical Office of the Republic of Serbia, 7 low-paid industrial sectors in the Republic of Serbia were identified, namely: manufacture of clothing, retail trade, except of motor vehicles, the activity of preparing and serving food and drinks, security and investigation activities, services to buildings (cleaning etc.), repair of computers and items for personal use, and other personal service activities. This means that these sectors are most affected by policy of minimum wages, particularly sectors of the activity of preparing and serving food and drinks, where the share of employees with low wages in the sector for the whole observed period was greater than 80% and sectors retail trade, except of motor vehicles, and other personal service activities in which the share of low income was greater than 50%.

On the regional level, employees in region of Vojvodina and Belgrade achieve higher wages in relation to wages in region of Šumadija and Western Serbia and region of Southern and Eastern Serbia. The smallest wages earned by employees in region of Šumadija and Western Serbia, and the largest in Belgrade region. Namely, results of Paired-Sample T Test point to a significant disproportion of wages in Belgrade region and employees in other regions of the Republic of Serbia, based on which the hypothesis of the existence of significant statistical differences between workers' wages in Belgrade and workers' wages in region of Vojvodina, Šumadija and Western Serbia and Southern and Eastern Serbia was confirmed.

The growing regional inequality brings many economic, social and political risks (Arandarenko, 2006). The necessity of giving more space address to issues of regional disproportions by economic policy makers is one of the key implications of this research. It is necessary to define a new policy of balanced regional development that would reduce the regional disproportions, while enhancing their individual development and recognizable characteristics.

Identification of low-paid industrial sectors and regional differences in workers' wages can ease the decision making process to increase minimum wage, by continuous monitoring of these sectors and regions, both in earnings and in employment. In regard to this, giving special attention to representatives of social partners, from industrial sectors which are recognized in this paper as low-paid, in minimum wage negotiations is, also, a practical implication of this research.

Disadvantages of this research mainly reflected in the limitation of data only on average wages by industrial sectors, and by regions, while data of median wages (received by the largest number of employees in Serbia, and statistically, this is the value of which there is an equal number of smaller and larger amounts of paid wages) are not available.

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ORIGINAL SCIENTIFIC ARTICLE  
doi:10.5937/ekonomika2001037A  
Received: September, 25. 2019.  
Accepted: December, 21. 2019.

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## COST MANAGEMENT EFFICIENCY FACTORS OF ENTERPRISES IN SERBIA

### Abstract

*Increased complexity of business operations, fast market and technological changes and global competition demand a quick and adequate answer from enterprises' management structures. Reliable and efficient cost accounting system provides a secure basis for making not only short-term, but strategic managements' decisions, as well. Assumptions for an increase of cost management efficiency are better interconnection between financial and management accounting, better control of cost types and cost centers, more reliable information for an alternative business decision making, support to investments control and strategic planning, impact on the motivation of employees and other. Seizing and keeping of enterprise's competitive position is no longer possible without active cost management policy. Research in this paper has shown that enterprises from Serbia's economic sector can significantly improve its business performance and competitiveness through advancement of cost accounting system.*

**Key words:** cost management, enterprise, efficiency factors, competitiveness, Serbia

**JEL classification:** D24, D25, L22, L23

## ФАКТОРИ ЕФИКАСНОСТИ УПРАВЉАЊА ТРОШКОВИМА ПРЕДУЗЕЋА У СРБИЈИ

### Апстракт

*Нарасла сложеност пословања, брзе промене и технолошке промене и глобална конкуренција захтевају брз и адекватан одговор управљачких структура предузећа. Поуздан и ефикасан систем обрачуна трошкова пружа сигурну основу за доношење не само крајкорочних, већ и дугорочних одлука менаџмента. Претпоставке за повећање ефикасности управљања трошковима су боља повезаност финансијског и управљачког рачуноводства,*

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*боља контрола по врстама трошкова и местима настанка, поузданице информације за алтернативно пословно одлучивање, подршка контроли инвестиција и стратешком планирању, утицај на мотивацију запослених и др. Освајање и одржавање конкурентске позиције предузећа више није могуће без активне политике управљања трошковима. Истраживање у овом раду је показало да предузећа из привредног сектора Србије могу значајно побољшати своје пословне перформансе и конкурентности унапређењем система обрачуна трошкова.*

**Кључне речи:** *управљање трошковима, предузеће, фактори ефикасности, конкурентности, Србија*

## Introduction

Two basic strategies for realization of competitive advantages are cost leading strategy and differentiation strategy. The goal of cost leading strategy is upbuilding and keeping of competitive advantage on market thanks to lower costs in comparison with competition. Costs are a factor on which enterprises can influence to a large degree, and thus they represent a starting point for realization of positive result of business, i. e. profit. Lower costs enable forming of lower selling prices in comparison with competition and, on that basis, realization of higher profit. For a successful implementation of this strategy, organizational structure with a high degree of specialization and standardization, as well as centralization and functional grouping of units, is necessary.

In modern business, management is obsessed with business-financial efficiency and effectiveness of enterprises' activities, so it is because of that directed to accounting as the main source of information for decision making. In Serbia, application of modern cost accounting methods is still in its infancy, but some experience, methods and practice are being taken over from enterprises from developed countries. Obstacles for a faster adoption of modern methods are often domestic regulations, rules on capital market, tax regulations, inertness of accounting profession and insufficient significance which is given to these issues by enterprises' management. Because of mentioned, cost accounting concept is often set in order to be appropriate for classical accounting principles and tax regulations, and not to objectives of cost accounting which are considerably wider than only providing cost price for the needs of balancing of output inventories.

Research in this paper has a goal to determine which factors have the biggest impact on cost management efficiency in enterprises viewed from managers' corner, on one hand, and from accounting workers, on the other. Through research, we want to identify the largest limitations and problems in application of modern cost accounting methods and, on the basis of obtained results, we want to recommend possible solutions and improvements in this area. The significance of the research is particularly important taking into account the fact that the application of international standards in areas of accounting and financial reporting in Serbia has started just in 2004.

## Cost management concept

Increased complexity of business operations caused by fast technological and market changes and diversification of business-financial activities of enterprises caused growing application of accounting information in enterprises. Demands to increase productivity and sturdy cost control caused by intensified competition, comprehension of vital role of planning and control in managing, decentralization of management and establishment of flexible organizational structure of enterprises lead in the same direction.

Enterprises operate in turbulent surrounding, with sudden and deep changes with insecure and uncertain perspective. Competitors on today's market know each other better, and methods of their functioning are becoming more and more equalized. Flexibility, innovativeness and continuous improvement of business operations are elements which are becoming a component of strategic approach to competitive advantage creation. Success in such surrounding achieve only those enterprises which are faster in adapting to new changes on market. Modern organizations provide enterprises' management a more efficient usage of existing capacities and rationalization of business operations' expenses.

Contemporary information systems enable adequate monitoring of processes' costs, and information about their occurrence and trends enable management to timely react and make business decisions. Rationalization of costs enables minimization of costs along with realization of desired result, which, except for business and financial indicators, includes and subjective feeling of customer satisfaction. Cost management is a special way of enterprise and business operations management which the greatest importance, in organization's goals achievement, commits to costs optimization.

Dynamic changes of external surrounding impose to enterprises a strategic way of thinking. Changes create a problem, but they can become chances if enterprise's management is aware of its position, its movement direction and the consequences of wrong strategy implementation. Running of the company has to be information supported and strategically oriented. Capability to obtain and use resources in a way to utilize chances from surrounding and avoid its threats is of central importance for organization's prosperity (Wilson & Gilligan, 2003).

Cost management contributes to global competitiveness of enterprises and to continuous improvement of business operations (Agrawal, et al, 1998). Cost management is also defined as philosophy, attitude (mission) and a series of techniques whose goal is to create a greater value with lower costs (Hilton, et al, 2000). Cost management represents a range of methods that can be used on an individual level in order to support certain decision or organization's management as a whole (Škrtić, 2005). According to Groth & Kinney (1994), the purpose of strategic cost management is production of continuous information cycle on activities in short and long term, in order to increase value in the eyes of customers and reduce costs.

Expenses have suffered, in the last decades, significant changes in its structure and in its general role, as well (Malinić et al, 2018). Organization's profit and its competitiveness on market depend on management's capability to recognize which are the key factors that provide superior performance – better quality, lower costs, higher quality service (Micić, Arsić, 2010).

Cost leading strategy implies that enterprise function efficiently whereby costs have a central role. Lower costs create possibility to form lower selling prices in comparison

with competition and, on that basis, realization of higher profits. Cost leading strategy requires organizational structure with a high degree of specialization, formalization, standardization, centralization and a functional grouping of units. On the other hand, differentiation strategy requires an enterprise to be flexible, innovative and to have a segmented market approach (Micić, Arsić, 2010).

Cost accounting implies different techniques and approaches when valuating inventories, determining and monitoring costs by their location, transferring from auxiliary to the main cost centers, as well as linkage of costs with their drivers – products and services (Todorović, 2009). Traditional cost accounting models became unreliable for cost management and business decisions making, so enterprises are forced to apply modern cost accounting models (Antić, Novičević, 2011).

Traditional techniques of cost accounting (although such techniques are still widely used), are a subject of numerous critiques because of its inflexibility and impossibility to keep up with a change of business surrounding. Traditional accounting techniques with full costs, whereby general costs are “absorbed” in production by using some basis (for example, machine’s work hours or direct work), were developed in times when direct work, raw materials and machine work were the most important inputs in production process (Aničić, Popović, 2015).

In order to cost accounting be efficient, it has to be tailored according to unique nature of business process in enterprise. There is no cost accounting system which will be superior in all possible situations. It can be said that economy and efficiency of cost accounting are determined by enterprise’s business process nature and types of information that its management needs (Milićević, 2000).

Cost accounting supplies enterprise’s management with necessary tools for the needs of planning and control of business activities, improvement of quality and efficiency of functioning and making decisions, both routine and strategic ones. Collection, presentation and analysis of information that refer to costs and outputs of an enterprise should enable management to successfully execute numerous tasks that are put in front of it (Hammer et al, 1994).

In future, a growing usage of management accounting means can be expected. Some of them are: budgeting, standard costs accounting system, responsibility accounting, contribution analysis and differential approach in creation of relevant data for the needs of making individual decisions. These tools, for enterprise management, have a much bigger significance in comparison with double bookkeeping and preparation of conventional financial statements (Hornngren, et al, 1994).

Numerous authors are in their works pointed to information limitations of traditional cost accounting systems. Cooper & Kaplan (1988), emphasize that decisions must be based on differential or/and incremental costs (and revenues) whose constructions vary in accordance with the nature of problem which is being solved. Traditional cost accounting systems are primarily created to provide information for the needs of external financial reporting in times when production technologies were, before all, labor-intensive (Kaplan, 1988).

In modern conditions of functioning, costs represent a measure of quality because many things and processes in enterprise depend on them. Integrated cost management in modern conditions of functioning where competition fight happens not only among enterprises, but among value chains as well, implies combined and mutual usage of more

modern concepts, accounting systems, methods and techniques for cost management in order to monitor, control, analyze and inform on costs within the value chain (Malinić, Jovanović, 2011). The key of integrated cost management is hidden in synergy effect, i. e. achievement that the whole is bigger than the sum of individual parts.

For a successful application of any cost management model in an enterprise, it is necessary to accomplish that all organizational units in it work as a team, starting from top management, over finances, accounting, production, marketing and other. The implementation of cost management model implies objectives definition, identification of activities that result in added value, knowing financial and nonfinancial indicators of functioning. Thereby, every organizational part has to carefully analyze its activities and costs, as well as the time in which the application will be executed.

Table 1: Strategic role of costs

	Differentiation strategy	Cost leading strategy
Standard costs role in assessment of performances	Not very significant	Very significant
Concepts' significance (such as flexible planning) for production costs control	Moderate to low	High to very high
Perception (acceptance) of plans realization significance	Moderate to low	High to very high
Marketing costs' analysis significance	Critical for success	Often not formalized
Product cost significance (as an input in making decision on prices)	Low	High
Competitors' costs analysis significance	Low	High

Source: Shank, J., Govindarajan, V. (1993) *Strategic Cost Management: The New Tool for Competitive Advantage*, Free Press, New York

## Basic features of cost accounting in enterprises in Serbia

In countries with developed market economy, merciless competition, with clearly defined positions of agents, i. e. owners and managers which among themselves agree on system of authority and responsibility, is dominant. In such business ambient management is necessarily obsessed with business-financial efficiency and effectiveness of enterprise, so it is hence directed to accounting as the main source of information for making decisions. In Serbia, such ambient is still in its infancy and cost accounting is being developed by models from developed countries.

In modern conditions of functioning, flexible financial strategy which will provide adaption of enterprise to changes in dynamic surrounding, with minimal costs and maintenance of high competitiveness, is necessary. Flexibility of an enterprise is its capability to quickly and with minimal costs avoid threats and utilize opportunities, and managing of financial flexibility is in the function of maximization of enterprise's value. Efficiency of investment in a certain project is generally assessed by two groups of methods: static and dynamic methods (Begović, et al.).

What differs good from weak business strategy is managers' capability to foresee movements that enable creation of sustainable competitive advantage with which

enterprise has good perspectives to achieve above-average profitability in chosen frames for functioning. Because of that, a particular attention must be paid to important aspects of products and services competitive advantage creation. Adoption and application of international standards of quality is especially required for small enterprises which are subcontractors or collaborators of big systems. Also, there are numerous specificities depending on business area in which enterprise is functioning, such as industry production, construction industry, trade and similar.

Low costs strategy is an endeavor of enterprise to minimize both total and costs per product and service unit. Selling price is formed on branch level and enterprise accepts it as a given value, so profit realization is dependent on the height of costs. Enterprise that has lower costs in comparison with competition, realizes higher profits and enables possibilities for investing and keeping of competitive advantage. In addition, lowering of costs must not lead to lowering of product's perceived quality.

Preconditions for successful development of an enterprise and application of international standards are stable conditions of functioning, low inflation, mild changes in currencies' exchange rates, existence of active assets and liabilities markets, development of securities market and other. As far as Serbia is concerned, problems with application of international standards are high inflation in transition period, instability of exchange rates, often changes in legislative, dominant application of purchase value model (neglecting of fair value model), undeveloped securities market, insufficient significance that is given to standards application which is revealed in the lack of literature that is dealing with them, insufficient representativeness in high schooling, non-existence of trainings and incentives by the state.

Domestic law rules, achieved level of economic development, prescribed or non-prescribed form of accounting and financial statements, rules on capital market, tax regulations and other also affect a delayed and slow process of implementation and harmonization with international standards (Rodić, et al, 2011). Some other problems are complexity of integration of the standards into domestic regulations, impact of domestic tax regulations, often changes and amendments of standards and problems with their interpretation, slow or minimal changes of culture in certain countries and other.

Application of IFRS (International Financial Reporting Standards) is obligatory in Serbia since 2004, and for banks and other financial organizations since 2003. Obligatory application of these standards is introduced with an aim to harmonize our accounting system with generally accepted achievements in this area. However, in many small and even medium enterprises the functions of management and ownership are not separated, i. e. owner is oftentimes a manager of an enterprise, at the same time. Such conditions do not create favourable climate for management accounting development, nor modern cost accounting concepts. These enterprises, as a rule, rely on traditional cost accounting methods, so all defects of those methods reflect on their results. That intensifies problems related to illiquidity, as well as shutting down of large number of small enterprises, especially having in mind stronger and stronger competition in all areas of business.

On the other hand, inertness, i. e. unwillingness of accounting profession to adopt and apply modern concepts in monitoring and accounting of costs is also present. Costs concept is often set in order to be appropriate for classical accounting principles and tax regulations, and not to objectives of cost accounting which are considerably wider than only providing cost price for the needs of balancing of output inventories. In Serbia,

according to current legal regulations, there is no obligation of certification of accounting staff, which is a big step back in the development of accounting profession as a whole.

Important shift in profession development was made by education and certification of accountants and auditors in accordance with programs of renowned world's accounting institutions. In Serbia it is necessary to raise professional culture and by upgrading the knowledge of managers and accountants, among which has to exist mutual trust which is, in a modern business world, an important precondition for successful enterprise management.

Legal entities and entrepreneurs, which are in production business in Serbia, are obliged to, in their bookkeeping, have class 9 – Accounting of costs and outputs which deals with (Petrović, et al, 2015): distribution of costs onto cost centers and outputs, connection of revenues with corresponding outputs, as well as with determination of business result on the level of business units – profit centers and determination of business result for whole enterprise by using sold outputs cost method. Accounting of costs and outputs provides data on:

1. Cost price of products and services that enterprise produces and sells;
2. Changes in inventories' value (final in comparison with initial);
3. Amounts of deviations from predicted (normal) functioning conditions in consumption, employment and efficiency;
4. Business results on business units level and on the level of an enterprise as a whole.

Very significant area related to costs is managing of projects' costs for which project directors, in cooperation with accounting and financial experts, are in charge of. During project's realization, different types of costs appear, some of which are direct (can be easily linked with making of product or providing of service on project), and others are indirectly linked with project's implementation, and project directors have a very small impact on their height. Different methods and techniques for costs assessment are being used, such as (Schwalbe, 2015): analogous estimate, bottom-up assessment, parametric modeling of resources cost rates, suppliers' offers and reserves analysis, software for project management.

The most common reasons for wrong estimates of project's costs are (De Marco, 1982): estimates are conducted quickly, lack of experience in conducting estimates, underestimation of certain types of costs, endeavor to obtain a big contract or internal means. Considering the fact that many projects are not conducted in accordance with plans, new or modified estimates of costs are often necessary in order to enact alternative solutions. Problems are even more complex in organizations which simultaneously realize more projects or investments as a group of interconnected activities united in a portfolio.

Having in mind the complexity of business environment in which enterprises function, it is obvious that additional attention has to be committed to the questions of choosing, realization and estimate of investment projects. That primarily refers to the project's financial construction part because of interest rates' height, high accompanying crediting expenses, currency clauses in contracts, mortgage support of credits and other. On the other hand, enterprises do not have enough of own (internal) funds to finance investment projects, so they are forced to accept unfavorable conditions under which are borrowed funds are obtained. Many significant costs of projects are underestimated or even overlooked, which later leads to different financial and business problems.

## Methodology

Research for the needs of this paper was conducted in the period from December 2018 to March 2019 on the sample of 48 examinees, half of which is from big enterprises, and the other half is from small and medium enterprises. Division on small and medium, on one, and big enterprises, on the other hand, was carried out in accordance with current Law on Accounting of the Republic of Serbia. Examinees structure in sample was made of managers, on one, and people employed on the jobs of accounting and finances, on the other hand. All examinees have a college degree (faculties) and work experience longer than 3 years on jobs of accounting and finances.

Examinees assessed impact of the following factors on cost management efficiency in enterprises in Serbia: competence of accounting staff, management's comprehension, competition's influence and legal and internal accounting regulation. The answers are statistically processed in program SPSS, tested by Kramer's test, and significance of statistical differences of answers of the two groups of examinees are tested by Hi square test.

From Table 2 it can be seen that the largest number of examinees from big enterprises (15) work on the function of manager, while the largest number of examinees from small and medium enterprises (13) work on the jobs of accounting and finances.

**Table 2:** Sample's structure considering the type of job on which examinee works on and the size of the enterprise (Crosstabulation)

Type of job	Enterprise size	
	Big	Small and medium
Accounting and finances	9	13
Manager	15	11
Total	24	24

Source: Author's research

## Discussion and the results of the research

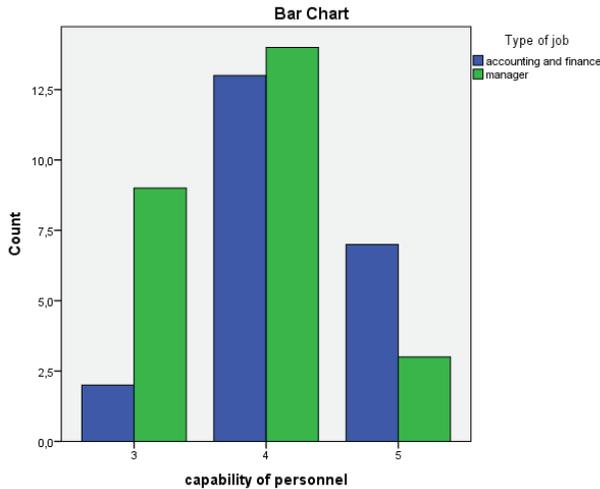
From Table 3 it can be noticed that the measures of mean averages of factors' assessments (Competence of accounting staff, Management's comprehension, Competition's influence and Legal and internal accounting regulation) are higher in comparison with theoretical average (AS=3).

**Table 3:** Factors expressiveness

Factors	Theor. min	Theor. max	Empirical min	Emp. max	AS	SD
Competence of accounting staff	1	5	3.00	5.00	3.979	0.668
Management's comprehension	1	5	2.00	5.00	3.979	0.934
Competition's influence	1	5	2.00	5.00	3.583	0.919
Legal and internal accounting regulation	1	5	2.00	5.00	3.458	1.031

Source: Author's research

The largest number of people employed on jobs of accounting and finances (13) and on management positions (14) assess the factor Competence of accounting staff with a mark 4 (Table 4 and Graph 1).



**Graph 1:** Distribution of examiners' answers in assessment of the factor Competence of accounting staff considering the type of job

**Table 4:** Differences between examiners in assessment of the factor Competence of accounting staff considering the type of job ( $X^2$  test)

	Value	df	Statistical significance
Pearson's	5.799	2	0.055
Kramer's V	0.348		
Contingency coefficient C	0.328		

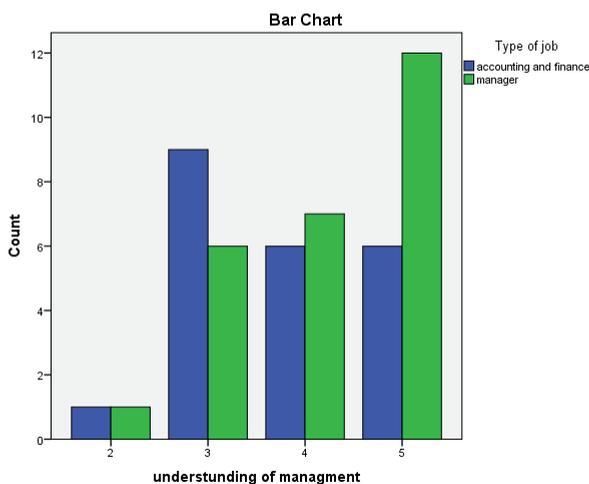
Statistically significant differences ( $X^2=5.799$ ,  $p>0.05$ ) in assessment of the factor Competence of accounting staff considering the type of job done by examinee were not determined (Table 4). Kramer's indicator is  $V=0.348$ , which indicates medium interconnection between variables. Type of job does not affect differences in competence of accounting staff, considering that for all variables  $Sig>0.05$ , along with existence of medium interconnection between variables.

Because of going through the transition period with delay in comparison with other countries, Serbia was also late with the introduction of international financial reporting standards as a whole, and thus in the area of application of modern concepts from management accounting domain. Competence of people who do accounting jobs in Serbia is not legally defined which left the space for incompetent people to do these jobs, especially in small enterprises and accounting agencies. Changes of legal and by-law regulations and mismatch with professional regulative, embodied in IFRS, are present. All that has a negative effect on possibilities to apply modern cost accounting in enterprises. In this research, managers have also gave a big importance to competence of accounting

staff and their impact on cost management efficiency. Positive facts are increasing in opening of the economy and endeavor to go out to developed international markets, which causes appropriate personnel solutions, both in management and in accounting and cost accounting part. It particularly refers to small and medium enterprises sector, since there still exists mixture of ownership and management.

The largest number of employed on the jobs of accounting and finances (9) assess with an average mark significance of factor Comprehension of management, while the largest number of employed on management jobs (12) assess the same factor with the highest mark (Table 5 and Graph 2).

**Graph 2:** *Distribution of examinees' answers in assessment of factor Comprehension of management considering the type of job*



**Table 5:** *Differences between examinees in assessment of the factor Comprehension of management considering the type of job ( $X^2$  test)*

	Value	df	Statistical significance
Pearson's	2.360	3	0.501
Kramer's V	0.222		
Contingency coefficient C	0.216		

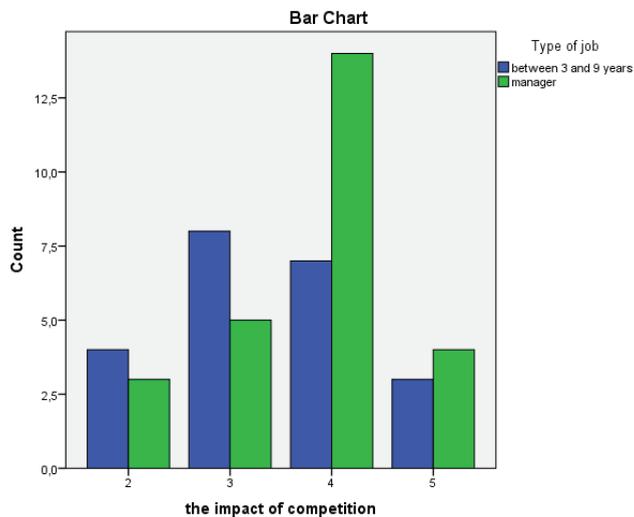
Results show that statistically significant differences ( $X^2=2.360$ ,  $p>0.05$ ) in assessment of the factor Comprehension of management considering the type of job that is done by examinee (Table 5). Kramer's indicator is  $V=0.222$ , which indicates that small interconnection between variables. The type of job does not affect differences in Comprehension of management, considering that for all variables  $Sig>0.05$ , along with existence of small interconnection between variables.

Employed on management jobs gave a bigger importance to management's impact on cost management efficiency in comparison with people employed on accounting jobs. For overall enterprise's result, responsibility is on management, hence its role is particularly important in the area of cost accounting, too. Management decides, among other things, on

accounting policy which enterprise applies in accordance with professional and legal regulations. As far as organization of cost accounting is concerned, cooperation between management and accounting is important in order for cost accounting system to provide relevant and timely information for making business decisions. Those information must be understandable to non-financial managers, too, because otherwise communicational gap between these two groups of jobs is created, with a negative impact on cost management efficiency. Because of that, constant education and knowledge improvement of managers and accountants, which are important preconditions for successful management of an enterprise and its competitiveness, are necessary.

The biggest number of employed on accounting and finances jobs (8) assess with an average mark significance of the factor The Impact of competition, while the biggest number of employed on management jobs (14) assess the same factor with the mark 4 (Table 6 i Graph 3).

**Graph 3:** Distribution of examinees' answers in assessing the factor The impact of competition considering the type of job



**Table 6:** Differences in assessment of factor The impact of competition considering the type of job ( $X^2$  test)

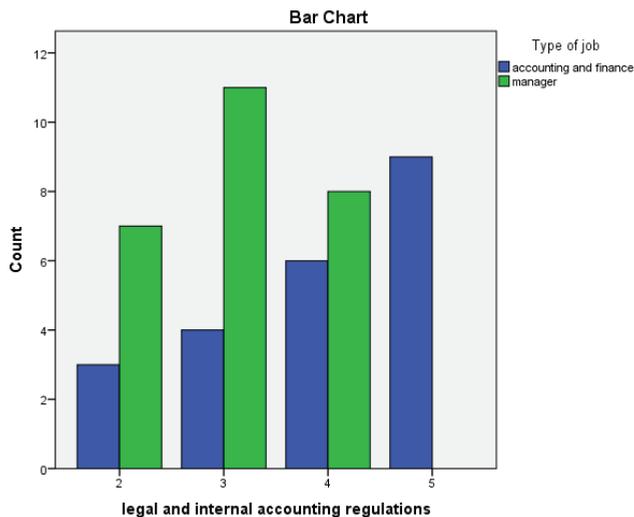
	Value	df	Statistical significance
Pirson's $X^2$	2.999	3	0.392
Kramer's V	0.250		
Contingency coefficient C	0.242		

Obtained results show that statistically significant differences ( $X^2=2.999$ ,  $p>0.05$ ) in assessment of the factor The impact of competition were not determined (Table 6). Kramer's indicator is  $V=0.250$ , which indicates small interconnection between variables. The type of job does not affect differences in the impact of competition, considering that for all variables  $Sig>0.05$ , along with existence of small interconnection between variables.

In this research, employed in accounting and finances area gave a smaller importance to the impact of competition on cost management efficiency in comparison with employed on management jobs. Reason for that is the fact that accounting worker observe competition on market significantly narrower than management, which is dealing with it on a daily basis. Competition has a dynamic character with changeable effects during time, it is consisted of both existing and potential competitors, the emergence of substitutes on market, negotiation relations with suppliers and buyers, barriers to enter into the branch of an industry and other. Enterprises are forced to adapt to price that is formed on market and on which they have very small impact. Because of that, adequate attention has to be committed to the questions of studying enterprise's market position, which will, in the long term, result in lower costs in comparison with competition, along with maintenance of quality which is demanded by consumers. The entrance of companies and strong foreign enterprises each day reinforce importance of these factors for survival and growth of domestic enterprises.

The biggest number of employed on accounting and finances jobs (9) assess with the highest mark significance of factor Legal and internal accounting regulations, while the biggest number of employed on management jobs (11) assess the same factor with an average mark (Table 7 i Graph 4).

**Graph 4:** Distribution of examinees' answers in assessment of the factor Legal and internal accounting regulations considering the type of job



**Table 7:** Differences in the assessment of the factor Legal and internal accounting regulations considering the type of job ( $X^2$  test)

	Value	df	Statistical significance
Pirson's $X^2$	<b>13.916</b>	3	<b>0.003**</b>
Kramer's V	<b>0.538</b>		
Contingency coefficient C	<b>0.474</b>		

\*\* $p < 0.01$

Obtained results show that statistically significant differences ( $X^2=13.916$ ,  $p<0.01$ ) in assessment of the factor Legal and internal accounting regulations considering the type of the job done by an examinee were determined (Table 7). Kramer's indicator is  $V=0.538$ , which indicates medium interconnection between variables. The type of examinee's job affects the differences in legal and internal accounting regulations, considering that for all variables  $Sig<0.01$ , along with existence of moderate interconnection between variables.

Examinees on management jobs gave a significantly smaller importance to the factor legal and internal accounting regulations in comparison with examinees which are employed on accounting jobs. Such outcome is a result of unrecognition of importance of legal and internal accounting regulations by the enterprise's management. Namely, current regulations have left a lot of space to domestic accounting regulations to create efficient cost accounting system and adapt it to its needs. How much will this regulations provide adequate and timely information for making business decisions depends on the quality of accounting staff. Accounting policy is created by management and accounting-financial office together, hence their relation has to be based on familiarity with the issues, and on mutual cooperation and confidence. So called communicational gap between management and accounting workers is also noticeable, especially in the small and medium enterprises sector. It is certain that current processes of foreign enterprises arrivals, mergers and acquisitions of smaller enterprises and other, will have a positive effect and raise the quality of internal accounting regulations in Serbia.

## Conclusion

Research in this paper showed that in enterprises in Serbia communicational gap between financial-accounting staff, on one hand, and management, on the other, is present. It is expressed more in small and medium enterprises sector, where ownership and management are often coupled. Those differences are visible in the answers on asked questions about the impact of certain factors on cost accounting efficiency. Employed on the management jobs gave significantly smaller importance to the factor internal accounting regulations in comparison with employed on accounting and finances jobs. Vice versa, financial-accounting staff gave smaller importance to factors the impact of competition and comprehension of management on cost accounting efficiency. Both groups of examinees equally valued factor the competence of accounting staff and its impact on cost accounting efficiency as the basis for making business decisions.

Belated introduction of international standards in Serbia had a reflection on the application of modern cost accounting methods. Besides above mentioned factors, continual education and improvement of internal accounting regulations will have, in perspective, a significant impact on modernization and an increase of cost accounting efficiency. Also, entrance of foreign enterprises on our market affects acceptance and application of positive accounting practice within domestic enterprises. The need for internalization of domestic enterprises and competitiveness' increase on foreign markets will also have a positive impact on cost accounting efficiency's improvement.

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ORIGINAL SCIENTIFIC ARTICLE  
doi:10.5937/ekonomika20010531  
Received: January, 29. 2020.  
Accepted: February, 30. 2020.

## PRODUCTIVITY OF SERBIAN MILK PRODUCERS BASED ON FADN DATA<sup>4</sup>

### Abstract

*Productivity is one of the basic economic principles needed for successful farm operations. The goal of this research is to analyze productivity of Serbian milk producers involved in FADN sample. Therefore, the research has been based on publically available FADN data and FADN methodology. Applying number of indicators authors discussed close relation between farm size and productivity. Besides, relation between productivity and economic efficiency of Serbian farms specialized in milk production is presented. The results indicated number of cows necessary to improve productivity of Serbian farms oriented towards milk production.*

**Key words:** milk production, productivity, FADN, economic efficiency

**JEL classification:** Q12, Q14, D13

## ПРОДУКТИВНОСТ РАДА ФАРМИ ЗА ПРОИЗВОДЊУ МЛЕКА У СРБИЈИ НА ОСНОВУ ФАДН ПОДАТАКА

### Апстракт

*Продуктивност је један од основних економских принципа неопходан за успешно функционисање пољопривредних газдинстава. Циљ овог истраживања је да анализира продуктивност произвођача млека у Србији који су укључени у ФАДН узорак. Због тога је истраживање базирано на јавно доступним ФАДН подацима и ФАДН методологији. Примењујући већи број показатеља аутори су анализирали блиску везу између величине газдинстава и продуктивности. Поред тога, приказана је и повезаност између продуктивности и економичности газдинстава у Србији која су специјализована за производњу млека. Добијени резултати указују на број крава који је неопходан да се унапреди продуктивност фарми усмерених на производњу млека у Србији.*

**Кључне речи:** производња млека, продуктивност, ФАДН, економичност

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<sup>4</sup> Paper is financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

## Introduction

Cattle production is the most important livestock production in Serbia, but its significance has decreased in the recent period. Having in mind changes in statistical methodology applied as of 2006, data for the previous period are not presented in this research. Anyway, it is noticeable that the total number of cattle has decreasing tendencies from 1,096,000 in 2006 to 878,000 in 2018. Besides, the number of milking cows decreased from 600,000 in 2006 to 423,000 in 2018, as well as the total beef production which also decreased in the observed period (Statistical Office of the Republic of Serbia for period from 2006 to 2018). Therefore, capacities for accommodation of cattle in Serbia are only 36% used (Radivojević, D., 2014). The reasons for such tendencies are numerous, but the most important one is variability of the market prices of outputs (milk, meat) and prices of inputs (primarily prices of animal feed) in cattle production. Besides, agricultural policy in Serbia has been changing frequently, so it is hard to predict future levels of state support. Nevertheless, changes in Serbian agricultural policy are usually favorable for livestock production. At the moment, Serbia's agricultural policy is not harmonized with Common Agricultural Policy (CAP) because there are significant differences concerning direct incentives (Božić and Papić, 2017).

Volume of milk production in Serbia remained rather stable in the long run (1,500 million liters per year), which is caused by an increase in milk production per cow. According to the official data published by the Serbian Statistical Office and authors' calculation, the milk production per cow increased by 881 liters per cow in period from 2006 to 2018. Milk production in Serbia is primarily based on family farms that are very small considering the number of heads (Table 1). Farms having less than 10 heads represent 89.94% of the total number of cattle farms.

*Table 1. Serbian farms dealing with cattle production*

Number of heads	Number of cattle farms	Structure (%)
1-2	88,457	49.90
3-9	70,977	40.04
10-19	12,121	6.84
20-29	2,914	1.64
30-49	1,701	0.96
50-99	810	0.46
>= 100	272	0.15
Total	177,252	100.00

*Source: Statistical Office of the Republic of Serbia (2013).*

To become more competitive with the EU dairy producers, Serbian farmers should increase their size and improve production technology, which is related to productivity increase. Therefore, the goal of this research is to analyse various aspects of productivity of farms directed to milk production.

## Theoretical backgrounds and literature review

Some authors enlist marketing and financing conditions as the most important ones for development of the entire livestock production (Ivanović, Jeločnik and Bekić, 2009). Similarly, problems related to financing and marketing are the most important problems of small and medium enterprises in Serbian agriculture (Simonović, Đuričić and Miletić, 2017). Results of research performed by Ivanović, Kovačević and Vasiljević (2018) indicated that beef production in Serbia would not be profitable without state subsidies. Besides, Subić, Vasiljević and Ivanović (2009) underline the importance of education of agricultural producers to enable them to identify development possibilities, while Nastić, Ivanović and Jeločnik (2014) determined that the majority of farmers have lack of knowledge related to farm management in the contemporary business environment. It is important to point out that pastures and meadows significantly participate in the structure of utilized agricultural area in Serbia (approximately 20.7%) and have great potential to decrease production costs. Nevertheless, they are not used enough in all forms of livestock production, such as cattle, sheep and goat production (Ivanović, L., 2018).

Vertical integration and cooperation in the area of milk production and processing is not developed enough. On the other hand, research presented by Končar, Marić and Vukmirović (2018) indicated that these principles increase income, productivity and profitability of all participants. One of important issues is small participation of food and live animals in total Serbian export. According to Marković (2019) it is only around 16% of Serbian export (average for period 2012 - 2017). One of possibilities to improve dairy farming is production of autochthonous food products, especially in areas where such products are registered. Discussing promotion of products with geographical indication Puškarić, Kuzman and Maksimović (2016) mentioned cow-milk kashkaval from Pirot, cow-milk cheese from Sjenica and alike. There are also some less known problems which should be solved, such as the relation between selection goals for dairy cows and the way milk price is determined (the problem is described by Ivanović, Stanojević, Nastić and Jeločnik, 2014). According to Nastić and Bekić (2015) Serbian farmers also have to pay attention to Nitrates Directive which is related to Serbian accession to the EU, because the Directive is related to additional investments in facilities for environmental protection.

At the same time, majority of premises for cattle productions are outdated (Radivojević, Ivanović, Nastić and Jeločnik, 2014). While Ivanović S., Ivanović L. and Bratić (2008) stated a significant relation between investments in cattle production and business results of the analyzed farms, Ivanović (2008) determined that larger cattle farms have better efficiency of investments. Similarly, Gogić, Ivanović and Nastić (2012) found out that investments in dairy farms' enlargement in Serbia are economically efficient.

Introduction of FADN system (Farm Accountancy Data Network) in Serbia and its use was discussed by Vasiljević (2011), Vasiljević, Zarić and Ivkov (2012) and Ivkov, Vasiljević and Ghelfi (2013). Figurek and Vukoje (2011) stated that FADN is appropriate basis for development of agricultural policy and for control of its effects. Result of research (also based on FADN data) dealing with farm size in the EU (Ivanović, S., 2018) show that a change in farm size is related to an increase of indicator Family Farm Income/Family Work Unit (for all farms included in the EU FADN sample). When the production types within cattle production in the EU are mutually compared it is determined that milk production has much higher FNVA/AWU (Farm Net Value Added per Annual Work Unit) than extensive forms of cattle production (Nastić, Marković and Ivanović, 2017).

## Research methodology and Hypotheses

The analysis of productivity of milk producers in Serbia has been performed on the basis of FADN data for 2015, because these are the most recent officially published data. In 2015 FADN sample consisted of 1,104 farms, while 19.50% of sample was farms specialized in milk production (Farm Return, 2015). The FADN sample for milk production within Farm Return is officially divided in various ways. If number of cows is considered, it is divided into four farm sizes (less than 5 cows, 5 to 10 cows, 10 to 20 cows, more than 20 cows). The other way officially used to divide the sample is according to various economic sizes of milk farms (EUR 4-8,000; EUR 8-25,000; EUR 25-100,000; more than EUR 100,000). According to agricultural census conducted in 2012 majority of livestock units (considering all types of production) are present on farms having economic size 4,000 – 8,999 EUR, 8,000 – 14,999 EUR and more than 100,000 EUR (Cvijanović, Subić and Paraušić, 2014). According to the same research only 2.9% of all farms in Serbia are specialized exclusively for milk production.

It is also possible to present number of cows (expressed in livestock units) for each above mentioned economic size of a farm. Having in mind that analyzed farms are specialized in milk production, cows dominate in total number of livestock units (Table 2).

*Table 2. Milk farms in the sample according to economic size and number of cows*

Economic size of farms	Number of milking cows per farm (in livestock units)	Total number of livestock units per farm
EUR 4-8,000	3.70	5.36
EUR 8-25,000	8.39	11.85
EUR 25-100,000	22.26	33.67
More than EUR 100,000	71.25	108.53
Average	6.43	9.28

*Source: Farm Return (2015)*

The most complex way of analysis used in Farm Return (2015) is to divide farms specialized in milk production into three groups according to their level of productivity. The basic assumption of the analysis is that productivity is expressed by an indicator – Farm Net Value Added per Annual Work Unit (FNVA/AWU - SE 425). The first group of farms represents 25% of farms with low level of indicator SE 425. The second group represents 50% of farms having medium level of this indicator, while 25% of farms having high level of indicator SE 425 are included in the third group. This approach will be used in this research to analyze various aspects of productivity of milk producers involved in FADN sample.

To describe changes in productivity authors used number of indicators such as Annual Work Unit (AWU), Family Work Unit (FWU), Farm Net Value Added/Annual Work Unit (FNVA/AWU) etc. The research starts from the hypothesis that there is a close relation between increase in farm size and level of productivity of milk producers. An additional hypothesis is that level of indicator SE 425 is related to level of indicator SE 132 (Total input / Total output).

## Research results and Discussion

If various levels of productivities are compared with number of milking cows and total number of livestock units, it could be noticed that increase of level of indicator SE 425 is closely related to the increase of farm size (Table 3). This is the case because only big farms have capacity to invest in modern building and equipment needed to facilitate the production and make labor more productive. Besides, only big farms are able to apply modern production technology, to provide wellbeing of animals, appropriate sanitary conditions and veterinarian care, to offer balanced fodder of good quality etc.

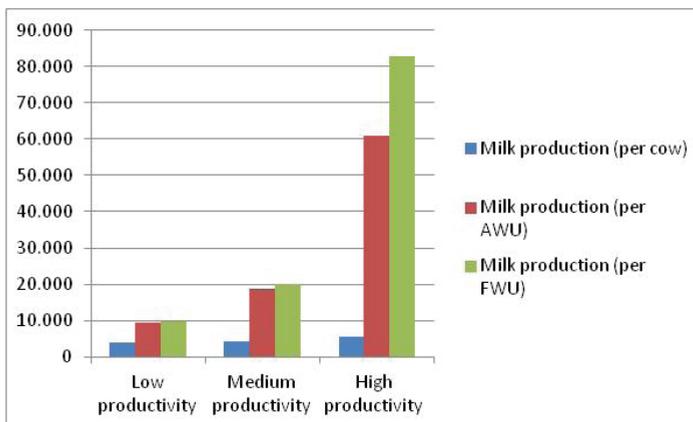
Table 3. Milk farms in the sample according to levels of SE 425

Farm Net Value Added per Annual Work Unit	Number of milking cows per farm (in livestock units)	Total number of livestock units per farm
Low level	6.60	10.08
Medium level	10.43	14.56
High level	28.92	44.73

Source: Farm Return (2015)

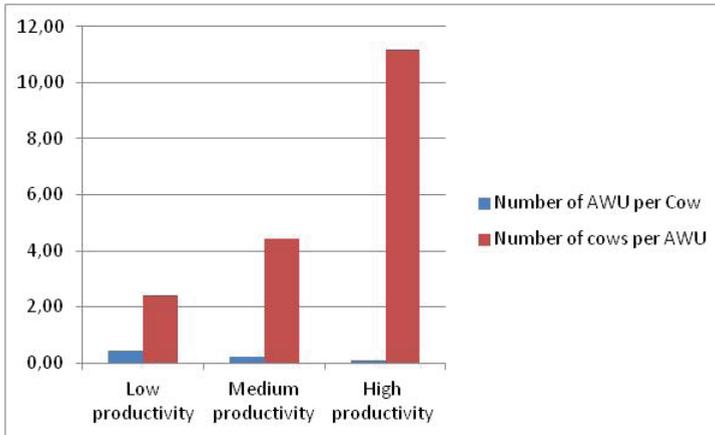
Besides, it is determined that farms having low level of productivity have the lowest milk production per cow (3,895 liters) while farms with high productivity have milk production per cow 5,645 liters per year (Figure 1). If total number of Annual Work Unit is considered, there are no big differences between observed levels of productivity (low level – 2.75 AWU in total; medium level – 2.36 AWU in total; high level – 2.59 AWU in total). On the other hand, milk production per annual work unit significantly increases with productivity level going from low to high, while milk production per Family Work Unit (unpaid labor) increases even more. It is also important that number of AWU per cow decreases while number of cows per AWU increases with increased level of productivity (Figure 2).

Figure 1. Milk production per cow and per AWU in 2015(liters)



Source: Farm Return (2015) and authors' calculation.

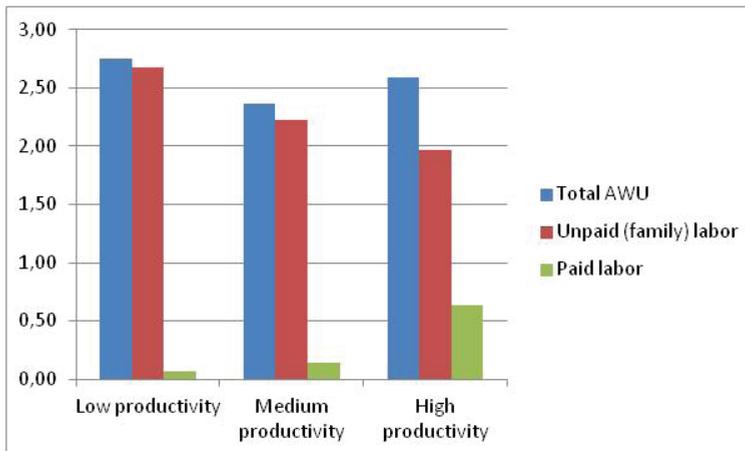
Figure 2. Relation between number of cows and AWU in 2015



Source: Farm Return (2015) and authors' calculation.

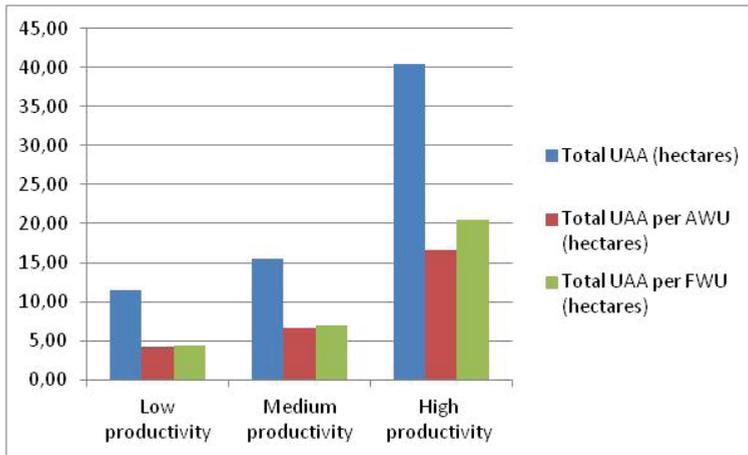
Consequently, highly productive farms are more orientated towards paid labor (Figure 3). They use nine times more paid labor comparing to the least productive farms. Nevertheless, in all observed cases work of family members (unpaid labor) dominate within total AWU. Difference in productivity influences total Utilized Agricultural Area (Figure 4) per farm (which ranges from 11.54 hectares to 40.41 hectares), amount of UAA per AWU (ranges from 4.20 to 16.60 hectares per AWU) as well as amount of UAA per FWU (from 4.30 hectares to 20.51 hectares).

Figure 3. Annual Work Unit (AWU) for various farm sizes in 2015



Source: Farm Return (2015) and authors' calculation.

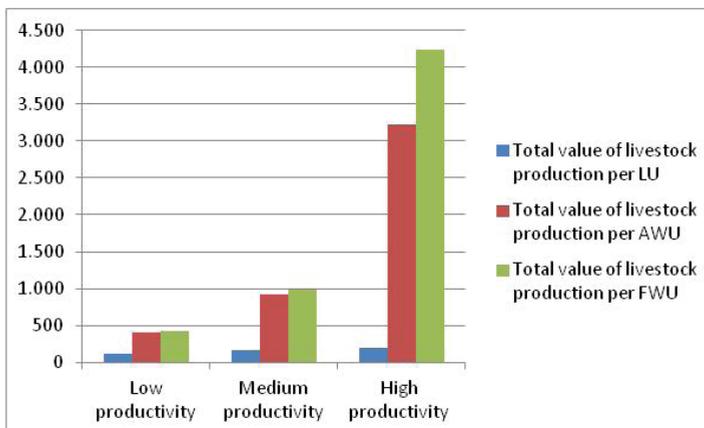
Figure 4. Utilized Agricultural Area (UAA) for various farm sizes in 2015



Source: Farm Return (2015) and authors' calculation.

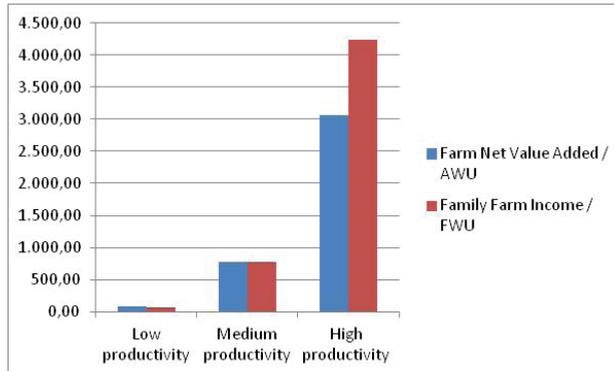
Considering value of livestock production per livestock unit (LU), per Annual Work Unit, and per Family Work Unit the biggest improvement was recorded for indicator related to family labor (Figure 5). The same pattern is noticeable concerning the most important productivity measures (Figure 6) which are FNVA/AWU as well as Family Farm Income / Family Work Unit (FFI/FWU). Later indicator is the most sensitive because high productive (the biggest farms) are enlarging amount of their Family Farm Income, while at the same time engagement of family labor is decreasing.

Figure 5. Value of livestock production per LU, AWU and FWU in 2015 (000 RSD)



Source: Farm Return (2015).

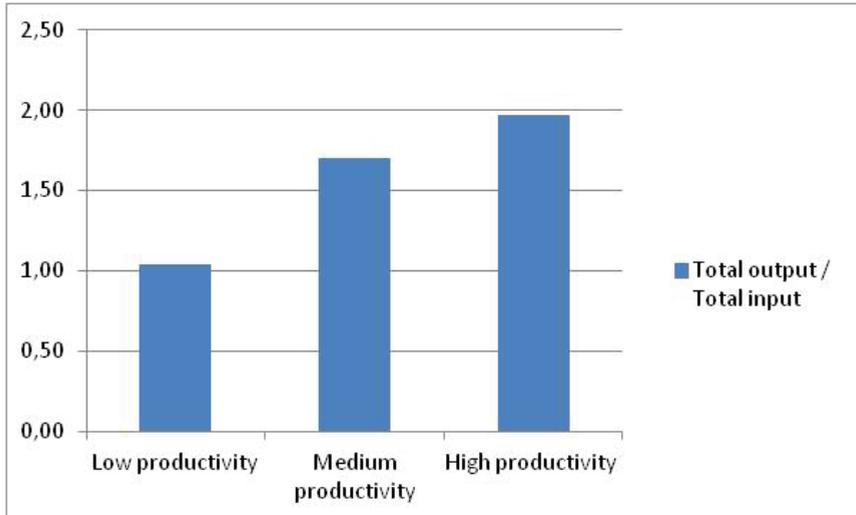
Figure 6. Indicator FNVA/AWU (SE 425) in 2015 (000 RSD)



Source: Farm Return (2015) and authors' calculation.

Having in mind that productivity is closely related to economic efficiency of agricultural production, indicator Total input / Total output (SE 132) for the smallest (the least productive) milk producers is just over 1, which means that sustainability of such farms in long run is questionable. On the other hand, more productive farms have acceptable levels of SE 132 (Figure 7).

Figure 7. Indicator SE 132 in 2015



Source: Farm Return (2015) and authors' calculation.

To perform additional analysis of factors affecting performance of observed farms, it is necessary to analyze structure of income (Table 4), and structure of total costs (Table 5). All farms specialized in milk production have value of livestock production higher than 50% of total production value. Farms with higher level of productivity are characterized by higher

participation of livestock production in total production, while participation of other gainful activities is decreasing. Considering participation of fodder in total costs it could be noticed that they dominate among other production costs. Farms having the highest productivity are producing the lowest percentage of purchased feedstuffs on the farm.

*Table 4. Structure of production value*

Indicator	Low		Medium		High	
	(000 RSD)	%	(000 RSD)	%	(000 RSD)	%
Value of crop production	1,017	47,04	1,419	39,18	4,950	37,26
Value of livestock production	1,121	51,85	2,185	60,32	8,335	62,74
Value of other gainful activities	24	1,11	18	0,50	0	0,00
Total value of production	2,162	100,00	3,622	100,00	13,285	100,00

*Source: Farm Return (2015)*

*Table 5. Structure of costs*

Indicator	Low	Medium	High
Total costs (000 RSD)	2,264	2,431	8,235
Purchased fodder for grazing stock (000 RSD)	1,132	1,378	4,221
Farm-produced feedstuffs for grazing stock (000 RSD)	928	1,079	3,016
Participation of purchased fodder in total costs (%)	50.00	56.68	51.26
Participation of farm produced feedstuffs in total costs (%)	40.99	44.39	36.62
Participation of farm produced in purchased (%)	81.98	78.30	71.45

*Source: Farm Return (2015)*

## Conclusion

The results of this research confirmed the hypotheses and indicated significance of productivity for economic results of farms specialized in milk production. Productivity is closely related to farm size, so that the farms having near to 30 milking cows and around 45 total livestock units are showing the best results. In such a way this analysis gives approximate number of cows needed for Serbian milk producers to achieve satisfying business results. Level of productivity is closely related to economic efficiency of production, as well. Therefore, increase in indicator of productivity SE 425 (FNVA/AWU) causes improvement of indicator SE 132 (Total input / Total output). Having all that in mind, policy makers should support enlargement of milk producing farms as well as use of highly productive cows. Future research should be directed towards possibilities for additional decrease of fodder costs, having in mind that they dominate within total costs.

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SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika2001065V  
Received: October, 11. 2019.  
Accepted: December, 21. 2019.

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## MACROECONOMIC ANALYSIS OF GDP AND EMPLOYMENT IN EU COUNTRIES

### Abstract

*In modern countries, there is request for focusing on budget policy. It is consequence of the weaknesses of previous ones. These policies were created to eliminate the resulting disparities in the past and they were successful in solving those problems, neglecting some categories whose negative effects will manifest later. The importance of achieving an adequate rate of GDP growth as well as employment is in the center of almost all economic policies. The differences are in the instruments and measures that must be taken to achieve them. This article addresses precisely these goals of macroeconomic stability and the correlation that exists among these categories. Proving this correlation is important because the adopted policies can be monitored more effectively, but on the other hand will serve as a reminder of the importance of the measures adopted in these categories and the related macroeconomic stability. The SPSS software package was used and its correlation and regression analysis to prove the dependency, and the data will serve as a theoretical overview of GDP and employment trends in EU.*

**Key words:** gross domestic product (GDP), employment, European Union.

**JEL classification:** E23, E24

## МАКРОЕКОНОМСКА АНАЛИЗА ГДП И ЗАПОСЛЕНОСТИ У ЗЕМЉАМА ЕВРОПСКЕ УНИЈЕ

### Апстракт

*Код савремених држава се намеће неопходности усмеравања ка буџетској политици. Она је проистекла из слабости, односно недостатака претходних политика. Те политике су уцрпано и настале ради ошклањања насталих диспропорција у прошлости и биле су успешне у томе, занемарујући неке категорије чије ће се негативно дејство тек касније испољити. Значај достизања*

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*одговарајуће стоје раста бруто домаће производа као и запослености се налази у средњој зони свих економских политика. Разлике су у инструментима и мерама које је неопходно предузети ради њиховог остваривања. Овај рад се бави управо овим циљевима макроекономске стабилности и корелације која постоји међу овим категоријама. Доказивање ове корелације има значаја јер се мере усвојене политике могу ефикасније применити али са друге стране ће послужити као подсетник значаја усвојених мера на ове категорије и са њом повезане макроекономске стабилности. За доказивање зависности се користе софтверски пакети СПСС и у оквиру њега корелациона и регресиона анализа, а подаци ће послужити и за теоријски осврт кретање БДП-а и запослености на нивоу Европске уније.*

**Кључне речи:** бруто домаћи производ, запосленост, Европска Унија.

## Introduction

Gross domestic product (GDP) is considered to be one of the most significant indicators of the country's economic development. It is certainly not the only one, but its movement is one of the most significant indicators of the successful implementation of appropriate economic policy measures. Many theorists talked about its importance and impact on the value of GDP is at the centre of almost all theories. In developed EU economies, there is the increase in public expenditures, fiscal revenues and budget deficits at all levels of institutional organization of public sector financing. Because of all these features and characteristics, it is accepted indicator of the healthiness of a country's economy and therefore economists, financial analysts, consultants, managers, economic policy makers, and politicians are interested in its movement. (Dugalić, 2017) There are frequent comparisons of GDP and other macroeconomic indicators (Kovačević & Pavlović, 2016) to establish a link between them. This paper will show whether there is a correlation between GDP and employment. The importance of examining this dependency is crucial to the effects of economic policies. (Popescu, 2016; Simić, Kosumi & Jialiang, 2019) Employment growth has multiplied effects on the economy. (Myślińska, 2006) Its increase reduces social transfers to unemployed persons but also increases production, which can again affect employment growth. The basic postulate of Keynesian theoretical thought was to achieve a level of full employment whereby the role of money was put aside and had a secondary importance. This resulted in major inflationary shocks that can drag the economy into a recession phase. When it comes to that stage of the economic cycle, production falls, and consequently, employment and finally GDP. This mechanism is an indicator of the importance of a systematic approach in defining economic development policies that will consider all elements of macroeconomic stability and their synergistic effect. (Joldić, Vasiljević & Krstić, 2018) Entering into a prosperous phase of the economic cycle and the associated GDP, and employment growth, will attract additional investment. (Mordecki, & Ramirez, 2018) Growth in investment activity will again induce GDP and employment growth but also a positive foreign trade balance. (Ines, Cinzia, 2009).

## Theoretical review of GDP and employment growth rates in EU Member States

This part of the article will show GDP growth and employment rates in EU member states. Analyzed data refer to the last quarter of 2017 and the all three quarters of 2018 and after that will be made statistical analysis and the results will be presented in the discussion section of the results.

*Table 1: Unemployment rates in the EU Member States for 2018.*

State	Unemployment %	State	Unemployment %
Czech Republic	2.2	Belgium	6.4
Malta	3.3	Estonia	6.5
Germany	3.4	EU-28	7.1
Hungary	3.7	Portugal	7.4
Netherlands	3.9	Lithuania	7.5
UK	4.1	Slovakia	7.5
Poland	4.4	Latvia	7.9
Romania	4.5	Finland	8.2
Denmark	4.8	EA-19	8.5
Austria	5.0	France	8.8
Bulgaria	5.2	Cyprus	9.1
Slovenia	5.2	Croatia	9.4
Luxembourg	5.4	Italy	11.0
Ireland	6.1	Spain	16.1
Sweden	6.2	Greece	20.6

*Source: Eurostat*

In Table 1, countries are ranked by increasing unemployment rate, which can be used for comparison of its percentages. The Czech Republic has the lowest unemployment rate in the European Union with only 2.2% and is the only country with a lower unemployment rate than 3%. The following group of countries includes those with unemployment rate up to 4%, Malta (3.3%), Germany (3.4%), Hungary (3.7%) and the Netherlands (3.9%). The group of countries where unemployment rate is up to 5% belongs to the United Kingdom (4.1%). Poland (4.4%), Romania (4.5%) and Denmark (4.8%). Austria, Bulgaria, Slovenia and Luxembourg have unemployment rates of 5.0%, 5.2%, 5.2% and 5.4% respectively. The unemployment rate in EU is 7.1%, but most countries have an unemployment rate below the average. This majority is almost 71% of the Member States. Certainly this is out of the ordinary. The crisis that has been in

Greece for more than a decade, as well as a huge amount of public debt and the decrease in gross domestic product (GDP) and thus employment, have a significant impact on this situation. Unemployment at the level of 20.6% certainly has a significant impact on the EU average unemployment rate. Less than 30% of countries have unemployment at EU level. Analyzing situation without Greece, EU average unemployment rate would be 6.4%. The achieved level of employment is one of the most significant indicators of the level of economic development.(Ciuhu, & Vasilie, 2018) Particularly painful for the transition countries is the employment and measures for increasing the number of employees are necessary factor for economic growth.(Đuričin, 2011) In addition to employment, GDP growth and inflation are indicators whose trends define the character of transition process. (Malešević-Perović, 2008)

*Table 2: Quarterly employment growth rates in EU Member States*

Year	Percentage change compared to the previous quarter				The percentage change compared to the same quarter of the previous year			
	2017	2018			2017	2018		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
<b>States</b>								
Belgium	0.3	0.3	0.3	0.4	1.2	1.2	1.1	1.4
Bulgaria	0.4	0.0	-0.2	-0.3	2.4	1.2	0.2	-0.9
Czech Republic	0.0	0.6	0.6	0.0	1.4	1.8	1.9	1.1
Denmark	0.4	0.6	0.4	0.3	1.7	1.9	2.0	1.8
Germany	0.3	0.5	0.2	0.3	1.4	1.5	1.3	1.3
Estonia	1.4	-1.4	1.3	-0.8	5.7	0.9	2.7	0.5
Ireland	1.2	0.7	0.7	-	3.5	3.2	3.4	-
Greece	-0.1	0.5	1.0	0.0	1.9	1.6	1.7	1.4
Spain	0.4	0.5	0.7	0.4	2.5	2.1	2.2	2.0
France	0.3	0.3	0.1	0.1	1.4	1.3	1.0	0.8
Croatia	0.2	0.4	0.0	-0.2	3.8	4.6	2.3	0.3
Italy	-0.3	0.2	0.6	-0.3	0.9	0.4	1.1	0.3
Cyprus	1.0	0.7	1.0	0.8	4.4	4.3	4.3	3.7
Latvia	0.9	0.9	-0.3	0.7	0.9	1.7	2.0	2.2
Lithuania	0.2	0.0	0.7	0.8	-0.5	0.1	0.5	1.7
Luxembourg	1.1	1.0	0.9	0.7	3.6	3.7	3.8	3.7
Hungary	0.7	0.7	0.5	0.5	2.0	2.4	2.3	2.3
Malta	1.4	1.4	1.4	0.9	4.8	5.6	6.0	4.9

Netherlands	0.7	0.7	0.5	0.6	2.3	2.6	2.4	2.5
Austria	0.6	0.3	0.4	0.3	1.8	1.9	1.9	1.6
Poland	-0.5	0.2	1.3	-0.2	0.5	0.4	0.7	0.9
Potrugal	0.7	0.8	0.0	0.5	3.2	3.2	2.1	2.1
Romania	-0.2	0.7	-0.1	-0.1	2.1	1.8	-1.5	0.2
Slovenia	0.8	0.8	0.7	0.7	3.0	3.3	3.0	2.8
Slovakia	0.6	0.5	0.5	0.4	2.2	2.2	2.1	1.9
Finland	1.0	0.9	0.6	0.3	2.1	2.3	2.9	2.7
Sweden	0.4	0.5	0.3	0.3	2.1	2.0	1.7	1.6
UK	0.3	0.6	0.1	0.1	1.0	1.3	1.0	1.1

*Source: Eurostat*

If we look at the percentage changes in consecutive quarters, we can see that are positive in almost all countries, which leads to the conclusion that employment almost exclusively increased in almost all countries in 2018 and the last quarter of 2017. This situation is the goal of every market economy and a precondition for achieving positive results and trends in other indicators of macroeconomic stability.(Zrinščak, 1997) There are significant deviations from the positive trend in Bulgaria because in the second quarter employment fell by 0.2% and in the third by 0.3%. The biggest decline was achieved in the first quarter of 2018 in Estonia, where it decreased by 1.4%, offset by a 1.3% increase already in the next quarter. In Romania, there has been a decline in employment in three of the last four quarters and in the first quarter of 2018 there was a 0.7% increase in employment. If we compare the quarters of one year with the same in the previous one, we can also see a positive trend. As the comparison period is longer the percentages will be certainly higher as they are related to the period of one year.

Employment decreased by 0.9% in the third quarter of 2018 compared to the same in 2017. The second and last case of the decrease in employment was recorded in the second quarter of Romania, where the employment rate was 1.5% lower than in the same quarter of the previous year. The highest employment growth was recorded in Estonia in the last quarter of 2017 and was 5.7%. In other countries, considering a period of one year, employment is rising, which is certainly a consequence of a well-managed budgetary policy and the achievement of one of the basic macroeconomic goals - employment. The importance of achieving a satisfactory level of employment is enormous because under-employment, by all macroeconomic indicators, has the most negative consequences. (Paul, 2001). The negative impact of rising unemployment is reflected in all spheres of social life.(Winkelmann, & Winkelmann, 1997)

In addition to the employment rate, more detailed statistical analysis also requires data on GDP growth rates, which can be found in the following table.

Table 3: Growth rates of GDP by quarters in EU Member States

Year	Percentage change compared to the previous quarter				The percentage change compared to the same quarter of the previous year			
	2017	2018			2017	2018		
Quarters	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
<b>States</b>								
Belgium	0.7	0.3	0.3	0.3	1.9	1.5	1.4	1.6
Bulgaria	0.7	0.9	0.8	0.7	3.5	3.5	3.4	3.1
Czech Republic	0.7	0.5	0.7	0.6	5.0	4.1	2.4	2.4
Denmark	0.8	0.4	0.2	0.7	0.9	-1.1	0.2	2.0
Germany	0.5	0.4	0.5	-0.2	2.8	2.0	1.9	1.2
Estonia	1.9	0.1	1.4	0.4	4.9	3.5	3.8	3.9
Ireland	2.6	-0.4	2.5	-	5.4	10.2	9.1	-
Greece	0.2	0.5	0.4	1.0	2.1	2.5	1.7	2.2
Spain	0.7	0.6	0.6	0.6	3.1	2.8	2.5	2.5
France	0.7	0.2	0.2	0.4	2.8	2.2	1.6	1.4
Croatia	0.2	0.8	1.0	0.6	2.4	2.6	2.8	2.7
Italy	0.3	0.3	0.2	-0.1	1.6	1.4	1.2	0.7
Cyprus	1.0	1.1	0.8	0.8	3.5	4.1	4.0	3.7
Latvia	0.8	1.5	1.2	1.7	4.8	4.8	4.6	5.3
Lithuania	1.3	1.0	0.9	-0.3	3.8	3.7	3.8	2.9
Luxembourg	1.4	0.9	0.0	-	2.8	3.2	3.1	-
Hungary	1.3	1.3	1.1	1.3	5.0	4.8	4.8	5.2
Malta	0.6	0.9	2.5	3.6	5.0	4.6	6.2	7.9
Netherlands	0.9	0.5	0.7	0.2	2.9	3.0	2.9	2.4
Austria	0.8	0.9	0.3	0.3	2.8	3.2	2.8	2.4
Poland	1.2	1.6	1.1	1.7	4.6	5.0	5.2	5.7
Portugal	0.8	0.4	0.6	0.3	2.5	2.2	2.4	2.1
Romania	0.4	0.3	1.5	1.9	6.6	4.3	4.3	4.1
Slovenia	2.0	0.6	0.9	1.3	6.3	5.1	4.6	5.0
Slovakia	1.1	1.0	1.2	1.1	3.7	3.9	4.3	4.5
Finland	0.7	0.9	0.3	0.4	2.7	2.5	2.3	2.5
Sweden	0.6	0.8	0.5	-0.2	2.7	3.3	2.6	1.7
UK	0.4	0.1	0.4	0.6	1.4	1.1	1.2	1.5

*Source: Eurostat*

Comparing GDP growth rates by quarter, it is clear that, globally, they are positive with minor or major variations by countries. Gross domestic product (GDP) growth is the precondition for sustainable development. (Milosavljević, Pantelejić, & Mededović, 2019) Cases of negative growth rates are in Germany in the last quarter, as well as in Italy and Lithuania. Other countries achieved positive GDP growth. In most countries quarterly growth is below 1%, but there are cases when it varies considerably. In Malta in the last quarter of 2018 growth rate was 3.6%. It should be emphasized that in Ireland in the last quarter of 2017 was recorded a significant growth rate of 2.6% compared to the previous quarter of the same year.

Considering the time period of one year and comparing the growth rates of the same quarters in consecutive years results and conclusions are similar. Positive growth rates are clearly visible in Denmark in the first quarter of 2018. Rate values vary, with the highest growth rate in Ireland in the first quarter of 2018, when GDP growth was 10.2% compared to the same quarter of the previous year. Slovakia is an example of the country with not only a positive rate of growth of GDP, but also the rates are higher for every consecutive quarter, and because of that is unique country in the list of countries in the table.

Slovenia is experiencing growth rates that are exceptional but the trend is declining. Positive GDP growth rates and employment rates evident in the EU member states should be achieved through economic policy measures in transition countries as they are necessary in the process of accession to the European Union. (Petrović, 2019) Positive rates of GDP growth and employment in the most EU countries indicate coordinated policies on the most important economic categories, and the harmonization process will certainly improve results. (Sterlacchini, 2009) The importance of GDP and employment growth is important not only for the economic progress of the country but also for raising the level of conscience of the importance of ecology as one of the important factors of overall social well-being. (Gardiner, & Hajek, 2017)

## Research methodology

In purpose of examining the dependence of the GDP growth rate and employment rate was used the SPSS software package within correlation and regression analysis. The reasons for this type of analysis are explained in the introductory part and refer to the recommendations of numerous authors. The data used was taken from Eurostat and will be presented in the next section of the discussion of the results.

An interpretation of the Pearson correlation coefficient (in the case of a normal distribution) will show the strength of the relationship and the significance level  $p$  the statistical significance of the result.

In theoretical considerations, the following models are used:

$X$ - growth rate of gross domestic product (*GDP*)

$Y$ - employment growth rate

The sum of the squares of the variable  $X$  is equal to the sum of the squares of the deviation of the value of the variable  $X$  from its average value:

$$SS_{xx} = \sum_{i=1}^n (X_i - \bar{X})^2$$

The average value of the variable  $X$  is equal:

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$

The sum of squares of variable  $Y$  is equal to the sum of squares of the deviation of the value of variable  $X$  from its average value:

$$SS_{yy} = \sum_{i=1}^n (Y_i - \bar{Y})^2$$

The average value of the variable  $Y$  is equal:

$$\bar{Y} = \frac{1}{n} \sum_{i=1}^n Y_i$$

The sum of the product of the variables  $X$  and  $Y$  is equal to the sum of the product of the deviation of the values of the variables  $X$  and  $Y$  from their averages:

$$SSxy = \sum (X_i - \bar{X})(Y_i - \bar{Y})$$

The correlation coefficient is equal to the ratio:

$$r = \frac{SSxy}{\sqrt{SSxx * SSyy}}$$

After correlation was examined the dependence of the growth of employment rate on the growth rate of gross domestic product(GDP), and the theoretical representation of the model can be presented as:

$$Y_i = a + bX_i + \epsilon_i \quad i = 1, 2, \dots, N$$

$Y_i$  -  $i$ -th dependent variable (employment growth rate)

$X_i$  -  $i$ -th independent variable (GDP growth rate)

$a, b$  - constants, regression parameters

$\epsilon_i$  - residuals

The least squares method implies that the parameters of the model are estimated so that the sum of the squares of the residuals, i.e. vertically measured deviations of the sample data from the points on the regression line estimated from the sample:

$$\sum_{i=1}^n \epsilon_i^2 = \sum_{i=1}^n (Y_i - \bar{Y})^2 = \sum_{i=1}^n (Y_i - (\hat{a} + \hat{b}Y_i))^2$$

be minimal.

For the regression linear equation  $Y = a + bX$ , the estimates for the parameters  $a$  and  $b$  are

$$\hat{a} = \bar{Y} - \hat{b} \bar{X}$$

$$\hat{b} = \frac{\text{cov}(X, Y)}{S_{xx}}$$

It is confirmed that the estimates achieved by this method are the best linear estimates, objective and stable.

The coefficient of determination can be used to check the quality of the model evaluation:

$$R^2 = 1 - \frac{\sum_{i=1}^n (Y_i - \hat{Y}_i)^2}{\sum_{i=1}^n (Y_i - \bar{Y})^2}$$

which will be used and the value of the model will depend on  $R^2$  and its proximity to value 1.

## Results and discussion

Correlation and regression analyzes were used to examine the relationship between growth rates of GDP and employment. The importance of implementation of this analysis will have significant effects on many spheres of social life.(Amores & Castilo, 2017) GDP and employment trends can also have significant effects on gas emissions.(Barker et al., 2016) The idea of implementation this analysis is also based on the results of the same analysis in the case of Hong Kong.(Chiang, Tao, & Wong, 2015) Preliminary tests of normality of distribution and homogeneity of variance were done in order to be able to implement correlation analysis. Tests results justified the use of the Pearson correlation coefficient. The value of the Person's correlation coefficient will be presented in the following table.

*Table 4: Results of correlation analysis*

Correlations (Spreadsheet1) Marked correlations are significant at $p < .05000$ (Casewise deletion of missing data)	
	Employment growth rate
GDP growth rate	0,365

*Source: Authors' representation based on SPSS*

The relationship between employment and GDP is also statistically significant, since  $p < 0.05$ , and accomplished correlation is characterized by the character of moderately positive dependence.

Regression analysis was used to show the justification of the model and served to formulate the regression equation.

*Table 5: Results of the regression analysis*

Dependent Variable	Employment
Multiple R	0,364
Multiple R <sup>2</sup>	0,533
Adjusted R <sup>2</sup>	0,099
SS Model	6,860
df Model	1
SS Residual	6,860
Df Residual	44,652
MS Residual	1,717
F	3,994
p	0,046

*Source: Authors' representation based on SPSS*

Regression analysis shows that GDP explains 53.3% of the total variance, which makes this model justifiable and it is possible to formulate a regression equation.

$$\text{Regression Equation: Employment} = 1.76 + 0.608 * \text{GDP}$$

A similar analysis was conducted by Popescu(2016). The analysis was based on establishing the correlation between GDP and unemployment in the period 2003-2014. The results are statistically significant. A strong negative link was found between GDP and unemployment,  $r = -0.829$ , which is once again a confirmation of the link between employment/unemployment and GDP.

## Conclusion

Focusing on budget policy is the feature of modern states. This is a result of the weakness of the mechanisms that led to the significant amounts of public debts and budget deficits. The allocation of budgetary resources has the influence on the most important macroeconomic aggregates in order to achieve a significant level of GDP and employment growth. Many authors have studied these categories and examined the dependence of macroeconomic indicators. This paper examines the correlation of GDP and employment as well as the statistical validity of the results. The subject of analysis is data of the movement of these categories in the EU Member States. The result serve as an indicator of the successful implementation of economic policy measures and these measures must also be used by countries in transition in order to join the European Union. The results shows positive trends in both GDP growth and employment rates. Statistical analysis of the data was done in the SPSS software program. A moderate positive correlation between GDP and employment was found,  $r = 0.365$  and the results are statistically significant  $p < 0.05$ . The significance of these result which is established correlation, is reflected in the necessity of systematically enacting economic measures whose positive consequences can be multiplied just as negative, which was often the case in the past. Entering the recession phase is inevitable in the economic cycle, but the losses incurred in this phase of the economic cycle must be such that, upon entering the prosperous phase, they can be quickly offset.

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SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika2001077V  
Received: January, 18. 2020.  
Accepted: March, 03. 2020.

## POTENTIALS FOR DEVELOPMENT FOOD TOURISM IN AP VOJVODINA IN THE REPUBLIC OF SERBIA<sup>3</sup>

### Abstract

*The aim of the paper work is to present the concept of food tourism with a special emphasis on potentials for its development in the area of AP Vojvodina in the Republic of Serbia. Special attention is given to presentation of local resources (natural, social, etc.) that are suitable for development food tourism. Also, the paper work points out the importance of tourism events that contribute to the popularization of local culinary specialties, i.e. manifestations that take place in honor of food in rural areas, which can and /or already represent the basis for development food tourism. Authors give emphasis in research for possibilities for complementary development different types of tourism based on food which is characteristic for the area of AP Vojvodina and special attention are given on rural tourism development. On that way article shows some guidelines for future development of food tourism in target area. If tourism would be linking with agricultural production, i.e. food that is characteristic for the region of AP Vojvodina, a new quality of image of tourist destination would be obtained. Through linking tourism, agriculture, events, food trade, can be start up development of rural areas of AP Vojvodina and it can be one of the possible ways how to solve numerous problems that burdning rural areas of this region nowadays.*

**Key words:** food, tourism, agriculture ,destination, rural area, event, market

**JEL classification:** M31, M37, Q13.

## ПОТЕНЦИЈАЛИ ЗА РАЗВОЈ ТУРИЗМА ХРАНЕ У АП ВОЈВОДИНИ У РЕПУБЛИЦИ СРБИЈИ

### Апстракт

*Циљ рада је представити концепт туризма хране са специјалним нагласком на потенцијале његовог развоја у подручју АП Војводине у Републици Србији. Посебна пажња посвећена је представљању локалних ресурса (природних, друштвених, итд.), који су погодни за развој туризма хране. Такође, рад истиче важност туристичких догађаја који доприносе популаризацији локалних кулинарских специјалитета, тј. манифестација које се одржавају у част хране*

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<sup>3</sup> Article as research is financed by the Ministry of Education, Science and Tehnological Development of the Republic of Serbia.

у руралним срединама, а које могу и / или већ представљају основу за развој туризма хране. Аутори у истраживању истичу могућности комплементарног развоја различитих врста туризма на основу хране која је карактеристична за подручје АП Војводине, а посебна пажња се посвећује развоју руралног туризма. На тај начин рад приказује неке од смерница за будући развој прехрамбеног туризма у циљном подручју. Ако би се туризам повезивао са пољопривредном производњом, тј. храном која је карактеристична за подручје Војводине, добио би се нови квалитет и мица ове туристичке дестинације. Повезивањем туризма, пољопривреде, догађаја, трговине храном може се покренути развој руралних подручја у АП Војводини, а то може бити један од начина да се реше бројни проблеми који данас оштрећују рурална подручја.

**Кључне речи:** храна, туризам, пољопривреда, дестинација, рурално подручје

## Introduction

Tourism has become a phenomenon that has entered all segments of economic and social life. Nowadays, there is practically no country in the world that does not invest into tourism development, expecting positive outcomes of such investments. The great numbers of possibilities of how to put the existing resources (natural, social, anthropogenic, etc.) into the function of tourism development are being explored, with the aim to improve the tourist offer. The challenges caused by the modern environment undoubtedly have implications on abandonment of the traditional understanding of the tourist destination towards its understanding not only as a destination product but also as a destination experience and a transition from destination marketing to destination management (Pestek, A. & Nikolić, A. 2008). The rapid expansion of interest in professional literature on food tourism has been practically recorded since 2008 (Ellis, A. at al., 2018). This increased prominence is demonstrated through a series of recent special issues of tourism academic journals and numerous of major international conferences exploring food tourism. In the Republic of Serbia, there are respectable conditions for the development of all the aforementioned types of tourism (food tourism, manifestation/ events, rural tourism, etc.). One of the areas that pose favourable conditions for the food tourism development is the Vojvodina region.

## Literature Review

Rural tourism is not based on stimulating mass arrivals, but focuses on a targeted “exclusive” market that needs a holiday that offers “something different, different and specific” (Tyrväinen, L. at al. 2001). Because experiences are deeply personal, ‘tourists constitute an unmanageable group of consumers, and their experiences are inevitably different even though they may consume the same tourism product’. This is an important reason why more recent studies have tended to focus on how experiences are constructed or managed rather than individual tourist experiences themselves. One of the thematic types of tourism, with growing interest in recent years, is the food tourism.

Food has a particularly important role in the development of tourism services, since it makes up a large part of tourism expenditure and it is a necessity, for all tourists, in all destinations. (Richards, G. 2012, p.2-3). Hjalager, A. M., and Richards, G. (2002) supports this by stating local food is an essential part of the tourism experience since it can serve both as a cultural and an entertaining activity. In the sense of creating a destination image via locality of food; considered as an important factor of a national cultural identity and destination promotion (McKercher, Okumus & Okumus, 2008). Wolf, E. (2002,) describes food tourism as simply – “travel in order to search for, and enjoy, prepared food and drink.” This definition can also include a dinner in the house of a local, a visit to the local market, or attending a local food event, etc. This concept can be very broad. In the *Master plan of sustainable development of rural tourism in Serbia* (2011), food tourism is defined as type of tourism whose the main motive is taste and consummation of food and wine on local, national, international, traditional and autochthonous levels. It covers the experience of gastronomy related to culinary heritage. Includes agricultural products such as alcoholic beverages, such as brandy. The relationship between food and tourism presents significant opportunities for sustainable rural development; in particular, linking the two can create jobs and increase sales of local produce, as well as create interrelationships, linkages and networks between stakeholders (Hall, C. M. at al, 2003).

Food is now recognized as one of the fastest growing aspects of tourism today. Studies reveal the role of food as both a lifestyle marker and a means of cultural identification. When consuming food of ‘others’, tourists can become ‘part’ of that culture, however briefly. Food also provides ‘authentic’ representation of the culture for the tourist. Tourism literature reveals the potential role for food in tourism in sustaining regional identity and contributing to regional development, as well as being a key element in competitive destination marketing (Steinmetz, R., 2010). Local food can be seen as a mean to explore a country’s culture, because represent the geography, history, and people of a country. It represents the identity of a destination, like a symbol of a place. Hence, the importance of linking food as promotion tool in tourism. (Reza, A., 2014). In relation to rural tourism, food culture is widely seen as an avenue for making small businesses more economically and socially self-sufficient through increasing tourist spending, extending the tourist season and enhancing local identity (Everett and Aitchison, 2008, Hall, 2005). Evidence from literature has shown that the slow food agenda is not to completely rid of fast food but it is a noble attempt to change our eating habits so that the taste, our cultural beliefs and identity are not homogenized by a global food culture devoid of diversity and pleasure (Donati, K., 2005). Accommodation on rural tourist farms creates a specific rural experience with its uniqueness, which makes it different from the accommodation offer characteristic of traditional accommodation (hotels, hostels, guesthouses, etc.). The accommodation and stay of tourists on farms is in line with the rural environment and culture of the local community. Consumer loyalty is strongly conditioned by the quality of services offered to enable tourists to participate in the lifestyle of the local community, or the host they reside with (Albacete-Sa’ez, C., at al. 2007). Re-arrival and income generation depend on how tourists evaluate the quality of services during their first stay, and accommodation and food are the basic elements of the offer that tourists evaluate when they deciding whether to stay in a destination or in a rural tourist household. If they are provided with high quality of services, that is, if their tourism experience is positive, the chances for their re-arrival, but also the generation of new tourists, increase, which

creates conditions for growth of income and competitiveness of that tourist destination. (Tian-Cole, S., and Crompton, J. 2003; Tian-Cole, S., at al. 2002; Kozak, M. 2001).

Hjajager and Corigliano (2000, p. 282) identify that food images are used in marketing in the following ways:

- Complementary – Food is used as appealing eye-catchers in brochures, videos and television programmes;
- Inventory – ‘An intensive effort is being put into creating new tourist products and experiences. The inventory regions may create a special atmosphere that appeals to guests whose main interest is the culture of food and eating;
- Superficial – Where food is used as a side ‘prop’ but is not considered the focus of the images portrayed.

Determining different needs of various tourist segments would create a better design of local food products (Sengel, T, at al 2015).

In defining factors affecting local food consumption, Mak et al. (2012) reports five dimensions; cultural and religious factors, socio-demographic factors, motivational factors, personality and past experience. Sengel, T, et al. (2015) highlights three:

- 1) *Demographic factors* were discussed as important affecting tourist food consumption and commonly include indicators such as age, gender, education level, marital status, religious belief and so on. (Kim S. et al., 2003).
- 2) *Motivational Factors* - Eating is a basic need of human nature, every tourist eats local food when travelling away from home. Taste, looks, scent of the food and the authenticity of the place are sensory issues perceived by five senses and can be considered as physical motivators (Fields, K. 2002). Related to this idea Kim et al. (2009) mentioned taste, flavor, smell and visual image of food as physical motivators that reflects sensory appeal as well. Besides representation of the restaurant, decoration, music, lighting and architecture are accepted as aspects of physical environment (Yuksel, A. & Yuksel, F. 2003; Meiselman, H. L. at al. 2000). Travelling is seen as a way of escaping from routine (Smith, S. 1994), so the tourists prefer eating in authentic places with traditional atmosphere instead of worldwide food chain restaurants. Eating local food in local restaurants is also accepted to be a way of social and cultural interaction since it gives clues about local way of living, manners, geography, economy and related cues (Getz, D. 2000).
- 3) *Psychological Factors* - Apart from given motivational and demographic factors some psychological factors based on personal characteristics, past exposure, variety seeking is also reported to affect local food consumption in destinations. Mainly food neophobia and neophilia have been examined by authors. While explaining these terms, people may naturally dislike or be dubious to taste unfamiliar food (neophobia), on the other hand they also have a curiosity to taste local food (neophilic) (Fischler, 1988). Related to this, willingness of consuming new food and being interested in trying unfamiliar food are mentioned to be push factors for some tourists to try local food at destinations (Chang, Kivela, Mak, 2011).

## Materials and methods

This paper work aimed at perceiving the potentials for food tourism development in AP Vojvodina regarding potentials (natural, social etc.) that this region of the Republic of Serbia possess. The research is based desk research based on the analysis of existing literature, actual documents, developing strategies, studies as well as the international documents, which were adopted for this area and all other relevant sources that served as a basis for research through comparative analysis. Main hypotheses of article is that AP Vojvodina possesses favorable condition for develop food tourism. Particularly authors were discussed about complementary development of food tourism with concept of “slow food”, organic food, rural tourism, tourism of events, organic food, etc. Authors suggest breeding food as way to preserve authenticity of local food delicacies. This could be one of the element of tourist supply that can attract tourist to visit this area.

## Discussion and results

### a) Characteristic of rural areas in Vojvodina and possibilities for development tourism with special turn to possibilities for development food tourism

In AP Vojvodina there are a total of 465 settlements, of which 415 are rural settlements. The population structure in AP Vojvodina based on the last two Censuses with the number of rural households is shown in Table 1.

*Table 1. Total population, households and average number of household members according to the 2002 and 2011 Census by districts in AP Vojvodina.*

District in AP Vojvodina	Total population		Total number of households		Average number members of households	
	2002	2011	2002	2011	2002	2011
Severnobački	200.140	185.552	74.359	70.939	2,69	2,62
Zapadnobački	214.011	187.581	74.627	69.366	2,88	2,70
Južnobački	593.666	607.835	207.848	222.164	2,86	2,73
Severnobanatski	165.881	146.690	61.396	57.127	2,70	2,69
Srednjobanatski	208.465	186.851	73.917	69.362	2,82	2,57
Južnobanatski	313.937	291.327	106.588	102.494	2,94	2,84
Sremski	335.901	311.053	111.222	105.985	3,02	2,93

*Source: Statistical Office of the Republic of Serbia, Census Books Nos. 003 and 019 (2011 and 2002)*

With about 12% of people aged 65 and over, or about 20% of people over 60, Vojvodina is in an advanced phase of demographic aging (Pejanović, R. 2010). The contingent of the young population was reduced from 30% in 1971 to 22.6% in 2002, or 21.5% in 2008, while the aging index in 2008 was 99.7 (Regional Spatial Plan AP Vojvodina, 2011).

According to the 2011 Census, the share of the population without school qualifications and incomplete primary education was almost double in rural than in urban areas. It

is assumed that the reason for this population structure is the oldest age group, which predominantly lives in rural areas of Vojvodina and that the high specific mortality rate of the oldest population is the cause of this phenomenon (Sokolovska, V. and Žolt, L. 2013). At the same time, the percentage of rural population with a college or university degree (6.71%) is almost three times lower than in urban areas (19.13%) (Rodić, V. et al., 2013). These data are important because human resources are a basic prerequisite and basis in providing quality tourism services. The quality of services depends on their availability and care. It is the quality of services that is the basic factor for creating loyal consumers and therefore long-term competitiveness (Basiony, A. E. et al. 2014). In the structure of GDP of AP Vojvodina, industry participates with 53.4%, services with 30%, agriculture with about 10%, and construction with 6.9%, while GDP per capita in rural areas is 74% of the national average. In rural areas, agriculture continues to be a major economic activity and a major source of income. However, agriculture is characterized by low productivity and competitiveness, a high level of extensive production with low incomes per household. In addition to the low income of agricultural producers, foreign direct investment in agriculture is below 1% of total investment. Consumer purchasing power is also extremely low (Andrić, N., et al. 2010). The main characteristic of rural households in terms of ownership structure is that they are small and divided. Such a structure has a negative impact on agricultural production. Because of all this, there is a need for an additional source of income. The development of rural tourism is one option. There are natural predispositions to such development but not well-designed social activities. For example, out of 415 rural settlements in AP Vojvodina, only 17 developed partially rural tourism (Jelić et al., 2010; Andrić, N. et al. 2010). This lack must necessarily be reversed in the context of the evidently present potentials for tourism development. This is also in line with the concept of multifunctional agriculture that has been promoted by the EU since the 1990s. During the 1990s, the EU promoted the “Multifunctional concept of agriculture and rural development” as part of its Common Agricultural Policy program, wellknown as acronym the CAP, which emphasized, among other things, the need for development of rural tourism. In formulating the multifunctional concept in the development of European agriculture, it has been starting from recommendations which gave the Food Agriculture Organization, the Agenda 21 document (Chapter XIV), as well as numerous international documents and research, etc., have started.

Agriculture as a primary state industry has far-reaching interests for complementary cooperation with all sectors of the economy, including tourism. Vojvodina with its food production resources represents a great opportunity for the development of food tourism. This attitude is supported by the following facts:

- Agricultural industry is highly developed in Vojvodina. It is those different agricultural products that could be seen as the basis for enriching the tourist offer of the local tourist destinations and could represent the basis for attracting tourists whose visit to certain destinations is primarily motivated by food consumption;
- There is a large number of different events throughout Vojvodina focused on local agricultural products and traditionally prepared food. Almost every village has a specific manifestation dedicated to some agro-food product and / or culinary product or specialties. These activities make the local tourist offer more attractive, which leads to complementarity in the development

of different types of tourism, such as food tourism, manifestation tourism (tourism events), rural tourism, etc.

- The relatively well preserved natural environment is also favourable in terms of the production of organic healthy food, which represents a trend for tourists from highly urbanized centers, nowadays. Even more, this area can offer the concept of “Slow food tourism” versus “Fast food tourism”, characteristic for very urbanized city centers. That way the local tourist offer can be further enriched.
- In AP Vojvodina, there are more than 30 nations and nationalities that have rich anthropogenic heritage. Each area/village has its own local gastronomic specialties that could potentially become the object of tourist offer and represent the distinction in relation to tourism offer of other local rural tourist destinations.

If all the aforementioned activities are properly designed in terms of marketing and management, it can help create a large number of different tourist products that could improve tourism offer not only in Vojvodina, but also in Serbia in general.

#### **b) Possible directions for the development food tourism in the area of AP Vojvodina**

Appropriate trends have been observed in the area of rendering services of food and drink in recent years. The system of classic restaurants, which until recently was predominantly present, is changing. Tendencies in the tourist market in addition to the already existing cafe restaurants and fast food restaurants, there are also catering establishments where one can consume organically produced healthy food, as well as the sale, promotion and consumption of food at different events and at different events. In this direction, the future directions and perspectives for develop food tourism in AP Vojvodina should be seen.

1) **The concept of „slow food“** - The Slow Food movement started in Italy in 1986 with the work of *Carlo Petrini*. This was followed by the activities of some intellectuals in Rome who decided to serve the locals and tourists alike the traditional Italian food as an alternative to mass-produced food worldwide. These efforts were encouraged and today it has over 100,000 members in about 130 countries (*Petrini, C. 2001, cited in Nilsson et al., 2011*). According to *Petrini*, “Slow food unites the pleasure of food with responsibility, sustainability and harmony with nature”. The Slow Food Movement’s beliefs led to a new concept of eco-gastronomy. This new thinking is based on the premise that everyone has a fundamental right to enjoyment or pleasure and that the plate and the (world) planet (3Ps) are interrelated (*Tam, D., 2008; Folorunso, S. et. al. 2013*). Slow Food Serbia is a non-profit organization established in 1989 in response to new lifestyles that have brought fast food. Slow food indicates that local food is disappearing all over the world. Therefore, the goal of organization is to raise people’s awareness of the importance of food, that it is important for us to know what we eat, where our food comes from, how we prepare and produce it. Slow food believes that every person should take responsibility and protect the local gastronomic heritage and products that threaten to disappear (*Slow food Serbia, 2019*). The primary goal of the slow food organization is to protect indigenous biodiversity through the biodiversity foundation, which means the diversity of plant and animal breeds. The best example for Serbia is the isolation of “Karakačna sheep”, “pig

mangulica”, “cow bušara”, as well as a variety of authentic plant varieties such as beans “Poljak” and “Smiljan”, etc. Slow food has three main tools for research, maintenance and protection of biodiversity. One of them is the “Ark of Taste”. It is a catalog of disappearing food that is part of the culture and tradition of Serbia and the whole world. (*Slow food Serbia*, 2019). In May 2019, the publication “*The Ark of Taste of Vojvodina*” was presented. The aim of this publication is to unite the gastronomic, cultural and tourist offer in AP Vojvodina in one place. The publication is a kind of guide through the various regions of Vojvodina and their food offerings. The publication was created as a result of the work of the Scientific Institute for Food Technologies from Novi Sad, DDOR Insurance Novi Sad and Slow food organization. The publication presents all kinds of food that can be offer to tourists such as fruits and vegetables, pasta, bakery products, dairy products, meat products, honey, as well as all other traditional dishes and beverages in this area. In other words, the publication presents the gastronomic wealth of AP Vojvodina, which bears historical and cultural specifics.

**2) Organic food** - The modern trends in the tourism market move further from the concept of mass tourism offered by vacations in destinations located on the seashore and/or mountain ski resorts. There is striving towards activating all segments of tourist demand in order to achieve the best results in tourism development. In this way the countries, i.e. destinations that do not possess the resource bases for developing the so-called “mass tourism” seek their chance on the tourism market by offering alternative tourism products. (*Vuković . P. at al. 2015.*). Modern tourists who go to rural destinations want to completely consume so-called “*rural tourism experience*”. In that sense, they want to escape from the modern way of life which one of the most recognized characteristic is „fast food“. Modern tourists who spend their vocation in rural tourist destination want to eat „slow food“, or beter word food made by organically produced agricultural products. Rural tourist destinations that can offer such more organic products are more competitive. (*Vuković, P & Roljević, S. 2018*). Organic farming is a fully controlled production. IOFAM – Organic international (2019) define organic agriculture as „*production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved*“ (IOFAM, 2019). Based on IFOAM rules, production conditions must be adapted to the conditions specific to each country or area where organic farming takes place, and also to be regulated by law. Therefore, the area on which organic farming is based must precisely meet the defined conditions. This includes isolation of land parcels, livestock farms and processing capacities from possible sources of pollution, then irrigation water of appropriate quality, harmonized development of crop and livestock production and qualification of experts and producers for organic agriculture, with obligatory continuous innovation of knowledge. It can be said that the consumption of organic food is as old as humanity is, but humans have led to the fact that today, due to economic development, most of the food contains harmful substances. Since most diseases originate from irregular and contaminated food as well as improper nutrition, the advantage of branch agriculture over conventional agriculture lies precisely in the production of health-safe food. Another very important benefit is the conservation of the environment by conserving its resources - land, water and air. (*Kljajić. N. at al. 2008*). Organic farming and rural tourism have multiple complementarities in development, which is reflected in the following:

- Sustainability of organic agriculture and rural tourism is based on the rational use of natural resources. The intention is to preserve and increase their diversity with minimum negative impacts on the environment.
- Organically produced agricultural products are subject to inspection and control, hence the trust of tourists who come to rural destinations that they will exactly be able to consume these organic products, which increase revenues of producers, as well as farmers who offer tourist services.
- Rural tourism is, by definition, small-scale and low intensity. As such it is found to comply with the organic products which, according to numerous studies have shown give lower yield of crops in comparison with conventional agriculture. However, these yields can be compensate with numerous benefits that organic farming offer, such as, for example, increased soil fertility, reduced pollution, conservation of agro-eco system, income security, strengthening communities, improving the health of the population, etc.

Rural tourism and organic agriculture are complementary activities. Both are low intensity and small volume. This is because they put the environment in the forefront. As one of the possibilities that would contribute to the development of both organic agriculture and rural tourism, it is possible to connect them in a tourist offer. In this way, the boarding house offer will be enriched and made possible by the creation of a large number of different specialties from organically produced agricultural products. The expectations are that in this way specific tourism products based on food tourism could be formed, which in a number of ways could enrich the overall tourist offer - from the classical boarding house to tourism events that would attract a certain number of tourists to rural areas. By doing so, rural tourism destinations that would connect these two complementary activities would also become more attractive to the market, ie. more competitive in relation to those destinations that do not have this kind of tourist supply.

In Serbia has done pretty small on linking rural tourism and food tourism with organic farming so far. It can be said that these are sporadic attempts. Considering the potentials that exist for the development of rural tourism, as well as organic agriculture, it is justified to expect some strategic approach at the state level. It provides opportunities for developing specific tourist brands for destinations that are located in characteristic natural sites. Especially if we understand the geographical diversity that the country has and which provides opportunities for the development of various types of organic farming production. It is also a possibility for development of tourist competitiveness of Serbia, which offers various rural tourism products. The range of tourist offer spreads both on-board and extra-board a tourist offer (Vuković, P and Roljević S. 2018). Having in mind all the foregoing, it is reasonable to expect appropriate activities to make link between organic agriculture and rural tourism. The results that could be achieved would be in favor of development and rural tourism and organic agriculture. This is in line with general market trends that show growth in demand for both types of business.

**3) Tourism of events** - Hall and Mitchell (2001) defined food tourism as “visitation to primary and secondary food producers, food festivals, restaurants and specific locations for which food tasting and/ or experiencing the attributes of specialist food production regions are the primary factor for travel”. It should be noted that every visit to a local food seller or cafe’ is not food tourism; but a deliberate effort on the part of tourists or individuals to experience a

food event or taste a particular type of food as the case may be. Every tourist destination tries to develop its own tourist product that is unique and identifiable to that destination. One such tourism product is a food event (*Folorunso, S. et. al. 2013*).

*Hall et al. (2003)* mentioned that travel behavior or tourist decision in travelling to participate in any food event should be primarily motivated by the desire to have a different experience. Food and its associated events can become part of a destination attraction and could be utilized as a tool to create desire in tourists to experience rural tourism. The above discussion points to food being an important motivating factor for tourists to visit a destination in their quest for a satisfying experience. Each rural area has some natural specificity that affects the agricultural production and the food consumed therein. For this reason, there are a large number of different culinary specialties that can be found in different tourist destinations.

In the AP Vojvodina live 28 nationalities with rich anthropogenic heritage with many different amenities and different manifestations dedicate to food. Tourist organization of AP Vojvodina each year makes publications in which promote events/manifestations dedicate to food. In September 2019 there were 21 events dedicate to food on area of AP Vojvodina according to Tourist organization of Serbia and Tourist organization of Vojvodina in 2019. It is important to mention that this table included different events which promote food by Tourist organization of Serbia but in practice calendar of food events is richer, because each village in AP Vojvodina has its own manifestation dedicate to some of local food (agricultural) products. “The Catalog of events” was published in 2018 by Tourist organization of Serbia in which was presented all tourist events and manifestation on the territory of Serbia. According to this source in AP Vojvodina in 2018 held more than 100 different events dedicate to food.

### **c) Branding of agricultural food products and appropriate marketing strategies for autochthonous agricultural food products**

In today’s market conditions, there is a lack of healthy, traditional, local agricultural products, which made demand and price increase due to their rarity and importance for consumers. Branded agricultural products guarantee to meet the sophisticated customer’s needs, and they are often the reason for journey (*Djordjević, T. at al. 2014*). In today’s market conditions with frequent and strong fluctuations, the brand plays an important role. The brand also plays a large role in the food market because of its high purchasing frequency, as it guarantees appropriate quality and variety from other similar products. Often, generic product names are given adjectives that indicate Geographical Indication or Appellation of Origin. This is done in order to differentiate the product and create a comparative advantage in the market. (*Giovannucci, D., at al. 2009*). According to legal law regulations in the Republic of Serbia, two types of designations are protected under the geographical origin: name of origin and geographical indication. The name protects the name of the location/destination from which the product originates (village, region, country, etc.), and the geographical indication identifies that the particular product originates from the appropriate geographical territory (village, region, country, etc.). These products are of great importance for tourism development, because the product and the territory share a reputation, so the success of the product often leads to strengthening the attractiveness of the area and is related to the benefits that can be achieved through tourism (*Djordjević, T. at al 2014*). Adding value to products strengthens

the territorial capacity of the area, improves the image of the territory and local identity of the population, while through networks and cooperation based on placement to a given value, increases employment and strengthens social cohesion. This value-added product and product placement process includes the SME sector, farm production, support from local development actors and institutions. It strengthens the presence of consumers and tourists in the appropriate destination by offering local products and services created using local resources (*Živkov, G. i sar. 2013*).

Depending on the region or local environment where the production takes place, the products have different characteristics. On the basis of added value in the market, they achieve a higher price, while consumers are satisfied with their consumption. Some autochthonous products in the area of AP Vojvodina are more or less known and have different representation in the diet of consumers. In order to increase the demand for these products, even though they currently exist, it is necessary to protect the authenticity of the products, of exceptional value, to legalize production and to carry out the necessary veterinary-health surveillance and to achieve as much standardization as possible, especially meat products (*Puškarčić, A. et al. 2013*).

It is important to state that producers of autochthonous agricultural food products of the area of AP Vojvodina should face competition in the target market, that is, other manufacturers of the same and similar indigenous products. Competitive products can be products of other manufacturers of indigenous products, but also products that come from industrial production. It is industrial food products that can replace traditional products, and the most common trump card is low prices. For this reason, it is necessary to position the products of a certain area in the target market with a predetermined strategy of appearance, which will include emphasizing the advantages of specific products and a specific geographical area, as well as the benefits obtained by their consumption. It is important that the development strategy also envisages linking of autochthonous agricultural products with the area in which the production takes place, emphasizing both the benefits of the products and the important characteristics that characterize the area, such as the untouched nature, the richness of the indigenous species, local plants and animals traditionally used in nutrition and the like. In order to present a range of indigenous agricultural food products in a particular geographical area, it is important that the packaging is adapted to identify the origin of the product immediately. The packaging should be of a modern design, however, the materials used in the packaging should be made exclusively of natural materials such as wood, jute, linen, etc. The marking should be in accordance with the concept of presenting the offer of agricultural food products of a particular locality. The autochthonous food product of a particular area should be of uniform and unique quality, that is, the product of different manufacturers should have the same quality, while the parts of organoleptic properties should represent the details on which the products are differentiated. In order to reduce uncertainty and possible suspicion of potential customers of the product, efforts should be made to find a way to actualize the specificity of the taste by searching for material indicators of the quality of the product. Protecting the geographical origin of products is an important part of the EU's Stabilization and Association Agreement, which applies to agriculture and the food industry. The EU expects Serbia to protect its original products and register them according to group rules. Many EU Member States are working to create the conditions to protect specificities in the agricultural and food industries by a method commonly

known as geographical origin. Protecting the geographical indication is a very useful tool for the development of the region, especially in rural areas, and represents an opportunity for Serbian producers of traditional products to use their branding to somehow brand their product and thus increase competitiveness (higher sales price, market recognition). (Paraušić, V. *et al.* 2007).

## Conclusion

Today, tourism has undergone lot of changes, both on the sides of tourist demand and supply. The concept of mass tourism minimizes the contacts of tourists with the local community and residents. The new approach to tourism development is more flexible, market-segmented and oriented towards residents of local tourist destinations. Also, the new approach to tourism is more concerned about the environment of a tourist destination. Modern tourists have greater and different requirements. Tourist travel nowadays because they want to live new tourist experience, different than traditional tourism offer. One of the experiences that make modern tourists to travel is the possibility of tasting the new gastronomic (food) flavors. Rural tourism is related to food tourism. Tourists that visit rural areas are motivated to consume local agri-food products as well as various gastronomic specialties made from local food. Rural tourism is of low intensity and low scope. It is addressed to the individual preferences of tourists who preferably visit rural areas. This concept of rural tourism is in the line with the concept of food tourism, to meet tourists as a consumer, enabling them to enjoy in the flavors of food, which is the primary motive for their journey. AP Vojvodina possesses the great potential for development of both types of tourism - gastronomic and rural. More than 85% of the AP Vojvodina territory cover rural areas where 43% of the population lives. This data show the great potential for rural tourism development. Vojvodina is also characterized by the fact that there are more than 30 different nations with rich anthropogenic heritage. In Vojvodina there are 415 rural settlements and each village has its own manifestation/event dedicated to local agricultural food products and food. There is also a well-preserved a natural environment that favors organic food in Vojvodina. Also, there is a well-developed agricultural industry. All this facts creates a good basis for the development of food tourism. In AP Vojvodina, there are a number of different factors that can attract tourists to stay in there. There are lot of resources that must be put into the function of tourism development. In accordance with the existing potentials of Vojvodina, Republic of Serbia, four directions and perspectives for the food tourism development are imposed: 1) the approach and concept of “slow food” tourism, 2) organic food, 3) event tourism and 4) branding of local agri-food products. An appropriate marketing strategy for local indigenous agri-food products should play an important role. It is important to have a distinction, to be differentiated and positioned in the market in order to respond to different demands of consumers / tourists, i.e. market segments. In this respect, it is important to apply a market focus strategy to the relevant market targets or niches. It is expected that this approach would have greater effects than the current undifferentiated marketing strategy, which did not produce major effects in tourism development. With the aim of interest of tourism development and the economy as a whole to strive to develop the marketing of indigenous products. Also, better communication among all stakeholders in the tourism market is needed in order to effectively meet the needs of tourist demand. In order to increase the tourist recognition of local products, it is necessary to

brand the appropriate agri-food products. This is important in order to strengthen the image of Vojvodina, republic of Serbia as a tourist destination. In order to better market positioning, all the factors in the tourism supply chain need to be linked. This increases the conditions for stronger market competitiveness. The suggestion is that this connectivity be modeled on a cluster princip that is organized on a functional principle.

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SCIENTIFIC REVIEW ARTICLE  
doi:10.5937/ekonomika2001093B  
Received: October, 28. 2019.  
Accepted: January, 24.2020.

## SURVEY ON WOMEN'S INNOVATIVE ENTREPRENEURSHIP IN SERBIA<sup>3</sup>

### Abstract

*The main objective of the research is to analyse and assess the innovative potential of women entrepreneurs in Serbia. A field survey was conducted in order to realize the research objective. The questionnaire was designed to gather perceptions of women entrepreneurs on the following five factors: motivation of women to be entrepreneurs, conditions and opportunities for conducting innovative activity in Serbia, investments in innovative activity, level of cooperation with relevant institutions in national innovation ecosystem, and familiarity with the role and measures of institutions supporting innovative activities in Serbia. Considering an even geographical coverage the sample included 30 women entrepreneurs in 6 areas. Based on the survey results, the innovative potential of women entrepreneurs in Serbia can be assessed as relevant but underdeveloped. In order to develop their innovative potential, improve innovative performances and increase the level of participation in innovative activities, a set of recommendations for policy makers is suggested in the paper.*

**Key words:** women's entrepreneurship, innovative potential, field survey, Serbia.

**JEL classification:** L26, O30, M21

## ИСТРАЖИВАЊЕ ПОТЕНЦИЈАЛА ЗА РАЗВОЈ ИНОВАТИВНОГ ЖЕНСКОГ ПРЕДУЗЕТНИШТВА У СРБИЈИ

### Апстракт

*Циљ истраживања је анализа и оцена поштенцијала за развој иновативног женског предузетништва у Србији. За поштере реализације дефинисаног циља истраживања, сироведено је штеренско истраживање на узорку од 30 жена предузетника у 6 географски равномерно расиоређених подручја. Уиштиник је конципиран на начин да обезбеди прикуиљање информација о перцепцијама жена предузетника о следећих иеш фактора: мотивација за предузетнички подухваи, услови и прилике за сировођење иновативних активности у Ср-*

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<sup>3</sup> This paper is a result of research financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia. Also, this research is supported by PERFORM project of Swiss Agency for Development and Cooperation (SDC), implemented by HELVETAS Swiss Inter-cooperation and University of Fribourg

бији, инвестиције у иновативне активности, ниво сарадње са релевантним институцијама у националном иновационом екосистему и ујознатости са улозом и мерама институционалне подршке иновативним активностима у Србији. На основу резултата истраживања, потенцијал за развој иновативног женског предузетништва у Србији је оцењен као релевантан али недовољно развијен. У циљу подстицања иновационог потенцијала жена предузетника, унапређења њихових иновативних перформанси и повећања нивоа њихове укључености у иновативне активности, у раду је дати сет препорука за креаторе економске политике.

**Кључне речи:** женско предузетништво, иновациони потенцијал, ширенско истраживање, Србија.

## Introduction

Economic development of nations is driven by strong private sectors characterized by enterprises that invest, increase productivity and create new jobs. Along with abandoning the dominant reliance on big businesses and mass production, the importance of the role of entrepreneurship is constantly increasing. The importance of entrepreneurship is particularly relevant in modern, dynamic business environment since smaller scale enterprises and entrepreneurs are flexible, innovative and adaptable to rapid changes in the market.

Both entrepreneurship and innovation have positive effects on economic growth and development (Ђурићин and Beraha, 2018). Innovations are considered as a key factor for achieving smart, sustainable and inclusive growth which is defined by the EU strategic documents as a priority goal. Innovation leads to new products and services or new ways of production and delivery and those are main assumptions of competitiveness of national economies, environment protection, health and general human well-being. In order to protect a competitive position in the future, it is necessary to embrace risk taking innovations, disturbing current business routines (Erić Nielsen, Stojanović-Aleksić & Zlatanović, 2019).

At the same time, entrepreneurship is associated with the generation of new ideas. Entrepreneurship is by its definition related to innovative activity. The entrepreneurs tend to predict and respond to changes within markets and bears the uncertainty of market dynamics (Knight, 1942). The entrepreneur is the innovator who introduces change within markets through the introduction of a new product or quality or new method of production, opening of a new market, introducing new source of supply of new materials or parts, and new organization of any industry (Schumpeter, 1934). No matter if it occurs in an existing business, public service institution or a new business venture started by an individual, innovation is the specific function of entrepreneurship (Drucker, 2002).

Relationship between entrepreneurship, innovation and economic development along with the growing importance and actuality of innovative activities, have determined the subject of the research presented in this paper. Since there is an extensive literature on the general role and importance of entrepreneurship, it will remain outside the coverage of this paper. Because there is much less research on different aspects of

women's entrepreneurship, the subject of the research is narrowly focused on women entrepreneurs, and more precisely on innovative women entrepreneurs.

Along with the sector of small and medium-sized enterprises, women's entrepreneurship is important for economic development for it contributes to reduction of unemployment, establishment of businesses in new spheres, implementation of new technologies, development of entrepreneurial sector, as well as to real GDP growth, regional and rural development (Jovanović and Lazić, 2018). Women's entrepreneurship is an important issue in terms of gender equality and women empowerment, but also for the promotion of sustainable development and economic growth through the creation of high growth, innovative enterprises (Radović-Marković et al., 2019; UNCTAD, 2013).

With an aim to fill the existing gap in research and literature on innovative activity of women entrepreneurs, this paper contributes an empirical study on several aspects of innovative women's entrepreneurship in Serbia and suggests a set of recommendations for policy makers based on the field survey results. The main objective of the research is to analyse and assess the innovative potential of women entrepreneurs in Serbia. In order to evaluate the innovative potential of women entrepreneurs, a field survey was conducted. The questionnaire was designed to gather information and perceptions of women entrepreneurs on the following five factors relevant for the assessment of innovative potential: motivation of women to be entrepreneurs, conditions and opportunities for conducting innovative activity in Serbia, investments in innovative activity, level of cooperation with relevant institutions in innovation ecosystem, and familiarity with the role and measures of institutions supporting innovative activities in Serbia.

## Literature review

In the broad context of entrepreneurship, the very special nature and characteristics of women entrepreneurs imply a separate approach to the consideration of this phenomenon. Unlike male's entrepreneurship, women's entrepreneurship is characterized by strong social dimension. Personal characteristics of women entrepreneurs and their motives for running business differ from those of men entrepreneurs. While independence and the need for self-achievement are common motives for both male and female entrepreneurs according to Hisrich (1990), women entrepreneurs are strongly encouraged by the flexibility of working hours (Orhan and Scott, 2001) that provides them with enough time for home duties, socializing, family issues, relaxing, etc. Many women find it difficult to reconcile family responsibilities with inflexible employment in the formal sector (Baughn, Chua & Neupert, 2006). Working at home enables women to avoid long business meeting and boss' critics and allows more freedom and different opportunities for quality use of time, however it often leads to traps of lacking organizational capabilities, having hard time with organizing commitments and time, and sometimes even losing their identity (Radović-Marković, 2018). Brush (2009) suggests that there are three main differences between men and women entrepreneurs: representation in the business sector, entrepreneurial process, and access to resources -especially growth capital. Avolio and Radović-Marković (2013) suggest that there are two categories of factors that explain women involvement in entrepreneurial activity, whereby the first one refers to circumstances such as personal, economic, work or family related

situations or events, and the second one refers to motives and is related to achievement, autonomy, power and affiliation..

Zapalska (1997) found significant differences between men and women regarding the objectives for their ventures and their perceptions on critical success factors. While 99% of male entrepreneurs stated that their main goal is to acquire the short-term profitability, it was stated as a goal by only 59% of female entrepreneurs. On the other hand, long-term capital accumulation and investment is a priority for 89% of women and only 12% of men entrepreneurs. Also, the most important factors as perceived by women refer to innovation/creation of something new, professional attitude, and establishment of business contacts, while these factors are not perceived as important by men entrepreneurs (Zapalska, 1997 in Bliss & Garratt, 2001).

Consideration of the main reasons and motivation of women to be entrepreneurs is an important issue particularly when attempting to assess the potential for innovative activities since entrepreneurship is not related to an enterprise's size and age but to a certain kind of activity (Drucker, 2002).

In the last decade, many changes in regard of women entrepreneurship have occurred in developing countries, whereby the most significant one refers to the increasing share of women entrepreneurs in the total number of entrepreneurs in both national economies and in the global economy (Jovanović and Lazić, 2018). However, despite being one of the fastest rising populations of entrepreneurs and making significant contribution to innovation, job and wealth creation, women are vastly understudied (De Bruin, Brush & Welter, 2006). Also, when being subject of analysis, women entrepreneurs are often considered as a homogenous category. For example, there are significant differences in terms of available resources between necessity-driven and opportunity-driven women entrepreneurs (Minniti, Arenius, & Langowitz, 2005).

Women entrepreneurs contribute to economic development not only through employment and wealth creation, but also by improving the diversity of entrepreneurial activity and the overall quality of entrepreneurship (Verheul & Thurik 2001, Verheul, Van Stel & Thurik, 2006, Verheul & Van Stel, 2007 in Nissan, Carrasco & Castano, 2012). In their empirical study on women entrepreneurship, innovation and internalization Nissan, Carrasco & Castano (2012) found that the contribution of male and female entrepreneurship to economic growth can be compared but since the rates of male entrepreneurship are higher, their contribution is proportionally higher, as well as that the lower rates of female entrepreneurship are due to many factors such as different preferences, discrimination, and risk aversion. Also, they concluded that there is a positive relationship between innovation and economic growth for both entrepreneur groups, without significant differences among them. According to Stošić et al. (2019) there is a positive relationship between innovation and entrepreneurship when both men and women begin their businesses to profit from a market opportunity, and there is no significant gender difference except for the higher rates of male entrepreneurship. However, when the entrepreneurial activity is driven by necessity, this relationship is negative which means that the degree of innovation is lower.

The nature, extent and the potential economic contribution of women's entrepreneurship is influenced by the institutional and legal contexts (Welter, 2004). Baughn, Chua & Neupert (2006) found that specific normative support for women entrepreneurs is highly associated with general positive regard for entrepreneurship and

level of gender equality in a society. Some researchers argue that there is a lack of formal support for women entrepreneurs (Bliss & Garratt, 2001). According to Warnecke (2013) both formal and informal institutions play an important role, and while formal institutions include laws and regulations, informal institutions are associated with societal norms and attitudes which are much harder to change, but they significantly limit opportunities for women.

Bliss & Garratt (2001) argue that institutional support to women entrepreneurs in transitioning economies should focus on the following areas: (i) easy access to information about starting and running a small business; (ii) training programs in the areas of business plan preparation, marketing strategies, human resource management, and financial management; (iii) providing access to mentoring relationships; (iv) modifying societal and cultural stereotypes that penalize women in business; (v) lobbying government agencies to reduce burdensome tax policies and the bureaucratic red tape that hinder entrepreneurial activity. Brindley (2005) points out that it is necessary to understand the gender aspects of risk for policy measures to be efficient and help women overcome barriers and achieve their entrepreneurial potential.

Estrin & Mickiewicz (2011) analysed how institutions affect men and women decisions to start new business in the period 2001-2006, and they found that women are less likely to undertake entrepreneurial activity in countries where the state sector is larger, but the rule of law is not gender sensitive.

A survey conducted by the UNCTAD in 2012 provided insights on drivers and obstacles to entrepreneurship and innovation from a gender perspective. The survey results indicate that women entrepreneurs are faced with the same challenges as male entrepreneurs, but women entrepreneurs face some additional challenges such as lack of visibility and access to support networks, and cultural acceptance. The difficulties that women face have helped them embrace the opportunities provided by information and communications technologies (ICT) in creating marketing channels, collecting customer information and improving efficiencies in their business processes. As ICTs play an important role in creating competitive advantage, the survey argues that policymakers in both developing and developed economies need to start a dialogue about how to support increased innovation in women's enterprises.

In Serbia, along with the growing awareness of the need of policies in support of innovative enterprises, the issue of policies and support measures targeting innovative women entrepreneurs is gaining importance. There is a lack of comprehensive research on innovative activities in general, and on innovative women entrepreneurial activities as well. However, available research results clearly indicate that women entrepreneurship is insufficiently supported. Based on a qualitative study on women entrepreneurship in Serbia, Zlatkov-Cvetković (2015) found that comprehensive measures are needed in order to increase women entrepreneurship, that a joint action of policy makers, representatives of banks, experts, and NGO's is necessary in order to encourage and support female entrepreneurship in Serbia. More precisely, specific measures are needed such as credit lines, guarantee funds and business incubators for female entrepreneurs, as well as changes in the traditional role of women as a precondition for alarming on women inequality.

Popović-Pantić (2014) conducted a study on female entrepreneurship and innovation in Serbia in the context of EU competitiveness. The findings show that women

prefer incremental to radical innovation of products/services, as well as that they are highly aware of the importance of innovation for enterprise's development. Also, the results point out to the small share of women using programs to support the innovativeness and competitiveness of SMEs is, that their capacities to perform innovation activities are limited by their financial and human resources. This study clearly indicates that there is a lack of female enterprises with innovative potential, thus pointing out to the need to focus on designing policy measures to promote female innovative entrepreneurship.

## Data and Methodology

The main objective of the research is to empirically analyse and assess the innovative women's entrepreneurship in Serbia. In order to realize the research objective, a field survey was conducted. A field survey was used as a qualitative method of data collection. In conducting a survey, a questionnaire was used and specially designed to provide data on the following five aspects of innovative women's entrepreneurship in Serbia:

- 1) motivation of women to be entrepreneurs,
- 2) conditions and opportunities for conducting innovative activity,
- 3) investments in innovative activity,
- 4) level of cooperation with relevant institutions in the innovation ecosystem,
- 5) familiarity with the role and measures of institutions supporting innovative activities.

A field survey was conducted in the period April-June 2018. The sample included 30 women entrepreneurs in 6 research areas. Considering an even geographical and demographical coverage, the research areas covered four statistical regions, i.e. the following six cities: the City of Novi Sad and the City of Subotica in Vojvodina region, the City of Belgrade in Belgrade region, the City of Čacak and the City of Kragujevac in Šumadija and Western Serbia, and the City of Niš in Southern and Eastern Serbia.

The questionnaire was semi structured and consisted of three sections. The first section referred to general information on women entrepreneurs such as name, address, size, core business activity, number of employees. The second section contained questions aimed at providing an insight on motivation of women to be entrepreneurs and the perception of women entrepreneurs on the existing terms and opportunities for conducting innovative activities in Serbia. Also, this section included a question regarding the amount and structure of investments in innovative activities. The third section referred to questions regarding cooperation with higher education institutions and/or scientific research institutions, as well as regarding the extent to which women entrepreneurs are familiar with institutions and measures supporting innovations in Serbia.

The questionnaires were distributed by E-mail to 30 women entrepreneurs in six cities in Serbia. Women entrepreneurs were selected by the random sampling method. The E-mail addresses of women entrepreneurs were provided to the researchers indirectly by the representatives of innovation infrastructure and by innovation promoting actors.

The research methodology implied the use of both primary and secondary data. The secondary data was used to define the theoretical framework of the research,

methodology, and size of the sample. The primary data is the survey data obtained from the conducted field research.

The data collected was analysed using descriptive statistics. The primary data was analysed using qualitative and quantitative analysis. Afterwards the objectification of results occurred. The innovative potential of women entrepreneurs in Serbia was assessed by using comparative analysis of both primary and secondary data.

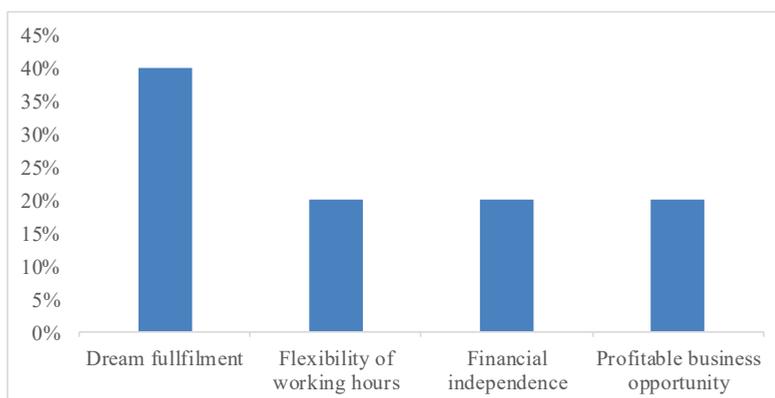
## Results and discussion

Empirical analysis of innovative women entrepreneurship indicates that conditions and opportunities for conducting innovative activities in Serbia are poor as they were assessed by 80% of respondents. Only 20% of surveyed women entrepreneurs assessed them as solid. None of the surveyed respondents perceive these terms and opportunities as being incentive which points out that government needs to be more actively engaged in improving innovative ecosystem and promoting the level of women's participation in innovative entrepreneurship.

The main reasons for such a poor assessment of existing conditions and opportunities for conducting innovative activities in Serbia, as perceived by women entrepreneurs, refer to the lack of financial resources, insufficient institutional support, lack of relevant procedures and regulations, and macroeconomic environment. Also, 40% of surveyed women entrepreneurs stated that they are completely unfamiliar with institutions and measures supporting innovations and innovative activities in Serbia.

Regarding motivation of women to become entrepreneurs, 40% of survey respondents claimed that they started their business to fulfil a dream. Flexibility of working hours was a motivation for 20% of respondents, while 20% reported that they were motivated by financial independence. Also, 20% of surveyed women said that they wanted to take the opportunity in profitable business sectors. The dominant share of respondents who started business to make a dream come true indicates that new market needs and opportunities are still insufficiently recognized by women entrepreneurs in Serbia.

*Figure 1: Motivation of women to be entrepreneurs*



Source: based on data obtained from authors' independent survey

The structure of investments in innovative activities shows that 50% of survey respondents invest in research and development activities. More precisely, 33.33% of surveyed women entrepreneurs invest up to 10% of sales revenue and 16.7% invest between 31-40% of sales revenues in research and development. Also, 16.7% of respondents invest up to 10% of sales revenues in outsourcing research and development activities from other enterprises, institutions and organizations. The same percentage of surveyed women entrepreneurs invest between 21-30% of sales revenue in purchase of machinery, equipment, software, etc.

The results also show that as per 16.7% of survey respondents invest up 10% of sales revenues, between 11-20% of sales revenues and between 21-30% of sale revenues in design and marketing development.

*Table 1: Structure and amount of investment in innovative activity*

Answer	% of sales revenues					
	up to 10%	11-20%	21-30%	31-40%	41-50%	no investment
R&D activities	33.30%			16.70%		50.00%
Outsourcing R&D from other enterprises, institutions or organizations	16.70%					83.30%
Purchase of machinery, equipment, software, etc.			16.70%			83.30%
Design and marketing development	16.70%	16.70%	16.70%			50.00%

*Source: based on data obtained from authors' independent survey*

The survey data leads to the conclusion that women entrepreneurs in Serbia invest rather modest amounts of their sales revenues in innovative activities. Particularly, women on average do make certain investments in research and development and design and marketing development, but very poorly in purchase of machinery, equipment, software, etc. Also, women entrepreneurs rarely rely on outsourcing research and development activities from other enterprises, institutions and organizations which can be perceived as a limiting factor for their innovative business activities and development opportunities.

The research results also indicate that there is a low level of cooperation between women entrepreneurs and higher education institutions and/or scientific research institutions in Serbia. 80% of respondents stated that they didn't cooperate with any institution but rather developed their innovation by themselves. On one hand, this highlights the need for strengthening relationships and ties between entrepreneurs and science and education. On the other hand, the fact that most surveyed women entrepreneurs developed their innovations by themselves points out that their innovative potential is evident.

Based on the empirical analysis, the innovative potential of women entrepreneurs in Serbia can be assessed as relevant but underdeveloped. The innovative potential

of women entrepreneurs is immanent, however the place and role of innovation in implementing their business activities is not clearly defined. Since innovation potential is a key precondition of competitiveness, conditions for increased innovative activity of women entrepreneurs need to be created. It is the ability of government to develop the innovation ecosystem in the country, and thus create stimulating environment for creativity and innovation. Governments play a crucial role in promoting innovation through policy measures. The mitigation of the main obstacles pointed out by the surveyed women entrepreneurs as the key factors determining the overall conditions and opportunities for innovative activities in Serbia is to be addressed by the government policy. The lack of financial resources is one of the biggest challenges entrepreneurs face when conducting their business activities, but it particularly becomes relevant in terms of innovations since they usually require significant capital investments in research and development, the purchase of equipment and machinery, prototype development, etc. The risk associated with innovations additionally makes them difficult to finance. Also, the existing macroeconomic environment and the lack of relevant procedures and regulations are perceived by women entrepreneurs as obstacles to innovative activities. The low level of cooperation between women entrepreneurs and institutions has a limiting impact on women's innovative potential since interactions among enterprises, universities and public research institutes are an important type of knowledge and information flow within national innovation ecosystems (OECD, 1997). In addition to that, a significant share of surveyed respondents is completely unfamiliar with institutions and measures supporting innovations and innovative activities in Serbia which brings under discussion the need to improve interactions between different actors in the national innovation ecosystem, and to enable the effects of their engagement to reach as many women entrepreneurs as possible.

The conducted analysis provides valuable insights for raising awareness about importance of innovative women entrepreneurship and getting the issue on the public agenda. Based on the survey results, this paper suggests a set of recommendations for policy makers in Serbia. First, there is a need for a comprehensive research on innovative performances, needs and problems of enterprises, institutions and other participants in national innovation ecosystem. The research results should serve as an evidence for public policy making. Second, innovation policy needs to be more focused on policy measures to promote women innovative activities. Policy measures should include government programmes, mechanisms and financing policy instruments such as government loans to support private research and development and mitigate the limited access of women entrepreneurs to financing. Also, interactions and cooperation between different actors involved in national innovation ecosystem are needed through a systematic approach based on encouraging various forms of linkages between enterprises, universities and research institutions such as joint research, personnel exchanges, cross patenting, purchase of equipment and a variety of other channels (OECD, 1997). Proposed recommendations for policy makers can be summarized as follows:

- Conducting survey research of the needs, problems and performance of all actors in the national innovation system;
- Introducing evidence-based innovation policy approach i.e. application of survey results in policy making;
- Designing policy measures i.e. programmes, mechanisms and financing

- instruments targeting the needs of women innovative entrepreneurs;
- Systematic approach to promoting interactions and cooperation between different actors in the national innovation system through more effective national innovation policy.

## Conclusion

The survey on innovative women's entrepreneurship in Serbia includes assessment of their innovative potential. The assessment is based on the analysis of five different aspects of their innovative activity including motivation to become an entrepreneur, perception on conditions and opportunities for conducting innovative activity, level of cooperation with relevant institutions in national innovation ecosystem, and familiarity with the role and measures of institutions supporting innovative activities in Serbia.

The results obtained from the field survey indicate that women are mostly motivated by a desire to make their dream come true. Besides that, as per 20% of women are motivated by financial independence, flexibility of working hours and taking advantage of profitable business opportunities. The conditions and opportunities for conducting innovative activities are perceived by 80% of surveyed respondents as rather poor. The main reasons for such a perception refer to the lack of financial resources, insufficient institutional support, lack of relevant procedures and regulations, and macroeconomic environment. Additionally, 40% of surveyed women entrepreneurs stated that they are completely unfamiliar with institutions and measures supporting innovations and innovative activities in Serbia. Regarding the structure and amount of investments in innovative activities, women on average modestly invest in research and development and in design and marketing development, but very poorly in purchase of machinery, equipment, software, etc., as well as in outsourcing research and development activities from other enterprises, institutions and organizations. The level of cooperation between women entrepreneurs and institutions involved in national innovation ecosystem is perceived as low and most surveyed women entrepreneurs developed their innovations by themselves which points out to their immanent innovative potential.

Based on the survey results, the innovative potential of women entrepreneurs in Serbia can be assessed as relevant but underdeveloped. In order to develop their innovative potential, improve innovative performances and increase the level of participation in innovative activities, a set of recommendations for policy makers is suggested in the paper.

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## ШАБЛОН / ТЕМПЛАТЕ ЗА ПИСАЊЕ РАДОВА

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ЕКОНОМИКА : међународни часопис за  
економску теорију и праксу и друштвена питања  
= international journal for economic theory  
and practice and social issues / главни и одговорни  
уредник Зоран Симоновић. - Год. 20, бр. 1/2  
(1973)- . - Ниш : Друштво економиста“Еко  
номика“; 1973- (Ниш : Medinvest). - 24 cm  
Тромесечно. - Текст на енгл. језику. - Је наставак:  
Наука и пракса = ISSN 0558-3063. - Друго издање  
на другом медијуму: Економика (Online) =  
ISSN 2334-9190  
ISSN 0350-137X = Економика (Ниш)  
COBISS.SR-ID 26903

