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Economic Horizons



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EDITORIAL

After the conducted double-blind review procedure and the improvement of the received manuscripts, Issue 1 Volume 2018 of the *Economic Horizons* contains seven contributions: three original scientific papers, three review papers, and the announcement of the international scientific conference.

Given the fact that so far no adequate research interest has been expressed for the key aspects of gender (in)equality in higher education in the Republic of Serbia, *Slavica Manic*, *Ljubinka Joksimovic* and *Sinisa Zaric* did research into the "position of women in science according to their position on the career ladder." Through the research process in which adequate research instruments was used, that the "under-representation of women is more pronounced along the career ladder" was confirmed, namely that the representation of women is subject to change inversely proportionally to their position in the academic hierarchy, which is indicative of the insufficient and/or inadequate utilization of the human potential because previous investments in their education are not materialized in the right manner, which has broader social and economic consequences.

Starting from the attitude that in numerous studies a fact was established that ecological accounting did also have an impact, among other things, on the profitability of an enterprise, *Amaechi Patrick Egbunike* and *Godsday Edesiri Okoro* did research into whether ecological accounting is relevant for the profitability of Nigerian enterprises. On the basis of the financial reports of the analyzed enterprises that are not engaged in the production of non-consumer goods, the research study that was carried out leads us to a conclusion that there is no significant correlation between ecological accounting and the level of the profitability of the mentioned enterprises, given the fact that the level of their profitability remains unchanged irrespective of whether such enterprises do, or do not, apply the standards of ecological accounting. Despite the mentioned current practice, an indication is made with respect to the fact that the application of ecological accounting is an important factor of the

improvement of the business results and the level of the competitiveness of Nigerian enterprises.

Pursuant to the importance of the protection and preservation of the living environment, an increasingly larger number of enterprises are making an attempt to reduce the negative impact on the living environment while simultaneously increasing economic efficiency, which is contributed to by the application of the ISO 14001 standard. Endeavoring to identify the motives for and benefits from the implementation of this Standard, *Dejan Jovanovic* and *Vesna Janjic* conducted an empirical research study by surveying the managers of enterprises via a questionnaire, which showed that the primary motives for the introduction of the ISO 14001 Standard were as follows: the responsibility for the living environment, the creation of the image of a socially responsible company, a better reputation of the enterprise, and the improvement of performances, whereas the benefits reflect in the improvement of ecological performances, the growth of efficiency, and greater profitability, which is correlated to cost reduction and the motivation of employees.

The decision-making process is effective and efficient when it is a result of a rational choice made by a fully informed decision-maker. However, *Jelena Nikolic* points to the fact that, in real conditions, there are deviations in the application of rational decision-making procedures due to the influence of the uncontrolled factors that limit the full knowledge of information and rationality. As a consequence of asymmetrical information and limited rationality, only in exceptional situations do decision-makers make a decision to look for and make a choice of the optimal alternative, i.e. they aspire to find satisfactory, not optimal solutions. Limited rationality, together with cognitive limitations, leads towards a decrease in the quality of decisions and the application of inadequate decision-making models since an approximate, simplified model of a real situation is used. The mentioned is implicative of the errors in the decision-making process since routine problem solving prevails, heuristics as a mental shortcut are applied, and different deformations in thinking occur, which leads to the prejudices that define the decision-making process.

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Given the fact that education is a driving force of economic prosperity, while starting from the implications of the economy of knowledge and new technologies on economic successfulness, *Rade Stankic, Biljana Jovanovic Gavrilović* and *Jasna Soldic Aleksic* conduct a research study of the mutual relations between information-communications technologies (ICTs), the education of the population and economic growth and development. It is indicated that quality and inclusive education has the key role in the achievement of dynamic and sustainable economic development. Pursuant to that, it is necessary that ICTs should be integrated into all of the aspects of the education process for the needs of a more effective and more efficient education. That is the way to encourage the development of the creative and innovative potential as a factor of economic development through a better usage of new technologies and the updating of the learning process, which results in an increased interest of young people to acquire knowledge and skills for the digitalized working environment.

Deliberating the relevant aspects of the Bretton Woods International Monetary System, since the suspension of which many years have passed, *Nenad Jankovic* indicates the need of monetary reforms at the world level, as well as the establishment of regional monetary cooperation, in the sense of the more adequate positioning of the euro and the Chinese yuan. With respect to that, however, there is still no needed consent since the dollar still preserves its position of the dominant currency of the world's foreign-exchange reserves. Namely, in spite of China's economic prosperity and the integration processes in the European Union, as some kind of the transition of the international monetary system from the bipolar (the US dollar and the euro) towards the tripolar currency bloc, which, beside the dollar and the euro, would also become richer for the yuan, not one single other currency has succeed yet in increasing its participation in the international financial market more significantly.

As the member of the Organizational Board, *Dejana Zlatanovic* announces the Fifth International Conference entitled *Contemporary Issues in Economics, Business and*

Management - EBM 2018, which will be organized by the Faculty of Economics of the University of Kragujevac and held on the days of 9th and 10th November 2018. The participants at the Conference will have an opportunity to point to the current development trends both in the theory and in the practice of economics, business economics and management.

In January 2018, the Faculty made changes in the Editorial Board of the *Economic Horizons* Journal by appointing the Editor-in-Chief, the Secretary and the Members of the Editorial Board from within its professors. The members of the prior convocation of the Editorial Board, together with the authors of the published contributions and the reviewers, were an important support to the improvement of the quality of the Journal, for which we extend our gratitude to them.

For the duration of the previous six years, namely from 2012 to 2017, the Editor-in-Chief of the *Economic Horizons* Journal was Slavica P. Petrović, PhD, Full Professor. Through her dedicated engagement, she decisively contributed to the creation and implementation of the new editing policy that is implicative of the continuous improvement of the quality of the Journal, its inclusion in a greater number of the world's reference bases of scientific journals and a significant international reputation. This is an opportunity for me to thank professor Slavica P. Petrović on behalf of the Faculty of Economics of the University of Kragujevac, as the publisher, the Editorial Board of the *Economic Horizons* Scientific Journal, and on my own behalf, for her unselfish engagement in the editing and continuous qualitative improvement of the *Economic Horizons*, which - during the twenty years of its publishing - achieved the worthiest results in this period.

The publishing of the *Economic Horizons* Journal is financially supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia, Decision No.: 451-03-381/2017-14/2.

Editor-in-Chief

Vlastimir Lekovic

Vlastimir Lekovic is a full professor at the Faculty of Economics of the University of Kragujevac. He earned his PhD at the Faculty of Economics of the University of Kragujevac, in the scientific field of general economics and economic development. He teaches the following teaching disciplines: Comparative Economic Systems, Public Sector Economics, Institutional Economics and Market Regulation Policies in the basic, master and PhD studies. The key fields of his scientific-research interest are the economic system, economic policy and institutional economics.

Original scientific paper

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VERTICAL SEGREGATION IN HIGHER EDUCATION - THE CASE STUDY OF THE REPUBLIC OF SERBIA

Slavica Manic*, Ljubinka Joksimovic and Sinisa Zaric

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The gender role hierarchy in the Republic of Serbia is an inspirational topic on several grounds: first, this is a specific issue within a wider gender equality problem, which has recently become the priority of structural reforms; second, it is a separate segment of gender segregation, the research issue unjustifiably ignored by the domestic academic community; finally, it is just a piece of the “puzzle” that reflects the situation in the gender inequality field, but exactly the one which neither national nor European statistics provide detailed information for. The above-mentioned reasons represent the basic motivation for writing this paper. In order to determine whether the position of women in science varies according to their position on the career scale, as it usually happens all over Europe, we shall examine the situation in the higher education system in the Republic of Serbia. That is why we apply the methodological procedures of descriptive statistics to the micro-data obtained from the Ministry of Education, Science and Technological Development in order to calculate the following relative indicators: the teaching staff structure by gender and grades across different fields of science and the glass ceiling index. We believe that such a relatively precise insight into the range of vertical segregation could be useful in conceiving future initiatives aimed at the systemic introduction of a gender perspective in the adoption, implementation and monitoring of public policies.

Keywords: gender equality, gender segregation, vertical segregation, horizontal segregation, higher education, the Republic of Serbia

JEL Classification: I23, I24, J16

INTRODUCTION

The actualization of gender inequality in academic studies dates back to the late 1960s and was prompted by the second wave of feminism, accusing the

mainstream approaches in social sciences of their “insensitiveness” - they did not notice the diverse problems women were facing (Babović, 2010; Galić, 2011). Particularly, sociological research did not show any interest in this issue: the structural position of women was not recognized or women’s experiences were deliberately ignored. That is why this approach was characterized as “malestream” (i.e. as dominantly

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male) sociology. Differences in the chances between males and females in economic science were explained by diverse human capital levels (Becker, 1985), measured by their formal qualification, work experience or women's willingness "to stop climbing just as they are getting near the peaks" (Probert, 2005, 58). Stressing, therefore, that gender segregation is caused by the individual characteristics of individuals, gender specific preferences, skills and abilities of men and women, the mainstream economy treated all of these factors as exogenous and did not analyze them within economic models (Conduto de Sousa, 2005).

The research of gender equality that was established on different grounds started in the 1970s. It was the consequence of pronounced segregation in the scientific space - the concentration of women in social and of men in natural and technical sciences. Also, it was materialized through the emergence of the prominent pro-feministic approaches (liberal feminism, postmodern feminism, feminist critical theory) that marked the transformation of the gender studies of a sociological orientation at that time (Babović, 2010). Emphasizing the fact that social relations explained the perpetuation of segregation (preferences were shaped by habits, expectations and unequal conditions), these concepts criticized the social structure based on the masculine character of the social power that "generated gender discrimination through institutions and bureaucracy" (Brstilo, 2010, 153). Such concepts, which offered a critique of the system of the domination of men and the subordination of women (historically the most persistent form of social segregation, Galić, 2011), posed new challenges for the theoretical, as well as empirical, study of this problem and encouraged various initiatives in the field of gender equality policies.

Having analyzed numerous texts, scientific databases and gender studies, we found that they did not show a research interest in certain aspects of gender segregation in Serbia. This fact determined the subject of our analysis: the study of the range of the different types of gender segregation, particularly the hierarchy of the gender roles in the field of higher education (in the literature, the most discussed

sector of the economic activity). Therefore, the aim of this paper is to determine whether the position of women in science in the Republic of Serbia (RS) varies according to their position on the career scale.

In accordance with the defined subject and the stated goal, the following hypothesis was set:

H: The representation of women changes inversely to their position in the academic hierarchy.

To test it, we shall use the methodological procedures of descriptive statistics applied to the micro-data of the Ministry of Education, Science and Technological Development in order to calculate the following relative indicators: the structure of the teaching staff by gender and grades across different fields of science and the glass ceiling index. The obtained findings are expected to be useful primarily as a correct substitute for the missing data in national and European statistics, as well as the starting point in considering the extent of gender, especially hierarchical segregation, as the first iteration in creating the appropriate gender equality policies.

Bearing this in mind, the paper is divided into four parts. The introductory remarks, emphasizing the importance of gender equality exploring, are followed by the second chapter, dealing with the academic study of gender segregation (as a specific issue within a wider gender equality problem). It is meant as the analysis of the most attractive topics of the researchers and the methodological approaches they applied in their studies. In the third chapter, the available general statistics will be used to monitor and analyze the distribution of women researchers by the sectors of the economic activity. These insights will serve us to explicitly point to the reasons that have determined the deeper studying of segregation in the higher education sector. The aforementioned micro-data are used for a descriptive overview and the statistics of the representation of women at different hierarchical levels and for calculating the indicators of vertical segregation. The last, fourth part of this paper consists of the final remarks, summarizing the key insights, the methodological limitations and the suggestions for further research.

LITERATURE REVIEW

The academic research of gender equality and/or gender inequality was, as has already been mentioned, initiated by sociological studies. In addition to studying stereotypes about gender roles (Lombardo, 2003; Galić, 2011), researchers were particularly interested in the different forms of segregation (Bettio & Verashchagina, 2009; Meulders, Plasman, Rigo & O'Dorchai, 2010). The number of the published papers, irrespective of the fact whether it is horizontal segregation (which implies an uneven distribution of women or men by professions and sectors of the economic activity) or vertical, i.e. hierarchical segregation (which refers either to the over- or underrepresentation of a particular sex in the highest positions within professions or sectors of the economic activity, due to which there are gender differences in terms of income, the status, job stability), was relatively similar. For example, during the 1980s, the number of the texts dealing with horizontal segregation was constant (at the level of twenty per year) and slightly higher than the number of those devoted to vertical segregation. During the 1990s, both issues attracted equal attention, and the number of publications increased to 50 per year. A more noticeable rise in the interest was observed after 1995, particularly in this century, since the number of the works comparing to the 1990s has increased almost three times (especially those from the domain of vertical segregation).

Regardless of the type of segregation, at the beginning of this decade there was still a mild dominance of the papers focused on the conceptual study of the problem and the review of the latest literature (Meulders *et al*, 2010). Speaking of empirical research, which gained in importance during the last couple of years, they (by default) start with a descriptive review based on the available statistical data (either general or those provided by the registers of the relevant institutions). Apart from analyzing a representative sample, researchers prefer to rely on micro-data (used in nearly 40% of all of the publications on horizontal and almost one-half of the publications on vertical segregation). These data can cover the participation of both sexes at different educational levels, in different

fields of science, diverse occupations and the sectors of the economic activity, along hierarchical levels, etc. Based on the available data, the degree of segregation is calculated by using a variety of methodological procedures (Bettio & Verashchagina, 2009), most often index/indicators that, *inter alia*, tracks gender differences across a sector's employment, the distribution of men and women by professions (occupations), the share of women in all academic staff compared to their share in Grade A, and so on.

The largest number of the surveys dedicated to these two forms of gender segregation were examining the problem in the higher education sector (unlike other institutional sectors - the public and the private - which were not the subject of interest in these topics), and the analysis usually began with the study of the trends that existed at the different levels of tertiary education (i.e. the share of women in the number of enrolled and graduated students). The existence of some form of spillover effects in higher education cycles was generally attributed to the potential benefits of acquiring master and doctoral degrees. However, although an increase in women's share in PhD graduates was evident in all of the fields of science, the concentration of men and women varied by the area of study (Nielsen, 2015).

The "balance of power" between the sexes had an impact on the intensity of studying the various aspects of gender segregation. Unlike Western countries, for example, in East European countries, any form of the unequal distribution of women and men attracted researchers' interest in this century. This was explained in the literature by very contradictory interpretations. It was often claimed that the share of highly qualified women in science had been high before transition (owing to the historical heritage that emphasized the importance of education), whereas horizontal segregation was less pronounced in this group of countries (European Commission, 2012), so that there were no reasons for its actualization and/or study. On the other hand, it was argued that, despite social democratization, the subordination of women was deeply rooted in the Christian culture based on the traditional division of gender roles. Top of Form In fact, this issue was not analyzed, not because

of its nonexistence, but for the reason of the fact that the key actors to whom it may concern did not actualize the problem: women were not questioning traditional ideological prejudices, they considered their positions as the natural consequence of their dual role, chose professions that were less valorized and generally exhibited low sensitivity to unequal treatment (Blagojević, Bundule, Burkhardt *et al*, 2003). Thus, despite the feminization of certain disciplines (women's concentration in social sciences, pedagogy, medicine) (Stöckelová & Linková, 2008), science continues to be the male activity (Palasik & Papp, 2008). Although women dominate among graduates, and their share grows among university staff (even in the highest rank) (European Commission, 2012), career development is very much dependent upon the field of research, so that both forms of segregation are present. On top of everything, the transition period marked the beginning of changes in the system of financing research institutions, a decrease in the number of researchers, a shift in formal and other criteria of measuring scientific productivity or in numerous legal solutions concerning the institutional structures of the education system and the like (Meulders *et al*, 2010). Although the above-mentioned things equally affected both sexes, the effects of transition were more harmful to the more vulnerable - the female population. Those segments that were "feminized" (education, health) in the era of socialism remain unchanged on their part: since they were part of the economically "poor" - state sector, they were unattractive to men who chose more profitable professions (Blagojević *et al*, 2003). Therefore, the recent interest in gender segregation is formally caused by its greater visibility and obviousness, and essentially by its deepening.

Irrespective of the above-mentioned things, in the literature on horizontal segregation, in principle, two broad areas of research have been singled out:

- the one studying the so-called educational segregation - the differences between the two sexes in the fields of study, and
- the other researching segregation in the labor market, in the scientific or research occupation and in the sectors of the economic activity.

Educational segregation implies an excessive or insufficient representation of the male or female sex in a particular field of study, which enables us to discover a possible (de)feminization or (de)masculinization of a certain scientific field. Such insights are necessary because differences in educational segregation spillover into the labor market, whereby the survival of gender segregation in science is "justified" by the gender-determined choice of studies. Hence, the phenomenon of horizontal segregation is most explored in the scientific fields where male dominance is more pronounced (such as natural or technical science).

The most available data on vertical segregation also refer to the higher education sector, particularly the academic sector. The educational achievements of women (a rise in their share in the number of graduates at all the levels of studies) did not lead to a corresponding increase in their participation in the higher positions of the academic hierarchy. On the contrary, their shares stagnate or decrease everywhere in Europe (Danell & Hjern, 2012). These findings served as a confirmation of the fact that gender emancipation began too late in the field of higher education, where the top positions of the academic hierarchy are still male-dominated (Hargens & Long, 2002; Popović & Duhaček, 2009; Timmers, Willemsen & Tijden, 2010). In other words, the gender structure at faculties (as the most respected scientific and educational institutions) shows the slowest change (Prpić, 2003).

Although this form of the unequal distribution of women and men represents the subject matter of study in various fields of science (such as medical) (Crompton & Lyonette, 2007), as well as in certain disciplines within the scientific fields: dentistry (Murray, 2002), architecture (Caven, 2006), vertical segregation has attracted the greatest attention by social sciences. The main reason is the fact that women are dominant in these areas - sociological literature in Western countries engaged in dealing with the above issues and offered a plenty of picturesque expressions to describe it. Thus, for example, the very existence of hierarchical gender roles is commonly referred to as gender differentiation (Prpić, 2003; Marschke,

Laursen, McCarl, Nielsen & Rankin, 2007), and rarely as gender discrimination (Knights & Richards, 2003; Popović & Duhaček, 2009). In explaining the factors keeping women remain at the lower levels of the hierarchical pyramid, the term “sticky floor” (Peterson, 2014) is used; the presence of the invisible but insurmountable obstacles that prevent women from climbing along the career scale has been named as “glass ceiling”¹ (European Commission, 2015) or the labyrinth (Eagly & Carli, 2007); finally, if the consequences that induce gender differentiation and/or discrimination (the lower presence of women at the higher levels of the academic hierarchy) are analyzed, the expression “leaky pipeline” is preferred in the literature (Langberg, 2006).

Certainly, the insufficient representation of women in higher positions represents the starting point in the discussion of vertical segregation, and the research continues in one of the following directions: finding out the cause of vertical segregation (the lack of equal opportunities for both sexes) (Benschop & Brouns, 2003), the study of the mechanisms that enable its survival and perpetuation (the internal organization of universities and faculties, as well as the social factors that create an unfavorable environment “perfect” for the establishment of the vertical segregation pattern) (Bain & Cummings, 2000; Marschke *et al*, 2007 Jackson & O’Callaghan, 2009). Empirical research studies confirmed the findings about the cumulative character of the gender-biased effects. In other words, the effects of gender stratification are additive, they disproportionately affect women and deteriorate with their career advancement (Eagly & Carli, 2007).

Although the issues of both types of segregation are present in scientific databases and gender studies (mostly concentrated on the higher education sector), due to the existence of a variety of general and specific topics, most research studies have certain limitations: they are mainly focused on one country and/or one phase, not on the entire system of education (from enrollment in studies to the end of the academic career); the studies dealing with the calculation of the segregation indicators do not contain other - qualitative - indicators; the conducted research studies were neither used to study the effectiveness

of the existing gender equality policies, nor were they used for their possible improvements (Bettio & Verashchagina, 2009).

Obviously, the creators of appropriate public policies in this domain need a realistic description of the actual situation - that of the insufficient representation of women either across a profession or within a particular profession along hierarchical levels. However, it turned out that the data necessary for the analysis of segregation are scarce and/or inadequate. Harmonized data sources (such as the European Research and Development Review, the UNESCO database or the OECD education database) are quite inadequate for this kind of analysis. That is why the European Union (EU) initiated the process of collecting disaggregated data on women in science and research. Even this database (Women in Science) failed to establish a complete set of data for all European countries. Since 2003, every three years, the European Commission has been publishing the reports (She Figures) that integrate Eurostat and primary data in order to explore the level of progress towards gender equality in research and innovation in Europe (European Commission, 2015). This is the main source of comparable statistical data on the representation of women and men among PhD students, researchers and academic decision-makers, and a starting point in summarizing the empirical findings about the extent of gender segregation in Europe.

EDUCATIONAL, HORIZONTAL AND VERTICAL SEGREGATION - EMPIRICAL FINDINGS

Global and European initiatives, intensified in the 1990s, have launched numerous reforms in the field of gender equality. Their results, however, are not equally good or even in all of the domains of gender inequality. Certainly, there is noticeable progress in gender balance in the pool of highly educated. The participation of women in the student population at the EU level is higher than that of men, and they finish their studies sooner and with better results.

According to the latest gender equality report published by the European Commission (European Commission, 2015), women accounted for 55% of the enrolled and 59% of all of the graduates; in addition, the share of women in the structure of those who completed PhD studies increased - to 47% at the EU-28 level, although it ranges from 40 up to 60% across the countries. According to the data of the Statistic Institute, today, women account for 55.36% of the enrolled and 57.84% of graduates at all of the levels of study in RS (in academic studies, their shares are 56.18% and 56.47%, respectively). Speaking of the higher levels of study, women's shares are 60.77% and 56.75% among the enrolled, and 60.57% and 48.04% among graduates (master and PhD, respectively). It seems that RS follows a general trend, in which the number of women studying at and graduating from almost all the levels of education exceeds the number of men (Becker, Hubbard & Murphy, 2010). At first glance, these data can be interpreted as the evidence of an improvement in gender equality in higher education, as well as an indicator of increasing chances and opportunities for women's career advancement (Danell & Hjerm, 2012).

However, the actual situation with regard to other parameters relativizes the aforementioned positive changes and prevents the adoption of unambiguous conclusions. In contrast to the feminization of the student population that is present up to the master level (when the number of women exceeds the number of men), in each subsequent iteration, the situation becomes more favorable for men (the percentage of the men/women who enrolled and/or completed their PhD studies). Even when segregation decreases at the highest level of tertiary education (by approaching the parity at the PhD level), female researchers are still insufficiently represented in the labor markets across the EU.

If we look at researchers in all of the sectors together (the higher education, public, business and non-profit sectors), in most countries the percentage of male researchers is higher (European Commission, 2015). The exceptions are Portugal and Great Britain, while in RS the share of women in the total number of researchers (in 2011) was 49.35%. In fact, men in RS

show a slight dominance over women if we observe all of the sectors of the economic activity on average. However, the parity is almost achieved in the higher education sector, women are more numerous in the government sector (with the share of 55.9%), whereas in the business sector they are slightly below one-third of the total number of researchers.

The higher education sector represents the main source of the employment of researchers in the EU: of all women researchers, 64% work in this sector; men have been concentrated in this area, too (as much as 46% of all male researchers), as well as in the business sector (44%). The concentration of women in the higher education sector, as well as in the public sector in RS, is even more pronounced. Table 1 shows the distribution of women researchers in the EU and RS for the years 2012 and, respectively, across the sectors of the economic activity.

Table 1 The distribution of women researchers across the sectors of the economic activity, EU and RS

Sectors of economic activity	EU (% of women of the total number of female researchers)	Serbia (% of women of the total number of female researchers)
Business sector	22.0	3.06
Public sector	12.5	24.50
Higher education sector	64.1	72.40
Non-profit sector	1.4	0.04

Source: European Commission, 2015; Authors, according to Statistički godišnjak Republike Srbije, 2015

The largest number of female researchers in RS, as well as in the EU, work in the higher education sector - about 72.4% (which is slightly less than in 2011, when almost three quarters of all women researchers were engaged in this sector of the economy). Nevertheless,

unlike the EU average, where more than a fifth of all researchers are engaged in the business sector, the situation in RS is quite different: almost a quarter of all women researchers work in the public sector, and only 3% of them in the business sector. However, men also prefer to be engaged as researchers in the higher education sector: as many as 78% of all male sex researchers in RS work in this sector. So, if both women and men “gravitate” to the higher education sector, what do we obtain as a result of the competition between them?

Generally speaking, in the higher education sector in most European countries (including RS), it is more likely that men (rather than women) will be engaged as researchers, whereas women are more likely to work as technical and supporting staff (European Commission, 2015). The proportion of women in the total number of researchers in the higher education sector at the EU-28 level is 41%, on average. RS is better in this regard, since this percentage is 47.8%; the same conclusion can be drawn on the basis of the average annual growth rate of researchers in the higher education sector: the estimated values at the EU-28 level were 4.4% for men and 2.3% for women (in the period 2005-2012), and in RS 5.9% for men and 9.8% for women (in the period 2008-2011). In fact, in contrast to the situation in RS, where the share of women in the structure of PhDs and researchers in higher education has been relatively uniform (48.04% and 47.8%, respectively), by comparing the educational achievements of women and their position in the labor market at the EU-28 level, we have noticed a gradual defeminization. Do these trends exist when we observe top researchers?

The position of women in science at the level of the EU-28 varies according to their climbing on the career scale - the share of women is significantly being reduced at each subsequent, higher level, which is an indicator of vertical segregation (European Commission, 2015): women only account for 21% of the total number of full professors, 37% of the total number of associate professors and 45% of the total number of assistant professors; also, the share of women in the category of full professors is far better in social sciences (23.5%) than in natural and technical

sciences (only 13%); the glass ceiling index, despite the downward trend, has remained at a relatively high level of 1.78.

Since European statistics do not have detailed data for RS, we started the research by analyzing the statistics of the representation of both sexes in the structure of the teaching staff.

According to the aggregate data for 2015 (Republički zavod za statistiku), the share of women in the total teaching staff was 46.67%; whereby they dominate the structure of associates (with a share of 54.25%), their participation among teachers was 43.14%. These data suggest that, in RS, as far as top researchers are concerned, some defeminization of science might exist. However, for a more detailed survey of the extent of vertical segregation in the academic sector, a descriptive overview and the statistics of the representation of both sexes at different hierarchical levels are necessary. For this purpose, our study had to rely on the micro-data obtained upon request for the purpose of this research from the Ministry of Education, Science and Technological Development. The data we had at our disposal included the following parameters: the sex, the year of birth, professional qualifications, where and when education was acquired, the institution that issued the diploma, the scientific title and the year of its acquisition, affiliation, the type of work (full-time, part-time). Based on the available data, the distribution of women in the academic hierarchy can be observed across scientific fields, faculties, for one or a larger number of universities. However, since there is no comparability of scientific grades at different institutions of higher education, nor is there any such comparability between institutions in different ownership regimes (private *versus* state faculties), we have decided to present the position of women in the academic hierarchy at the state universities in RS. We studied the presence of women in different areas of science in those positions in the academic hierarchy - a full professor, an associate professor, an assistant professor - in which they demonstrated a smaller participation in the European frameworks. Table 2 shows the shares of women in all of the mentioned grades across the following groups of sciences: natural

sciences and mathematics, medical sciences, technics and technology, social and humanistic sciences and the arts.² In the last row, we calculate the glass ceiling index, which compares the share of women at all of the levels in total (from assistant professors to full professors) with their share in the group of full professors.

Since this survey only provides a rough outline of the status and the positioning of women in the academic hierarchy, it is necessary to add several notes that point to the specificities within the above-mentioned areas of science.

The slight dominance of women in the field of natural sciences in the category of associate professors, especially their far better positioning among assistant professors, occurred due to the faculties not belonging to the University of Belgrade. On the other hand, at the faculties of the University of Belgrade, the presence of women at all of the analyzed grades is relatively more uniform (their shares range from 43% up to 54%).

Women have achieved parity in the ranks of associate and full professors, and have a distinctly good position among assistant professors within the corpus of medical science (in fact, their position at grade C is even better comparing to all the other science groups). The position of women is particularly good in the field of pharmacy (where they dominate at all scientific grades). Only in one case (in the field of medicine) do we have a situation where women are more present at

level A than overall in academia (which means that the glass ceiling index has a value less than 1). In the field of dentistry, the proportion of women assistant professors reaches a level of 60%, whereas they still represent a minority even at grade C in veterinary science.

According to the data, the technics and technology field obviously does not represent the “most desirable” area in which women should build a career. However, there are differences between the disciplines belonging to this group of sciences. Technology and agriculture may be the right choice for them, since women on average achieve a share of approximately 40%; with the exception of the category of full professors, the same thing could be said for architecture. If we observe electrical engineering, the results significantly vary across faculties and universities, being not suitable for making unambiguous conclusions regarding women’s career advancement. For certain disciplines, such as mechanical engineering, construction, and especially mining and geology, it can undoubtedly be claimed that they are predominantly male.

In the group of social and humanistic sciences women dominate in all of the grades in the field of languages (sometimes their shares go up to two-thirds); the dominance of women as associate and assistant professors is present in the field of education. Women represent a minority at the faculties of sport (with

Table 2 Women’s share (all grades) across different fields of science

Grades	Natural science & mathematics	Medical sciences	Technics & technology	Social & humanistic sciences	Arts	All fields of science
Total (A, B, C)	51	53	33.4	48.9	46.1	45.1
Full professor (A)	44	49.8	25.4	43.9	39.3	38.6
Associate professor (B)	51	50.2	38.1	47.6	45.8	46
Assistant professor (C)	56.7	58.6	38.8	55.4	56.3	51
Glass ceiling index	1.16	1.06	1.31	1.11	1.18	1.17

Source: Authors, according to the micro-data of Ministry of Education, Science and Technological Development, the Republic of Serbia

the shares below 20% under the category of full professors and up to almost one-third among assistant professors). Although there are some exceptions (where the glass ceiling index has a value less than 1), in total women have not reached parity at a number of faculties in certain disciplines of social sciences, such as law, political science and the majority of the faculties of economics.

Having calculated a simple glass ceiling index that measures the share of women in all scientific grades *versus* their share among full professors, we have found that their progress towards higher positions is significantly more difficult in the field of technical sciences, whereas their ability to progress is most apparent in the field of medical sciences.

CONCLUSION

A turning point in the academic treatment of gender equality problems occurred in the studies of sociological orientation in the 1970s. Owing it, therefore, in the next decades, the research of the different aspects of gender segregation was particularly actualized. The exception to the attention given to this issue is Eastern Europe (including the Republic of Serbia), where researchers expressed an interest no sooner than at the beginning of this century. Without a desire to arbitrate the controversial argumentation of whether the delayed interest was objectively conditioned (because there was no segregation) or subjectively determined (neither women themselves, nor academics reconsidered the issue), it also led to the situation in which there was a deficit of such research studies (both in theoretical and empirical terms). Our study could represent a modest contribution to the reduction or at least mitigation of this deficit, as it represents a pioneering research study of the previously neglected problem of the distribution of women in science according to their position on the career scale. The findings can primarily be used as a correct substitute for the missing data, and as a starting point in the creation of appropriate gender equality policies as well.

Apart from the aggregate European and national statistics data, in the analysis of the actual state of affairs regarding the range of the different types of gender segregation, particularly the hierarchical one, in the field of higher education in RS, we mostly relied on the micro-data obtained from the Ministry of Education, Science and Technological Development. The main conclusions are as follows:

- The previously noticed trend of sudden women's share dropout in the subsequent education cycles (master and PhD studies) has been stopped and reversed. At the highest level of tertiary education, women could soon achieve parity: their shares in the structure of PhD graduates in the EU-28 and Serbia are 47% and 48%, respectively.
- Unlike the lower or higher degree of feminization noticed among the student population, the situation on the labor market is characterized by the first signs of masculinization (i.e. defeminization). The unequal distribution of women and men being employed as researchers in the higher education sector is, however, more evident at the EU-28 level than in RS (the relative shares of women are 41% and 47.8%, respectively).
- The underrepresentation of women becomes more pronounced with every subsequent iteration along their careers. Still, the situation in RS is better when lower scientific grades are subjected to analysis: women are slightly dominant in the category of assistant professors (with a share of 51%), whereas in the category of associate professors, they slowly approach parity (with a share of 46%). The respective values in the EU-28 are 45% and 37%. However, these comparisons should be taken cautiously, since the definitions of the grades C and B (assistant professors and associate professors) vary among countries. The most appropriate is the comparison at Level A, as it corresponds to the rank of full professors in most countries.
- The academic career of women in the EU is characterized by strong vertical segregation: their share at grade A is only 21% and the glass ceiling index is still high - 1.78. Although this

type of segregation in RS is not extreme to that extent, since the share of women in the category of full professors (for all scientific fields) is 38.6%, and the glass ceiling index has a value of 1.17, we have proved our hypothesis about the underrepresentation of women at the highest scientific level of the academic hierarchy.

The fact that the educational achievements of women in RS did not lead to a corresponding increase of their participation in appropriate positions in the academic hierarchy goes beyond the issues of hierarchical segregation *per se*. The underrepresentation of women in higher ranks, in fact, points to the insufficient and/or inadequate utilization of resources (human capital). As a result, previous educational investments have not been fully materialized, and the problem of the defeminization of science is becoming even harder, with its potentially wider economic and social consequences.

Our analysis contains a couple of limitations. Some of them are objectively conditioned, such as the method of categorizing scientific fields, which could have a certain impact on the comparability of the data for RS with those for the EU. The rest of them are inherent and similar to any other research of such a type: given the fact that the study is focused on state universities, it offers an incomplete picture of the position of women in the entire higher education system in RS; in addition, it does not deal with the educational segregation that would allow the recognition of regularity regarding the spillover of defeminization from the level of tertiary education (due to the choice of study fields) to the existence of more or less pronounced vertical segregation in certain scientific fields. Therefore, some next research study of gender segregation should be directed towards the above-mentioned issues, so that the omissions noticed in this study could be eliminated.

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ENDNOTES

- 1 This index moves within a range from zero to infinity. If it is 1, it means there is no difference between women and men in terms of chances for career advancement. If its value is less than 1, this means that women are more present in the group of full professors than in academia; if the glass ceiling index is above 1, it indicates that women are less present among full professors than in the structure of the teaching staff. In other words, the higher the value of this index, the greater the effect of the glass ceiling index, meaning that it is more difficult for women to “move up” to higher positions.
- 2 European statistics monitor the representation of women and men in the following fields of science: natural sciences, medical sciences, engineering and technology, agriculture, social sciences and humanities. Our categorization of scientific fields is somewhat different and is determined not only by the limitations of the available micro data, but also by the fact that other state universities in Serbia (Kragujevac, Niš, Novi Sad, Novi Pazar, Priština-Kosovska Mitrovica) do not classify faculties into scientific fields. Therefore, we have opted for the categorization that exists at the University of Belgrade, classifying the faculties within the above-mentioned groups.

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DOES GREEN ACCOUNTING MATTER TO THE PROFITABILITY OF FIRMS? A CANONICAL ASSESSMENT

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Quite a few studies have argued that green accounting does matter to the profitability of a firm; however, little is known about Nigerian firms. To address this gap, this paper seeks to investigate whether green accounting matters to the profitability of Nigerian firms or not. Towards achieving this, an expo-facto research design was adopted and ten non-consumer goods firms listed on the Nigerian Stock Exchange were selected during 2012-2016. The data were sourced from the annual reports and accounts of the selected non-consumer goods firms. The data comprised of green accounting (expenses of community involvement and the amount spent on environmental protection) and profitability (return on equity and Tobin Q) indicators. The data obtained were analyzed by using canonical correlations. The study revealed that there was no significant relationship between green accounting and profitability measures among the non-consumer goods firms. The implication is that whether or not firms engage in green accounting, their profitability level remains unchanged. In addition, this provides evidence that the practice of green accounting among non-consumer goods firms in Nigeria is still at its ad-hoc stage. On the basis of the above findings, we proposed that the Financial Reporting Council of Nigeria and corporate entities should, as a matter of fact, accommodate the growing awareness in green accounting and formulate a disclosure requirement aimed at improving the profitability of firms. This will no doubt enhance green accounting practices among firms and in general policies aimed at enhancing their competitiveness in the industry in which they are domiciled.

Keywords: green accounting, return on equity, expenses on environmental protection and employee safety, canonical correlation

JEL Classification: M41, M48

INTRODUCTION

Green accounting as a concept is up-and-coming in developing countries like Nigeria, but has received

considerable attention in western countries, such as the United States of America (USA), the United Kingdom (UK), Italy, Spain and a lot of others. In Nigeria, several environmental and protection laws have been enacted by the Federal Government in order to ensure that firms comply with the environment-related matters and that the same is reported in their

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annual reports and accounts. In spite of the effort by the Government and the other agencies regulating environmental activities in Nigeria, firms, especially those in the oil and gas sector, as well as the firms in the non-consumer goods sub-sector that are involved in environmental pollution, still do not comply with these environment protection laws. As observed by D. E. Emeakponuzo and M. Udih (2015), the non-compliance by firms in Nigeria with the environment-related matters and the disclosure of the same in their annual reports and accounts may be connected with decay in the infrastructure, deficiencies in the suitable technology and the regulatory framework, as well as a high level of corruption. In addition to non-compliance by firms in Nigeria, the absence of appropriate green accounting models or techniques has also compounded the problems of the applicability of green accounting in Nigeria (Jeroh & Okoro, 2016).

According to D. M. Makori and A. Jagongo (2013), green accounting refers to the practice of providing accurate information (in firms' annual reports and accounts) on the probable social costs emanating from production externalities upon the environment and how many deliberate intervention costs have been incurred in order to bridge the gap between marginal social and private costs. It is becoming an imperative that, in order for corporate firms to develop green-cost responsiveness, they should disclose such green costs in their annual reports and accounts (Hoje, Kim & Park, 2014; Ezejiofor, Racheal & Chigbo, 2016). The disclosure of a firm's green costs is believed to make the firm responsive (Shelly, Fust & Lisa, 2007; Cortez & Cudia, 2011; Muller, Mendelsohn & Nordhaus, 2011); a firm is given a chance to minimize its costs in the medium- and long-term (Hasan & Hakan, 2012), and it is also the fundamental determinant of profitability/performance (Lee, Pati & Roh, 2011; Okoye & Ezejiofor, 2013; Jeroh & Okoro, 2016).

Quite a few studies have argued in support of a positive association between green accounting and the level of profitability (Wiseman, 1982; Edwards, 1998; Agbiogwu, Ihendinihu & Okafor, 2016; Nnamani, Onyekwelu & Ugwu, 2017); however, there are still arguments to the contrary that green accounting negatively affects the level of profitability (Makori &

Jagongo, 2013; Adekanmi, Adedoyin & Adewole, 2015; Dibia & Onwuchekwa, 2015). The dissimilar findings may have led to inconclusive results with respect to green accounting and profitability indicators. Also, firms in the non-consumer goods sub-sector cause a lot of environmental problems. This study has been motivated by the inconclusive nature of the studies carried out on green accounting and profitability indicators in the Nigerian corporate environment.

In light of the foregoing, the goal of this paper is geared towards assessing whether or not green accounting does matter to the profitability of firms in Nigeria.

In this paper, we have hypothesized that there is no significant canonical correlation between green accounting and the profitability of non-consumer goods firms.

Besides, the scientific instrument is the secondary data comprising of expenses of the community involvement, the amount spent on environmental protection, return on equity and Tobin Q. The remaining part of this paper is divided into the following sections: the prior literature, the theoretical framework, materials/methods, results, discussion and conclusion.

LITERATURE REVIEW

There is robust empirical evidence of green accounting and the performance of firms in developed and developing countries. In Nigeria, the largest number of the pieces of empirical evidence were obtained from the oil and gas industry, whereas there are scanty empirical studies conducted by using the non-consumer goods sub-sector. For instance, J. N. Nnamani *et al* (2017) evaluated the effect of sustainability accounting on the financial performance of the listed manufacturing firms in Nigeria. These manufacturing firms were those belonging to the brewery sub-sector. The secondary data were obtained from the annual reports and accounts of the three brewery firms quoted on the Nigerian Stock Exchange for the total asset, return on

equity, the total personal cost to turnover and return on assets, and the data obtained were analyzed by using the ordinary least square estimation technique. The study found that sustainability reporting had a positive and significant effect on the financial performance of the brewery companies that had been subjected to investigation.

E. Jeroh and G. E. Okoro (2016) assessed the effect of environmental and dismantling costs on a firm's performance among the selected oil and gas companies in Nigeria. The data on return on assets, and the environmental and dismantling costs were obtained from the annual reports and accounts of the selected oil and gas companies during 2008-2015 and were analyzed via the ordinary least square. The findings of the study were indicative of the fact that environmental and dismantling costs positively influenced the performance of a firm. In addition, the moderating variable (the size of a firm) was found to have a negative and significant influence on the performance of a firm.

A. A. Agbiogwu, J. U. Ihendinihu and M. C. Okafor (2016) analyzed the impact of environmental and social costs on the performance of manufacturing companies in Nigeria by using the secondary data obtained from the ten randomly selected companies' annual reports and accounts in 2014, and the t-test statistical tool was employed in the analysis of those data. The findings showed that environmental and social costs significantly affect the net profit margin, earnings per share and return on capital employed.

R. A. Ezejiofor *et al* (2016) examined the effect of sustainability accounting on the performance of corporate firms in Nigeria. The ex-post-facto research design was employed and the secondary data were sourced from annual reports and accounts. The regression statistical technique was adopted in testing the relevant hypotheses of the study. Based on the analysis of the data, it was revealed that the environmental cost has no significant impact on the revenue of corporate firms. However, a positive relationship was established. In addition, the environmental cost significantly and positively influences the profit generation of corporate firms in Nigeria.

J. C. Eze, A. U. Nweze and C. I. Enekwe (2016) identified the factors affecting environmental accounting in developing nations by means of employing both primary and secondary data. The survey approach was the selected research design. However, the study found that environmentally friendly companies which voluntarily disclose their environmental activities benefit from a high level of competitiveness. Their findings also suggest that environmental accounting stimulates companies to track their greenhouse gas emissions and other environmental elements against the reduction or elimination point.

A study by D. E. Emeakponuzo and M. Udih (2015) of environmental accounting practices and corporate firms in Nigeria revealed that, in order to develop a suitable Environmental Management System (EMS), the role played by the plant environmental staff was fundamental and that such plant environmental staff should work in collaboration with accountants in order to ensure a suitable EMS. In addition, the findings revealed that attention had not been paid to the cost of natural resource damages in the project evaluation. The above study utilized twenty-five quoted companies from dissimilar sectors. The hypotheses of the study were tested via the Chi-square and Kendall coefficients. More specifically, based on the test of the hypotheses, the study found that environmental accounting practice was significant in benchmarking the standard for corporate reporting and that compliance with the environmental protection laws in Nigeria might not have had a significant influence on environmental accounting practice due to enlightenment, enforcement and compliance issues.

N. B. Ijeoma (2015) investigated the environmental practices of Nigeria's firms so as to ascertain if companies in Nigeria were environmentally friendly. The primary data were obtained through a questionnaire and the Mann-Whitney U-test was used in analyzing the data. The results showed that environmental cost accounting positively influenced the level of profitability among manufacturing firms in Nigeria. Also, it was revealed that manufacturing firms incorporated the environmentally friendly practices.

A. D. Adekanmi *et al* (2015) explored the determinants of the socio-environmental accounting of the listed firms in Nigeria. The secondary data were collected from the fifty firms listed on the Nigerian Stock Exchange during the period 2005-2013. The descriptive and inferential statistics were employed in the analysis of the data, which was performed by applying the ordinary least square estimation technique. However, the study revealed that the size of the firm ($t = 10.3263$; $p < 0.05$), its profitability ($t = 7.6913$; $p < 0.05$) and the number of the analysts analyzing the firm ($t = 2.4684$; $p < 0.05$) were the three fundamental factors that had a positive effect on the socio-environmental reporting of the listed firms in Nigeria. In addition, socio-environmental performance had a significant ($t = -3.3508$; $p < 0.05$) negative influence on socio-environmental reporting in the Nigerian quoted companies.

N. O. Dibia and J. C. Onwuchekwa (2015) empirically analyzed the determinants of the environmental disclosures in the oil and gas industry in Nigeria. The study variables were the size of the firm, its profit, leverage, the audit firm type and environmental disclosures. The cross-sectional design was adopted and a sample of fifteen companies was drawn from the oil and gas industry. These oil and gas companies were those quoted on the Nigerian Stock Exchange during the period 2008-2013. The binary regression technique was employed in the analysis of the data. The finding suggests that there is a significant association between the size of the firm and corporate socially responsible disclosures. No significant relationship was accounted for with respect to the profit, leverage, audit type and corporate socially responsible disclosures, either.

R. Namakonzi and E. Inanga (2014) explored the extent to which Environmental Management Accounting (EMA) was applied, as well as the costs and challenges militating against the implementation process of EMA, so as to achieve effective environmental management in the Ugandan manufacturing industry. The study employed the descriptive approach and the primary data were basically relied upon. The study found that the greatest challenges militating against the implementation of EMA in Uganda were connected

with the difficulties in defining, unraveling, recognizing, categorizing, measuring and controlling environmental protection costs in Uganda.

The study of D. M. Makori and A. Jagongo (2013) established whether there was any significant association between environmental accounting and the profitability of the selected firms. The data for the study were obtained from the annual reports and accounts of the fourteen companies quoted on the Bombay Stock Exchange in India and the analysis was carried out via multiple regressions. The study found that there was a significant negative association between environmental accounting and return on capital employed, whereas a significant and positive association was established for earnings per share, the net profit margin and a dividend per share.

A similar study of environmental accounting and organizational performance among the oil and gas companies operating in the Niger Delta Region of Nigeria was conducted by B. E. Bassey, S. O. Effiok and O. E. Eton (2013). The primary and secondary data were obtained and Pearson's Product Moment Correlation Coefficient (PPMCC) was the statistical tool employed. The study found that the environmental cost significantly correlated with a firm's profitability.

M. S. K. Ifurueze, M. E. Lydon and P. F. Bingilar (2013) assessed the effect of the environmental cost on the corporate performance of the oil companies in the Niger Delta Region of Nigeria. Twelve oil and gas companies were sampled and the secondary data (return on equity, the community development cost, the waste management cost and the employee health and safety cost) were obtained and analyzed. In order to test the relevant hypotheses of the study, the multiple regression technique was employed. The findings of the study suggest that sustainable business practices and corporate performance are significantly correlated. Also, the study revealed that the possible reasons for corporate conflict resolution as witnessed in a reduction in the fines, penalties and compensations paid to host communities in the Niger Delta Region of Nigeria might be connected with the sustainability practices of the oil and gas companies in that region.

Based on the review of the prior studies, it is obvious that there are dissimilar findings leading to inconclusive results with respect to green accounting and profitability indicators. Thus, this study was carried out with an aim of providing the empirical evidence that may either disapprove or prove the prior results related to the relationship between green accounting and profitability indicators in Nigeria.

THE THEORETICAL FRAMEWORK

The theoretical foundation of this paper is anchored in the "Stakeholder Theory". This theory sees corporate organizations as the elements of the social system, while concentrating on the diverse stakeholder groups within a society. The emphasis of this theory is on the fact that stakeholders need to be identified by corporate organizations in order for such organizations to ascertain the groups that need to be managed so as to enhance the interest of the organization. In this case, the interest of stakeholders will be that of maximizing the wealth of the owners of resources and being environmentally responsible. Thus, the management of corporate organizations needs to manage these interests in order for them to become environmentally friendly towards the environment in which the business is domiciled.

Summarily, the stakeholder theory illustrates how certain activities which corporate organizations are

engaged in can be sustained without undermining the interest of resource owners and the environment. Thus, this theory recognizes that, in order for corporate organizations to maintain a good relation, the interest of all stakeholders must not be infringed or undermined.

This paper tries to investigate the relationship between these green accounting indicators (the expenses of community involvement and the value spent on environmental protection) and the profitability (return on equity and tobing) of non-consumer goods firms in Nigeria. Given the number of the independent and dependent variables, the study employed the Multivariate Correlation Analysis (MCA) and, more specifically, the study utilized the Canonical Correlation Analysis (CCA).

DATA AND METHODS

This paper seeks to investigate green accounting and the profitability of non-consumer goods firms in Nigeria. In order to achieve this, the expo-facto research design was adopted. This design is concerned with the data that are in existence. This design was employed since it seeks to establish the factors that are connected with the already existing events, where the researcher has no control over certain variables as the events already exist and cannot be manipulated. The study population comprised of all of the listed non-

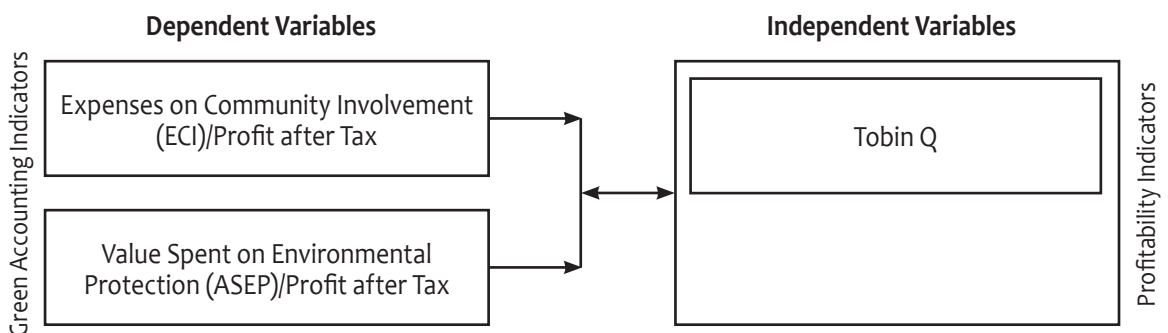


Figure 1 The Conceptualized Model of the Study

consumer goods firms quoted on the Nigerian Stock Exchange. However, a purposive sampling technique was employed to select the ten non-consumer goods firms that have a consistent dataset and have captured environmental data in their annual reports and accounts during the period under investigation. The data were employed from the annual reports and accounts of the selected non-consumer goods firms from 2012-2016.

The data comprised of the green accounting (the expenses of community involvement and the amount spent on environmental protection) and the profitability (return on equity and tobing) indicators. In order to avoid the heteroscedasticity problem, the green accounting indicators were scaled by Profit after Tax (PAT) in order to assume a similar "value range". The appropriate method of data analysis is the canonical correlations since it can be used to assess the association among the groups or sets of variables: the green accounting variables (X1) and the sets of the profitability variables (X2). The analysis was done via STATA 13.0.

RESULTS

Table 1 reports the descriptive statistics of the profitability measures (tobinq and retoi: return on equity) and the green accounting measures (eci: the expenses of community involvement and asepi: the amount spent on environmental protection) for the non-consumer goods firms studied. In the Table 1, tobing has a mean of 6.17 and a standard deviation of .5492. The mean value of retoi is 6.90 with a standard deviation approaching 1.27; eci has a mean of 6.22 of the total profit and a standard deviation of .8659, whereas asepi has a mean of 8.17 of the total profit and a standard deviation approaching .9052.

From Table 2 above, it is obvious that the mean VIF for all of the variables does not exceed the standardized Variance Inflation Factor (VIF) level ($1.12 < 10.0$). The implication is that there is the absence of multicollinearity among the variables. Consequently, there is the absence of the heteroscedasticity problem among the variables.

Table 1 The Descriptive Statistics of the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
tobinq	50	6.1728	.5492222	5.02	6.98
retoe	50	6.8982	1.267823	5.14	9.56
eci	50	6.2212	.8658596	5.06	8.76
asep	50	8.1682	.9052244	6.01	9.2

Source: Authors

Table 2 The Variance Inflation Factor Result

Variable	VIF	1/VIF
retoe	1.12	0.895922
tobinq	1.12	0.895922
Mean VIF	1.12	

Source: Authors

From Table 3, it can be seen that eci (1.1969) was found to be the most significant green accounting variable, followed by asepi (0.1484). In addition, the result revealed that when other variables are held constant, a one-unit increase in the eci will result in a 1.1969 increase in the score on the first canonical variate in the green accounting measures set. In the same way, when other variables are held constant, a one-unit increase in the asepi will result in a 0.1484 increase in the score on the first canonical variate in the green accounting measures set. A similar circumstance occurred in the score of the second canonical variate in the green accounting measures set, although a negative sign is attached to them.

Table 3 The Canonical Correlation Result of the Raw Coefficients for the Green Accounting Variable Set

	1	2
eci	1.1969	-0.2548
asepi	0.1484	-1.1610

Source: Authors

In Table 4, it was shown that *retoe* (0.7903) was found to be the most significant profitability variable, followed by *tobinq* (-0.0110). However, in the score of the second canonical variate, *tobinq* was found to be the most significant profitability measure with the value of 1.9236 and a negative sign was attached to *retoe* (-0.2643). This implies that when other variables are held constant, a one-unit increase in *tobinq* will result in a 1.9236 increase in the score on the second canonical variate in the profitability measures set.

Table 4 The Canonical Correlation Result of the Raw Coefficients for the Second Profitability Variable Set

	1	2
<i>tobinq</i>	-0.0110	1.9236
<i>retoe</i>	0.7903	-0.2643

Source: Authors

The result in Table 5 revealed that *tobinq* (0.3750) and *retoe* (0.0177) have a positive connection with the sets of the green accounting variables (*eci* and *asep*).

Table 5 The Canonical Correlation

Canonical correlation	
0.3750	0.0177

Source: Authors

The tests of significance for all of the canonical correlations as presented in Table 6 revealed that the statistics in relation to Wilks' Lambda, Pillai's Trace and Lawley-Hotelling trace *f*-statistics and the *P*-values showed clearly that there was no significant relationship between the profitability measures (*tobinq* and *retoe*) and those of the green accounting measures (*eci* and *asep*). However, Roy's Largest Root suggests a significant relationship between the profitability measures and those of the green accounting measures. Overall, it implies that there is no significant relationship between profitability and the green accounting measures among the non-consumer goods firms in Nigeria.

Table 6 The Tests of Significance for all Canonical Correlations

	Statistic	df1	df2	F	prob>F
Wilks' lambda	.85913	4	92	1.8141	0.1328 e
Pillai's trace	.140914	4	94	1.7812	0.1391 a
Lawley-Hotelling trace	.163917	4	90	1.8441	0.1273 a
Roy's largest root	.163604	2	47	3.8447	0.0284 u

e = exact, a = approximate, u = upper bound on F

Source: Authors

CONCLUSION

Search for environmental sustainability has caused corporate organizations to realize that there is the need to disclose the green costs resulting from the combined effects of social and environmental damages in their annual reports and accounts. Perhaps, the necessity to disclose green costs in the annual reports and accounts of firms has prompted a series of studies of the need to assess whether green accounting affects the profitability of firms in Nigeria globally. In this paper, we gauged green accounting by means of the expenses of the community involvement and the amount spent on environmental protection, and profitability via return on equity and Tobin Q. The study period spanned from 2012 to 2016 and a multivariate statistical tool (canonical correlation) was employed in the analysis of the data. On the basis of the statistical test, it was revealed that the expenses of the community involvement were the most significant green accounting measure in the score on the first and second canonical variates. Contrarily, return on equity was found to have the most significant score on the first canonical variate, whereas Tobin Q had the most significant score on the second canonical variate in the profitability measures set.

The canonical variate results suggest that a large number of firms in Nigeria spend a lot of resources on the community involvement, more than on environmental protection. Perhaps, the rationale why firms spend a large amount of resources on the community involvement rather than on environmental protection may be connected with the belief that the corporate image of organizations can be improved by their becoming involved in the community development programs in the environment where their firms are domiciled. Besides, the outcome of the tested hypothesis has showed that green accounting has no significant canonical correlation with the profitability of non-consumer goods firms as is indicated in Wilk's Lambda, Pillai's Trace, Lawley-Hotelling trace f-statistics and P-values. This implies that, in spite of the fact that firms do engage in green accounting, their profitability level remains unaffected.

The finding of this study is at variance with prior empirical evidence that green accounting significantly affects the profitability of firms in Nigeria. On this note, it was recommended that the Financial Reporting Council of Nigeria (FRCN), the regulatory framework of accounting and management of firms should accommodate the growing awareness in green accounting and as a matter of urgency, the FRCN and regulatory framework of accounting should devise a disclosure requirement aimed at enhancing the profitability level of firms in Nigeria. Moreover, this study has contributed to the literature indicating that green accounting does not matter to the profitability of firms, especially those operating with non-consumer goods in Nigeria. As a matter of fact, this study was limited to non-consumer goods firms in Nigeria; hence, future research studies should take into account an investigation into green accounting and the profitability of consumer-goods and healthcare firms in Nigeria.

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MOTIVES FOR, BENEFITS FROM AND ACCOUNTING SUPPORT TO THE ISO 14001 STANDARD IMPLEMENTATION

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With an increase in the number of the companies that have adopted the ISO 14001 standard, the interest demonstrated in research studies regarding the assessment of the motives for and benefits from the ISO 14001 standard implementation has also been increasing. Nevertheless, in spite of the importance of the ISO 14001 standards, a discussion on their importance and the role of accounting in this process yet remains an open issue among researchers and practitioners. Starting from the above said, the main purpose of the research conducted in this paper is to identify the motives for and benefits from the implementation of the ISO 14001 standard and to examine the role of accounting in the implementation process. The empirical research in this paper was performed on the example of the 33 companies that have the obligation to submit their data on the sources of environmental pollution to the National Pollution Register. The data were collected through a poll of the management of the companies via a questionnaire, whereas the data analysis was performed by using various quantitative statistical methods and techniques, and primarily through the application of descriptive statistics and non-parametric tests. The results of the research indicate that the primary motives for the introduction of the ISO 14001 standards are an environmental responsibility, creating the image of a socially responsible company and the improvement of performances, whereas the benefits can be synthesized through the improvement of environmental performances, efficiency and profitability. Also, the results of the research study indicate that the managers of the companies partly recognize the role of accounting in the implementation of the ISO 14001 standard. The main conclusion of the research is that the management of the companies partly recognize the role of accounting in the ISO 14001 standards implementation. The main conclusion of the research is that the management of the companies in Serbia understand the importance of the implementation of the ISO 14001 standards, but not to a proper extent, as well as the role of accounting in that process.

Keywords: environmental protection, enterprise, ISO 14001 standard, motives, benefits, accounting

JEL Classification: Q51, Q56, Q57, M14, M41

INTRODUCTION

Over the past decades, the impact of industrial organizations on the environment has become

apparent. On a global scale, this has led to the fact that many enterprises invest all their efforts in seeking the management instruments that enable them to decrease a negative impact on the environment and increase their economic efficiency. An environmental management system is one of the instruments that have contributed to the achievement of this goal

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and attracted the increased attention of international researchers. The most popular and the most commonly used system is the ISO 14001 standard.

The International Organization for Standardization presented a series of the ISO 14000 standards in 1996, these being the voluntary procedures that companies should adopt in their environmental protection management processes. The initial reaction to these standards was not good. Namely, in 1999, three years after the publishing of these standards, there were 10,000 ISO 14001 certificates throughout the world. Nevertheless, around 2002, there were over 46,000 certificates; in 2005, there were more than 88,000 certificates (Gavrinski, Ferrer & Paiva, 2008), and in 2016, there were more than 340,000 certificates worldwide (www.iso.org). The increase in the number of the enterprises that have implemented the ISO 14001 standard has led to an increased interest of researchers in identifying the motives for (Boiral & Sala, 1998; Hillary, 2004; Link & Naveh, 2006; Gadenne, Kennedy & McKeiver, 2009; Tari, Molina-Azorin & Heras, 2012). Also, having in mind the importance of information for a successful implementation of the ISO 14001 standards, the interest of researchers in the examination of the role and importance of accounting in the environmental protection management process has been growing (Wilmshurst & Frost, 2001; Yakou & Dorweiler, 2004; Vasile & Man, 2012). These studies are mainly focused on the development of the market economy, whereas research studies in developing countries are limited.

The subject of the research study carried out in this paper is the motives for and benefits from the implementation of the ISO 14001 standards and the role of accounting in its implementation.

The aim of the research is to identify the motives for and benefits from the implementation of the ISO 14001 standards and to examine the role of accounting in the process of the implementation of the ISO 14001 standards.

Having in mind the defined topic, the goal of the research, as well as the research hypothesis, the qualitative and quantitative methodologies have been applied in the paper. The application of a qualitative

methodology is reflected in consulting the relevant literature in order to create the theoretical foundation for conducting the research study and for testing the research hypothesis. The empirical research was carried out on the example of the enterprises that have the obligation to submit their data on the sources of the pollution of the environment media to the National Register of the Sources of Pollution, according to the provisions of the PRTR (Pollutant Release and Transfer Register) Protocol. The data collection was carried out by using the questionnaire distributed to the management of the enterprises. The data analysis was performed by applying various quantitative statistical methods and techniques, primarily by applying descriptive statistics and non-parametric tests.

The work is structured into five sections. After the introduction, the paper provides an overview of the literature creating the basis for the formulation of the research hypothesis. In the third section, the research methodology is explained. After that, in the fourth section, the results of the conducted empirical research are presented. Finally, in the fifth section, the conclusions are given, the contribution of the paper is highlighted, and the limitations and domains of future research studies are indicated.

LITERATURE REVIEW

The Conceptual Basis of the Environmental Management Systems

The application of the new legal approach, which is increasingly being spread worldwide, implying that for the created environmental damage a pollutant is responsible due to the fact that it performs risky activities with respect to the environment and, during regular operations, its activities represent a potential environmental hazard (Petrović, 2012, 108-111), has created the need for introducing standardized and documented environmental management systems (EMSs). Namely, good management practice in leading companies worldwide indicates that the

impacts companies have on the environment can be decreased if companies implement the EMSs. The organizations that implement the EMSs determine how their activities affect the environment, identify the type of the impact and sources for preventing the pollution of the environment and the degradation of natural resources (Rondinelli & Berry, 2000; Darnall, Henriques & Sadorsky, 2008).

The EMS represents the part of the overall management system which includes the organization structure, the planning activities, responsibilities, procedures, processes and means for the development, introduction, achievement, monitoring and maintaining of the policy of environmental protection (Coglianese & Nash, 2001). Starting from the aforesaid, it can be concluded that the EMS creates a good starting point, according to which companies can evaluate all of the aspects of their operations, and therefore are able to minimize the damages of one subsystem against another (Shrivastava, 1995). Due to the fact that the EMS has the goal to design or alter operations, processes and products in order to prevent (and not only to improve) the negative effects on the environment, many researchers characterize these approaches as proactive environmental strategies or practices (Hart & Ahuja, 1996; Russo & Fouts, 1997; Sharma & Vredenburg, 1998; Aragón-Correa & Sharma, 2003), where these approaches lead to the improvement of environmental performances (Khanna & Anton, 2002; King, Lenox & Terlaak, 2005). When adopting the EMS, companies to a great extent apply various types of environmental activities, since environmental management systems are created in various surroundings. Therefore, the EMS can, for example, be created on the basis of national standards (the British BS 7750), international standards (ISO 14000), as well as environmental policy guidelines (EVRO-EMAS).

In Great Britain in March 1992, the BS 7750 standard was enacted, and it was named the "Specification for Environmental Management Systems". The goal of this standard is to provide a possibility for each enterprise to amend its management system with a socially verified and publicly recognized system of environmental management, which starts from the clear formulation of the environmental strategy

and the environmental policy, as well as the goals of the enterprise. In the preface to the standard, it was indicated that the BS 7750 has the general principles of the management system as well as the ISO 9000 standard, which represents the starting point for the upgrading of the BS 7750 standards.

Eco-management and Audit Scheme – EMAS – is the initiative of the European Union enacted in April 1995, regulated by the EC 1221/2009 statute (Testa, Rozzi, Daddi, Gusmerotti, Frey & Iraldo, 2014, 165), whose goal is to induce a continual improvement of environmental protection in public and private organizations (Rahbek, 2007). EMAS operates in the manner that minimizes the probability of the occurrence of an event with a potentially negative impact on the environment. In companies, a greater implementation of the EMS is conditioned by the fact that banks and insurance companies, together with potential investors, are more interested in cooperating with the companies which have already implemented EMAS. Unlike the BS 7750, EMAS does not apply to an enterprise as a whole, but rather to a certain location of the company. The introduction and implementation of EMAS are aimed at improving the ecological performances of companies. Having in mind the fact that, in companies, managers, as well as employees, should take care of the environment, the success of EMAS is conditioned by their motivation to participate in the environmental management process (Freimann & Walther, 2002, 100-102).

As the ecological goal can be achieved through a purposeful distribution of tasks among organizational levels, the environmental standards of the ISO 14000 series have been developed, which has enabled efficient environmental management at various organizational levels. The International Organization for Standardization – ISO – is in charge of the preparation of the standards. As in the case of the previously mentioned EMS (the BS 7750 and EMAS), the important postulate of the ISO standards is that they are voluntary. The series of the ISO 14000 standards covers the two key areas of the valuation of a system or an organization:

- the first area is the so-called organizational issues,
- the other is products, services or processes.

Within the ISO 14000 series of standards, the basic standard defining good practices in environmental management is the ISO 14001, which specifies the various demands that must be fulfilled in the establishment of a more efficient system of environmental management so as to reduce and minimize pollution and other environmental incidents.

The Environmental Management System According to the ISO 14001 Standard

In the past two decades, the process of integration and globalization at the international level has increased the importance of the introduction of the EMS. Ecological disasters have had the main influence on the creation of the awareness of the importance of preventive actions and measures and the preparation of the international standards of environmental management. With the publication of the ISO 14000 standards series, the international business community tried to develop the international standard for environmental management. The development of ISO 14000 standards series has enabled companies to manage the environment more efficiently and to also reduce the negative impacts of their operations on the environment (Poksinska, Dahlgard & Eklund, 2003, 585). Nevertheless, as a request for the need to improve the environment (Bansal & Bogner, 2002), in 1996, the International Organization for Standardization published a series of the ISO 14000 standards, which consists of the several consultative documents related to the systems of environment protection management, the evaluation of ecological performances, ecological labeling, the estimation of the lifecycle and the aspects of environmental products. This series was lately revised in 2004 and 2015. Although the ISO 14000 does not represent the only way for efficiently conducting the environment protection management system, it does try to advise companies with respect to the development of a better environmental protection policy. The ISO 14001 is a part of this series and is the only standard especially designed for the purpose of satisfying the needs of the system of environment protection management (Nawrocka & Parker, 2009; Gomez & Rodriguez, 2011).

As the basic standard of the ISO 14000 series, the international standard ISO 14001 – Environmental Management Systems – represents an altered version of the BS 7750. The ISO 14001 is so designed to help companies to identify and control the impacts of their activities, products and services on the environment. Also, it helps interested parties to recognize a company's concern for the improvement of the environment.

The main requirement of the ISO 14001 standards is the permanent improvement of the relationship with the environment. The concept itself incorporates the Deming PDCA Cycle (Plan-Do-Check-Act Deming Cycle). This standard defines demands for the environmental management system that should enable an organization (a company) to develop and apply the policy and the goals, having in mind legislative demands, as well as the information on the significant aspects of the environment. The ISO 14001 provides directions for designing the system of environmental management, which enables companies to identify their own policy of environmental protection (Murat, 2009) and to also correct possible deficiencies in their operations. Therefore, the ISO 14001 should be incorporated into a company's strategy. Nevertheless, although the ISO 14001 is internationally recognized, many companies reluctantly adopt this standard, having in mind the fact that it is a voluntary standard and the benefits from the application of the same have not yet been sufficiently recognized by companies' managers. In order to stress the importance of this standard for companies' operations, there are a large number of studies carried out in the past two decades that have explored the methods of and benefits from the implementation of the ISO 14001 standards (Dyllick & Hamschmidt, 2000; Poksinska *et al*, 2003; Gomez & Rdriguez, 2011; Testa *et al*, 2014; Schylander & Martinuzzi, 2007).

The Motives for the Introduction of the ISO 14001 Standards

In order to understand the relationship between the ISO 14001 standards and the benefits from their implementation, it is important to overlook the

motives for adopting this standard. In the relevant literature in this field, there are various theoretical perspectives. On the one hand, a group of scientists relied on the aspects of the institutional theory in order to explain why companies adopted the ISO 14001 and other proactive ecological strategies (Bansal & Roth, 2000; Davidson & Worrell 2001; Bansal & Hunter, 2003; Bansal & Clelland, 2004). These authors suggest that companies are motivated to increase their inner efficiency and outside legitimacy, which can lead to competitive advantage. On the other hand, scientists rely on companies' opinions about resources in order to explain that complementary resources and capabilities lead to the adoption of proactive ecological strategies (Sharma & Vredenburg, 1998; Aragon-Correa & Sharma, 2003; Darnall & Edwards, 2006) and the improvements of business performances (Darnall *et al.*, 2008). With the implementation of these strategies, authors suggest that companies have a higher probability to obtain competitive advantage. In a small number of cases, researchers combined both theoretical standpoints (Bansal, 2005) and came to the conclusions similar to those given in previous studies which individually take into consideration both these theories (Darnall *et al.*, 2008).

Institutional theory starts from the fact that the companies operating in similar social normative frameworks, values and assumptions often perform in the same manner in order to achieve the social legitimacy needed for the long-term survival and competitiveness of the company (Suchman, 1995). Starting from this, researchers especially stress the importance of outside legitimization, with an accent on the fact that at the inter-organizational level institutional pressures are created from outside sources (the Government, the market and society), whereas at the organizational level, institutional pressures are derived from the culture, the mutual belief system, political processes and stakeholders (DiMaggio & Powell, 1983; Henriques & Sadosky, 1999; Darnall *et al.*, 2008). Therefore, institutional actors can impose forced, mimetic and normative pressures on managers.

The institutional theory starts from the assumption that external factors will lead to similar answers from all companies. Nevertheless, companies react

to outside pressures in various ways, depending on their approach to resources and the complementary capabilities derived over time (Oliver, 1997). For example, organizations with fewer internal resources and possibilities may not be able to respond fast or efficiently to the various forms of institutional pressures, whereas the entities with a higher amount of resources and better abilities can do so.

Beside the classification of motives to institutional pressures and resources and capabilities, in their research study conducted in Sweden, B. Poksinska and associates (2003) identify internal (cost reduction, the improvement of the quality of and the attitude towards the environment, the motivation of employees, the advantages internal stakeholders have), regulatory (the avoidance of potential export barriers, the relationship with the community, the relationship with the authorities) and external market motives (a corporate image, market advantages, pressures from buyers, the imitation of competition). A research study conducted in Hong Kong is indicative of the fact that, as the main motives for the introduction of the ISO 14001 standards, the raising of awareness at the national and international levels focused on the improvement of ecological performances, as well as an increase in public and market pressures (Kwai-Sang & Kit-Fai, 1999), are stressed. In their research conducted in Switzerland, T. Dyllick and J. Hamschmidt (2000) indicate the improvement of the public image as the main motive for the introduction of the ISO 14001 standards. A similar conclusion was reached by E. Schylander and A. Martinuzzi (2007), who, in their study conducted in Austria, also indicated adjusting to the laws, the improvement of ecological performances, costs savings and the motivation of employees as the motives. D. Morrow and D. Rondinelli (2002) stress that German companies operating in the energy sector implement environment management systems in order to improve their coherence with the legislation, develop and improve their eco-documentation and improve their efficiency.

Starting from the above-mentioned research, the following hypothesis will be tested in this paper:

H1: The primary motives for companies to implement the ISO 14001 standards are responsibility towards the environment, the creation of the image of a socially responsible company and performances improvements.

Benefits From the Implementation of the ISO 14001 Standards

The theoretical and empirical research studies of the benefits from the implementation of the ISO 14001 standards have been carried out in the past two decades. In the majority of those empirical research studies, the impact of a formal and an informal EMS on the economy and ecological performances has been subjected to analysis. The conducted research studies provide very useful pieces of evidence and an indication for the implementation of the ISO 14001 standards, but do not provide a sufficient piece of evidence for the generalization of their findings, as is indicated in the mentioned studies in the next part of the paper. Namely, numerous empirical research studies in this field have demonstrated that numerous companies achieved significant benefits in their operations after the adoption and implementation of the ISO 14001 standards. The adoption and implementation of the ISO 14001 standards into companies' operations can be observed as an investment intended to improve the image of a company, which is a way to generate additional income.

According to the analysis of the results of numerous research studies, J. J. Tari and associates (2012, 304) conclude that, with the implementation of the ISO 14001 standards, companies gain numerous benefits, which can generally be summarized into the following three groups:

- the improvement of ecological performances,
- efficiency and
- profitability.

Also, they stress that, taking into consideration the fact that there are numerous research studies dedicated to researching the benefits from the implementation

of the ISO 14001 standards, these benefits can be systematized in various manners.

O. Boirai and J. -M. Sala (1998) summarize the benefits from the ISO 14001 standards into three categories: the improvement of the management system, better control and socio-economic benefits. In their research study conducted in Sweden, B. Poskinka and associates (2003) stress the fact that by the implementation of the ISO 14001 standards, companies demonstrate their dedication to environmental questions, improve their relationship with stakeholders, and improve their internal procedures, as well as their competitive position. In his research, R. Hillary (2004) systematizes all benefits into internal and external. In addition, this author divides internal benefits into three groups: organizational and financial benefits and the benefits related to employees. On the other hand, external benefits are divided into economic, environmental and social. S. Link and E. Naveh (2006) systematize all benefits from the implementation of the ISO 14001 standards into two groups: environmental performances and business performances. As the main benefits from the implementation of the ISO 14001 standards, E. Schylander and A. Martinuzzi (2007) highlight a decrease in the impact on the environment, especially in the field of waste disposal, the improvement of a company's image, costs effectiveness (especially a decrease in the costs related to waste management) and a more efficient use of resources. D. L. Gadenne and associates (2009, 46) indicate the fact that by the implementation of the environmental management system into a business strategy and a more efficient management of environmental protection, companies attain numerous benefits related to a decrease in waste, a decrease in costs, an increase in customers' satisfaction, increased employees' dedication, the improvement of products and public relations. The most comprehensive systematization is that provided by I. Gavronski and associates (2008), who group them into four groups:

- The first group is an increase in productivity and it involves: a decrease in the usage of resources, a decrease in production costs and a better motivation of employees;

- The second are financial benefits, and they are related to the fact that companies can have an opportunity to use various funds, i.e. to obtain loans at lower interest rates;
- The third group is related to market benefits, and involves the creation of competitive advantage, the creation of positive effects towards the market and customers, as well as an opportunity to expand care for the environment to the entire value chain; and
- The fourth group of benefits refers to social benefits, such as an improved image of a company and a better cooperation with environmental protection companies.

By summarizing of the previously mentioned benefits presented in the survey overview, and starting from the subject matter and the goal of the research, the following hypothesis will be tested in this paper:

H2: By the implementation of the ISO 14001 standards, companies obtain numerous benefits, such as the improvement of ecological performances, efficiency and profitability.

The Support of Accounting to the Implementation of the ISO 14001 Standards

Beside the identification of motives and benefits, an attempt is also made in this paper for the purpose of indicating the role of accounting or the importance of accounting information in the implementation, as well as consideration of the motives for and benefits from the ISO 14001 standards. Namely, for the reason of the consideration of the environmental impacts of a company's operations, it is necessary for accounting to integrate the corporative environment and the business policy, thus providing guidelines on building a sustainable business. Therefore environmental accounting integrates the characteristics of the system of environmental management (Yakou & Dorweiler, 2004).

T. D. Wilmshurst and V. Frost (2001) state in their study that accounting can play a significant role in

the successful implementation of the environmental management system by introducing traditional accounting functions in the process of environmental management. These skills include measuring, recording, monitoring and verifying financial data. Environmental management systems can incorporate the accounting mechanisms that perform the assessment of the environmental impact, the assessment of environmental performance, and the monitoring of the success of the implementation of environmental actions. Associated with other management systems, they can improve the quality of decision-making in an enterprise. This role intended for accountants does not mean that they should be "environmental experts", but it rather means that an accountant is an "expert" in construction, engineering or retail business, whereas on the other hand their role should not only be limited to financial data. Accountants should be trained in the skills necessary for the development and operation of an environmental management system (the ISO 14001 standard) related to the recording, reporting, disclosure and verification of a company's performance, including environmental performances (Janjić and Jovanović, 2015).

E. Vasile and M. Man (2012) point out that environmental accounting provides information to the management by identifying and quantifying certain measures, such as: obligations arising from the environmental impact of the company, the costs incurred as a result of compliance with the law, the savings in costs achieved as a result of the implementation of the ISO 14001 standards, the economic benefits of other initiatives that lead to increased efficiency and improvements in business quality. As a significant contribution, M. Yakou and V. Dorweiler (2004) indicate the connection of environmental cost accounting with the ISO 14000 series. In the companies that adopt the ISO 14000 standards, environmental cost accounting is a tool, part of the environmental protection process integrated with the business strategy and decision-making. In her paper, K. Škarić-Jovanović (2013) states that the proper accounting treatment of environmental costs is an important presumption of environmental management and the basis for the

introduction of the ISO 14001 standard. On the basis of the above-mentioned, it follows that accounting should contribute to information on investments in environmental protection, the manner of their systematization, and the responsibilities and effects of these investments. Therefore, it is designed to trace and monitor environmental and physical activities, hereby providing such information that is essential for the successful implementation of the ISO 14001 standards and the measuring of the benefits of its implementation.

Starting from the theoretical standpoints and the empirical research studies of the role of accounting in the implementation of the ISO 14001 standards, the following hypothesis will be tested in the paper:

H3: Accounting plays an important role in the implementation of the ISO 14001 standards.

THE METHODOLOGICAL APPROACH

The survey was carried out at the end of 2016 by interviewing the company management through a questionnaire, which was conceptualized on the concepts identified in similar research papers listed in the literature review. The questionnaire consists of 18 questions, and the answers related to the ISO 14001 standard and the role of accounting in its implementation are analyzed in this paper. Most questions in the questionnaire are the closed-ended –type of questions. In the questionnaires, a five-step Likert scale is also used, which indicates the degree of the agreement of the management of the company with the defined opinions. The respondents were able to answer by providing the answers between 1 – I totally disagree, and 5 – I completely agree. Prior to the implementation of the main research, the questionnaire was subjected to a pilot study aimed at determining the necessity of implementing changes before the commencement of the main research. After the pilot survey had been conducted, minor changes were made in the questionnaire, and they were mainly related to the formulation of the questions. All of the companies involved in the survey were contacted by

telephone before being provided the questionnaire, this having been done in order for questionnaires to be sent to the addresses of the management of those companies.

The research hypotheses were tested on a selected sample of the companies that have an obligation to submit their data to the National Pollution Registry, in accordance with the provisions of the PRTR (Pollutant Release and Transfer Register) Protocol, regarding the sources of environmental media pollution (Službeni glasnik Republike Srbije, 2011). According to the data of the Environmental Protection Agency, 179 enterprises (or 250 plants) are obliged to submit data to the National Register of Pollutants. Out of the 179 companies that had received the questionnaires, 60 companies completed the questionnaire, which is a response rate of 33.52%, which is in line with the response rates in previous surveys (Christmann, 2000, Studer, Welford & Hills, 2006; Schylander & Martinuzzi, 2007; Darnall *et al*, 2008). Starting from the defined hypotheses, only the companies that have implemented the ISO 14001 standard are included in the analysis. The analysis of the questionnaire has found that the 33 companies that responded to the questionnaire have the ISO 14001 and the answers given by the management of these companies will be the subject matter of a further analysis, whereas the remaining 27 companies will be excluded from the analysis as they could not answer the questions which relate to the ISO 14001 standard because they do not have it.

In Table 1, the basic information on the certified organizations, as well as the respondents (managers), is provided.

As shown in Table 1, the majority account for the limited liability companies in the sample (60.6%), which is followed by the joint-stock companies (33.3%) and ultimately the fewest are the public enterprises (6.1%). Observed by size, the large enterprises are predominant (51.5%); they are followed by the medium enterprises (27.3%), whereas the least represented are the small enterprises (21.2%). If the sample is analyzed according to the characteristics of the respondents, it

Table 1 Characteristics of the sample

	Frequency	%
Legal form of the company		
public enterprise	2	6.1
shareholders company	11	33.3
limited liability	20	60.6
Size of the company		
Small	7	21.2
Medium	9	27.3
Large	17	51.5
Sex		
Male	12	36.4
Female	21	63.6
Position in the company		
CEO	5	15.2
Financial Director	12	36.3
Technical Director	3	9.1
Commercial Director, Chief Accountant, etc.	13	39.4
Education level		
Faculty	32	97
Secondary school	1	3
Years of service		
3-5	1	3.0
6-10	3	9.1
11-15	7	21.2
16-25	13	39.4
>25	9	27.3

Source: Authors

is possible to observe that the questionnaire was more responded to by female respondents (63.6%). Also, according to the age structure, the most numerous categories of the respondents are the persons under 45 years of age (54.5%). If we take into consideration the fact that the questionnaire was intended for the management of the companies, the structure of the sample according to the position indicates that the

questionnaire was filled in by 15.2% of the CEOs, 36.3% by the financial directors, 9.1% by the technical directors and the remaining 39.4% by the commercial directors, the chief accountants, the QMS and EMS sector managers and the others. In the sample, the respondents with a faculty diploma (97%) are predominant, among whom 51.5% account for those who have graduated from the Faculty of Economics. If the years of service are observed, the persons with a working experience longer than 10 years (60.6%) are predominant in the questionnaire.

The questionnaire data were analyzed in the Statistical Package for Social Sciences (SPSS, Version 20.0). The measuring of the reliability and internal consistency of the variables was performed by using Cronbach's Alpha Coefficient. Descriptive statistics was used to measure the central tendency (the arithmetic mean, the median, and the modus) and the measurement of variability (the standard deviation). Also, a correlation analysis and non-parametric tests were used in the paper with the aim of obtaining a clearer presentation of the results and making the conclusions as precise as.

THE RESEARCH RESULTS

The value of Cronbach's Alpha Coefficient is calculated for each of the questions to which the respondents provided the answers on the Likert scale. The value of Cronbach's Alpha Coefficient for the reliability of the measuring scale is greater than 0.7; on the basis of the foregoing, it can be concluded that the questionnaire has a good internal consistence. The generally agreed lower limit for Cronbach's Alpha is 0.70, although it may fall up to 0.60 in exploratory research (Hair, Anderson, Tatham & Black, 1998; DeVellis, 2003). After the reliability check, the checking of the normality of the distribution of the used variables was checked. The normality is shown by a statistically insignificant (random) deviation from normality, i.e. by a Sig. value greater than 0.05. After having conducted the Shapiro-Wilk test, we established the fact that the assumption about a normal distribution was not confirmed.

Table 2 shows the frequency of the statement on the question related to the motives for the introduction and implementation of the ISO 14001 standards. The statements in the table are sorted according to the order of the frequency of the variables. The highest level of agreement was demonstrated by the respondents is that relating to the environmental responsibility statement ($M = 4.85$), which is in accordance with the expected results and the theoretical framework presented in the literature overview. The results of the study show that the respondents have shown the lowest degree of agreement with the stakeholders' pressure statement ($M = 2.73$). Also, in a more detailed analysis of the results, a conclusion could be drawn that a large number of the respondents (54.5%, i.e. 18 respondents) fully or partly agree with the statement that the motive for the introduction and implementation of the ISO 14001 standards is accounted for by the existence of a legal obligation, which is incorrect given the fact that it is the standard voluntarily applied by the companies. However, the value of the modus indicates that the largest number of the respondents circled the number 1 for this question on the offered Likert scale ranging from 1 to

5, so it can be concluded that the opinions are divided regarding that.

When elaborating the results of descriptive statistics, it should also be noted that the distribution is not normal, so the arithmetic mean is not the best measure of the average, for the reason of which fact is necessary that we should obtain the values of the median and the modus. The median value in the statements is 4 or 5, whereas the most common marks given by the respondents when completing the questionnaire were 4 and 5, except for the legal obligation and the pressure from the stakeholders statements. By analyzing the results of descriptive statistics, the companies' primary motives for the introduction of the ISO 14001 standard can be said to be their environmental responsibility, building the image of a socially responsible company, a better reputation of the company and the improvement of performances. Starting from the abovesaid, it follows that Hypothesis 1 has been confirmed.

Table 3 accounts for the frequency of the statement on the benefits of the introduction and implementation of the ISO 14001 standard. The results presented in the table indicate that the respondents gave the highest

Table 2 The expression of the statements on the motives for the introduction and implementation of the ISO 14001 standard

Motives for the introduction and implementation of ISO 14001 standards	N	Min	Max	M	SD	Med.	Mod.
Responsibility for the environment	33	4	5	4.85	0,364	5	5
The creation of the image of a socially responsible company	33	4	5	4.67	0.479	5	5
A better reputation of the company	33	3	5	4.58	0.614	5	5
Performance improvements	33	2	5	4.39	0.747	5	5
Cost reduction	33	1	5	3.76	1.001	4	4
The motivation of employees	33	1	5	3.45	1.175	4	4
The legal obligation	33	1	5	3.15	1.734	4	1
Stakeholders' pressure	33	1	4	2.73	1.126	3	3

N - number of respondents, Min - minimum, Max - maximum, M - Mean, SD - standard deviation, Med. - median, Mod. - modus

Source: Authors

Table 3 The frequency of the benefits from the introduction and implementation of the ISO 14001 standard statement

The introduction and implementation of the ISO 14001 standard	N	Min	Max	AS	SD	Med.	Mod.
The improvement of the environmental performance of enterprises	33	1	5	4.52	0.939	5	5
The improvement of the competitive position	33	1	5	3.94	1.059	4	4
Increased business efficiency	33	2	5	3.76	0.792	4	4
Increasing profitability	33	1	5	3.39	0.864	4	4

N - number of respondents, Min - minimum, Max - maximum, M - Mean, SD - standard deviation, Med. - median, Mod. - Modus

Source: Authors

mark to the improvement of ecological performances statement ($M = 4.52$), i.e. the commonest score given to this statement by the respondents was 5 (Mod. = 5). Namely, 30 respondents (90.9%) fully or partially agree that the introduction and implementation of the ISO 14001 standards contributes to the improvement of ecological performances. The other statements listed in Table 3 have approximately the same significance in the respondents' opinions since the greatest number of the respondents graded these statements with a 4. Summarizing the results accounted for in Table 3, the implementation of the ISO 14001 standards can be said to create a lot of benefits for companies, such as improving environmental performances, the competitive position, efficiency and profitability. On the basis of the foregoing, it follows that Hypothesis 2 has been confirmed.

After the identification of the motives for and benefits from the implementation of the ISO 14001 standard, a correlation analysis (Table 4) was carried out in order to examine whether, and to which extent if so, there was a relationship between the aforementioned variables, i.e. quantitative coherence (Cohen, 1998, 79-81).

After the conducted correlation analysis (Table 4), it is concluded that there is a statistically significant quantitative coherence between the motive related to cost reduction, on the one hand, and ecological performance ($r_s = 0.523$ – a strong positive correlation), increased efficiency ($r_s = 0.401$ – a medium positive correlation), increased profitability ($r_s = 0.543$ – a strong positive correlation) and the improvement of

the competitive position ($r_s = 0.545$ – a strong positive correlation), on the other. The abovesaid indicates that there is a link between the cost reduction motives and the benefits from improving ecological performance, an increase in efficiency, profitability and the improvement of the competitive position. Also, the results of data processing indicate that there is a positive correlation between the employees' motivation and increased efficiency ($r_s = 0.393$ – a medium correlation), a profitability increase ($r_s = 0.599$ – a high correlation) and the improvement of the competitive position ($r_s = 0.402$ – a medium correlation). In addition to the abovementioned, the results of data processing point to the existence of a correlation between the motives for creating the image of a socially responsible company and improving the competitive position ($r_s = 0.391$ – a medium correlation). On the basis of the results of the correlation analysis, it can be concluded that there is a link between the motive for the introduction and the benefits from the implementation of the ISO 14001 standards.

The third research hypothesis is that related to the role of accounting in the implementation of the ISO 14001 standards. Within this segment of the descriptive analysis, the role of accounting in the implementation of the ISO 14001 standard will also be highlighted (Table 5). Namely, the results of descriptive statistics indicate that 39.4% of the respondents fully or partially agree that accounting plays a significant role in the implementation of the ISO 14001 standard ($M = 3.12$), while 33.3% are not sure, and 27.3% of the respondents

Table 4 The correlation analysis of the motives for and benefits from the introduction and implementation of the ISO 14001 standard

Motivation for the introduction of ISO 14001 standards	Benefits from the implementation of the 14001 standard				
		The improvement of ecological performances	Increased efficiency	Increased profitability	The improved competitive position
Spirman's correlation coefficient of rank	A better reputation of the company	rs 0.060 Sig. 0.739 N 33	0.001 0.997 33	0.034 0.852 33	0.395* 0.023 33
	Stakeholders' pressure	rs -0.095 Sig. 0.598 N 33	-0.012 0.948 33	0.194 0.278 33	0.053 0.769 33
	Costs reduction	rs 0.523** Sig. 0.002 N 33	0.401* 0.021 33	0.543** 0.001 33	0.545** 0.001 33
	Performances improvement	rs 0.299 Sig. 0.091 N 33	0.240 0.179 33	0.206 0.250 33	0.282 0.112 33
	The motivation of employees	rs 0.283 Sig. 0.110 N 33	0.393* 0.024 33	0.599** 0.000 33	0.402* 0.020 33
	The legal obligation	rs 0.066 Sig. 0.716 N 33	-0.274 0.123 33	0.143 0.427 33	0.158 0.378 33
	Responsibility to the environment	rs 0.341 Sig. 0.052 N 33	0.192 0.284 33	0.194 0.278 33	0.293 0.099 33
	The creation of the image of a socially responsible company	rs 0.092 Sig. 0.611 N 33	-0.004 0.983 33	-0.115 0.526 33	0.391* 0.024 33

*Statistical relevance at the level of 0.05; ** Statistical relevance at the level of 0.01

Source: Authors

Table 5 The role of accounting in the implementation of the ISO 14001 standards

	Freq.	%	Min	Max	M	SD	Med	Mod
I completely disagree	3	9.1						
I partially disagree	6	18.2						
I am not sure	11	33.3	1	5	3.12	1.11	3	3
I partly agree	10	30.3						
I fully agree	3	9.1						
Total	33	100						

Freq. - frequency, Min - minimum, Max - maximum, M - Mean, SD - standard deviation, Med. - median, Mod. - Modus

Source: Authors

either totally or partially disagree with the statement that accounting plays a role in the implementation of the ISO 14001 standards. Based on the above, it can be concluded that the third hypothesis has only partially been confirmed.

Bearing in mind the fact that managers' opinions about the role of accounting in the implementation of the ISO 14001 standards are divided, the application of non-parametric tests was an attempt to identify whether there is a statistically significant difference between the groups in the sample (the subsamples). After the application of the Kruskal-Wallis test, it was found that there was no statistically significant difference in the managers' opinions about the role of accounting in implementing the ISO 14001 standards when the size of the company ($\chi^2(2, n = 33) = 2.73, p = 0.255$) and the position of the managers in the company ($\chi^2(3, n = 33) = 5.05, p = 0.168$) are observed; also, by using the Mann-Whitney U Test, a conclusion was drawn that there was no statistically significant difference in the managers' opinions about the role of accounting in the implementation of the ISO 14001 standards when the gender of the managers ($U = 119, z = -0.272, p = 0.786$) was taken into consideration. However, after using the Mann-Whitney U test, it was found that there was a statistically significant difference if the joint-stock companies were compared with the limited liability companies ($U = 49.500, z = -2.593, p = 0.01, r = 0.47$). Namely, the respondents from the joint-stock companies gave greater importance to accounting in the implementation of the ISO 14001 standards ($M = 3.82, \text{Med.} = 4, \text{Mod.} = 4$) than those from the limited liability companies ($M = 2.80, \text{Med.} = 3, \text{Mod.} = 3$). Such a result can be justified by the fact that joint-stock companies, covered by this research, are mostly with foreign capital, i.e. they come from the countries where socially responsible business is more developed and are more focused on exports, so that the pressures from stakeholders are stronger when it comes to environmental issues.

CONCLUSION

Market saturation and the increasing demands from the community related to the environmental

protection impose on the companies an obligation to adapt their goals and strategies to the requirements of the environment which they operate in. Managers are increasingly required to manage their companies in a manner that will create benefits for society as a whole. Therefore, the successful management of a company in changed business conditions requires from the management to choose a new, original mode of operation, behavior and proactive thinking. Therefore, the enterprises that incorporate into their business proactive environmental strategies earlier are more likely to take on better strategic positions and better access to resources and opportunities than it is the case with the companies that implement reactive strategies. In the literature, the ISO 14001 standard is listed as a particularly useful tool for the implementation of a proactive environmental strategy.

The results of the research presented in this paper indicate that environmental responsibility, the creation of the image of a socially responsible company, a better reputation of the company and the improvements of performances are particularly the primary motives for the introduction and implementation of the ISO 14001 standards, whereas costs reduction and the motivation of employees are presented as the secondary motives in this regard. Also, based on the results obtained from the research study, it can be concluded that the introduction and implementation of the ISO 14001 standards, in the opinions of the respondents, has contributed to the improvement of ecological performances. In the respondents' opinions, the improvement of environmental performances, caused by the introduction and implementation of the ISO 14001 standards, has positively impacted the competitive position and an increase in the efficiency of operations. It is important to note that the stated benefits are highly correlated with the motive of costs reduction and employees' motivation.

As far as the role of accounting in the implementation of the ISO 14001 standards is concerned, the attitudes are divided: one-third of the respondents consider it to have a significant role, one-third of the respondents consider that it does not have an important role, and one-third are not certain regarding that issue. T. D. Wilmshurst and G. R. Frost (2001) have also come to a similar conclusion, namely that there is a

neutral attitude towards the accountant's role in the environmental management process. The obtained results can be justified by the fact that in the sample more than 50% are the medium and small enterprises that do not have a developed accounting function and often have only one person performing all accounting tasks. Also, in small-sized accounting joint-stock companies, above all those with foreign capital, the role of accounting in the implementation of the ISO 14001 standards is recognized and, taking into account the fact that their participation in the sample is less than 50%, the obtained results are expected to be such.

In addition to the abovementioned, it is necessary to point out the fact that the results of the empirical research study do not deviate from the results of similar research studies conducted in the world (Dyllick & Hamschmidt, 2000; Wilmshurst & Frost, 2001; Poksinska *et al*, 2003; Schylander & Martinuzzi, 2007; Gavronski *et al*, 2008; Gadenne *et al*, 2009) and that they confirm the two out of the three defined hypotheses. Namely, the third hypothesis is partially confirmed since the attitudes of the companies' management in the Republic of Serbia are divided when it comes to the importance of accounting in the implementation of the ISO 14001 standard.

Starting from the abovesaid, it can be concluded that the results of the research study have significant theoretical and practical implications. Namely, the results of the research indicate the importance of implementing the ISO 14001 standards, as well as the fact that company managers still do not fully recognize the role of accounting in this process. Bearing in mind the fact that there are a small number of research studies in this area in developing countries, this research study contributes to filling in the gaps in the literature, highlighting the motives for, benefits from and the importance of accounting in the environmental management process. By linking the empirical research results to the existing research results in the world, certain guidelines can be derived that can help managers to improve the process of environment protection management. Enterprises should think of investments in environmental protection as investments into the future, bearing in mind the importance of proactive environmental

strategies for the operations of the company. In addition, companies should motivate employees to behave more responsibly towards the environment and be more rational in using resources. Also, the benefits from the implementation of the ISO 14001 standards should be highlighted, and they should be expressed both qualitatively and quantitatively. The study provides a significant contribution to the business policy of a company, emphasizing the fact that, in the periods of constant change, the success of an enterprise is largely conditioned by its social responsibility. The results also indicate that domestic enterprises have not yet fully recognized the role of accounting in environmental management systems, and that greater progress here should be made in the future, namely companies in developed market economies should be looked after.

The main limitation of this study relates to the size of the sample. Namely, the small sample limited the application of a more demanding statistical methodology. In order to have more general conclusions, all the companies that have implemented the ISO 14001 standard should be included and the number of variables should also be increased and more advanced statistical techniques applied. It would be useful to carry out a comparative analysis, which would enable a comparison of the expectations from the implementation of the ISO 14001 standards with the benefits that would be measured both by financial and non-financial indicators. The subjectivity of the respondents can also be stated as a constraint. Namely, having in mind the fact that this is a sensitive problem companies are being faced with, it is possible that the respondents gave socially desirable answers in order to create a better picture of the company in which they work. For future research studies, it would be good to separately interview CEOs, financial and environmental managers, and compare their responses. Also, more detailed results would be obtained if an interview were used in addition to the poll. Bearing in mind the aforementioned constraints, future research should include a time dimension in order to see the cost-effectiveness of and benefits from the implementation of the ISO 14001 standard over time.

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Review paper

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BIASES IN THE DECISION-MAKING PROCESS AND POSSIBILITIES OF OVERCOMING THEM

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Starting from the normative approach, a decision as the outcome of the decision-making process should represent a rational choice made by a completely informed decision-maker. With the development of the behavioral perspective of the decision-making process, certain mistakes in decision-makers' behavior have been noticed, emerging as a consequence of their limited cognitive capacities and the information asymmetry. The application of heuristics as simplified mental strategies, as well as certain deformations in decision-makers' thinking and perception, leads to the different biases that affect their attitudes and approach to problem solving. The aim of the research study is reflected in identifying the biases that most often occur in the decision-making process, as well as their causes and consequences. The qualitative methodology of the research has been applied in parallel with the relevant methods of analysis and synthesis, deduction and induction. On the basis of the conducted empirical studies, the recommendations for overcoming biases have been defined, which represents the main result of the research study. The derived conclusions with respect to the possibilities of overcoming biases can help decision-makers to improve the decision-making process in real situations.

Keywords: decision-making process, decision-makers, bounded rationality, mental strategies, biases

JEL Classification: M10, D81

INTRODUCTION

In the conditions of uncertainty, the promulgation of good decisions becomes the key factor for a company's success. The decision-making process represents a set of the activities that lead to making the final choice of one out of a set of possible actions by which the

desired aim will be achieved (Babić, 1995, 14). Starting from the assumption that decision-makers are completely informed and perfectly rational beings, the development of the normative models of decision-making is the answer to the observed need to prescribe the procedures of decision-making that will enable a rational choice. However, it is observed that in real situations there are deviations in the application of the rational procedures of decision-making, and also that the behavior of decision-makers is under the

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influence of the uncontrolled factors that infringe the conditions of complete information and rationality.

In fact, research in the decision-making process in real situations implies the importance of understanding the limited cognitive capacities of decision-makers that lead to mistakes in the perspective of observing problems and negatively affect the effectiveness of decision-making (Maitland & Sammartino, 2015). As a consequence of the limitation of cognitive capacities, decision-makers apply different heuristics as mental strategies by which they simplify problems and redefine the manner of their solving (Tiwana, Wang, Keil & Ahluwalia, 2007). By introducing the concept of bounded rationality (Simon, 1955), researches in the field of strategic decision-making have been focused on the study of the cognitive abilities of decision-makers and their limits, as well as on the understanding of behavior of decision-makers and the mechanisms of overcoming the observed limitation in the process of resolving complex problems (Menon, 2018). In accordance with the abovementioned, the understanding of mental strategies, as the mechanisms of simplifying the decision-making process, represents the first step in facing complex problems (Levinthal, 2011).

Starting from the understanding that decision-makers are bounded rational individuals, the subject matter of research are the biases as heuristics that influence the judgment of decision-makers and cause certain systematic mistakes in the decision-making process. The understanding of the biases that emerge as a consequence of the influence of different social and psychological factors on decision-makers represents the current research field in the area of the decision-making theory.

In the given context, the research is aimed at showing in which way biases affect the outcome of the decision-making process and the possible ways to overcome them. In accordance with the defined subject matter and the aim of the research, the starting research hypothesis is that the application of heuristics as mental strategies by which the decision-making process is simplified negatively affects the quality of a decision as the outcome of the decision-making process.

In accordance with the abovementioned, we started from the results of the empirical research carried out by different authors who had dealt with the influence of biases on the decision-making process.

On the basis of the survey of the relevant research that includes the partial studies of certain biases, the comprehensive analysis of the identified biases in the decision-making process represents an attempt to provide an answer to the observed research gap. The quality methodology was applied in the research, based on the descriptive study and interpretation of the results of the conducted analysis. For the purpose of deriving general attitudes regarding the causes of biases and the consequences of biases for the quality of the decision-making process, the methods of analysis and synthesis, deduction and induction, have been applied as the appropriate research methods of the theoretical verification of the set analysis.

The paper is structured into three mutually related unities. In the first part of the paper, the nature of the decision-making process and the bounded rationality of decision-makers are analyzed. Starting from the behavioral perspective, special attention is dedicated to researching the direct and indirect effects of bounded rationality in decision-making. The second part of the paper is dedicated to conducting research into the biases that emerge as a consequence of the limited cognitive capacities of decision-makers. The analyzed biases determine the manner in which decision-makers process the obtained information during the decision-making process, estimate the proposed alternatives and make a choice. On the basis of the comprehensive overview of empirical research in biases, in the third part of the paper special attention is given to identifying the possibilities of overcoming them for the purpose of improving the quality of the decision-making process.

BOUNDED RATIONALITY IN DECISION-MAKING

Although there are different approaches in the conceptual defining of the decision-making process,

their mutual characteristic is that the decision-making process implies all of the activities of making the choice of one among the proposed options that include identifying problems, and the generation and choice of the alternative (Zlatanović & Nikolić, 2017). In a broader sense, decision-making is observed as a set of the activities used in order to find and apply the course of action that will lead to the realization of the set aim. In a narrower sense, decision-making represents the choice of one out of a set of the considered options (Babić, 1995, 15). The essence of the decision-making process is the choice of the best decision. A good decision has to satisfy two main criteria: effectiveness and efficacy. An effective decision is that leading to the complete fulfillment of the set aim, whereas an efficient decision is that shaping all of the actions oriented towards the given aim so that the minimum of available resources are used (Howard & Abbas, 2016, 30). A good decision emerges as a result of the correct understanding of problems and the defining of the aims, the creative development of alternatives, the objective evaluation of the alternatives and a consistent choice (Harrison, 1996). In order to define the procedures that will lead to making a good decision, the normative models of decision-making have been developed.

According to the normative models of rational choice, decision-making can be characterized as a rational, predictive and deterministic process. The behavior of decision-makers within the mentioned activities included in the decision-making process is characterized by rationality and the choice of the optimal solution. The problems that are resolved are well-structured and choice is consistent (Simon, 1959). The abovementioned characteristics are derived from the understanding that decision-makers, as the actors of the decision-making process, are ideally rational individuals who implement the comparative evaluation of alternatives and perform the choice of the optimal alternative on the basis of rational procedures and the rules of decision-making (Sklad & Diekstra, 2014). In fact, according to the economic theory of a company, as the representative of the normative perspective of the study of the decision-making process, the behavior of decision-makers represents the explicit choice based on logic, deductive

conclusions, whereby all the limitations arising from human nature are completely disregarded. On the basis of complete information, decision-makers make a calculation of the expected usefulness of the options, depending on the estimated probabilities of the relevant events and the usefulness of all of the possible outcomes of the analyzed options (Wang, 1996). A completely informed and rational decision-maker chooses the option that maximizes the expected usefulness (Levinthal, 2011).

However, contrary to the theoretical assumptions of the normative approach, the complete rationality is unattainable for the following reasons: firstly, in the case of most decisions, the list of the potential consequences of each option is very long, with many unknown outcomes, which means that the idea of complete information is not real; secondly, the possibilities of different outcomes are usually unknown and in the best case can only be roughly estimated, by which the ability of decision-makers to make a rational choice is challenged; thirdly, decision-makers do not always behave compliantly with the principle of maximizing. This type of thinking, which implies the optimization, cannot resolve complex social problems since it ignores the different perceptions, values and interests present in organizations (Zlatanović, 2010). Starting from the observed limitations of the normative approach, the perspectives in the study of the decision-making process are changed. The rationality of decision-makers is observed through the prism of the interdependence of objective, rational behavior and the behavior conditioned by the behavioral factors that shape the perception and judgment of decision-makers (Zlatanović & Nikolić, 2017). With the development of behavioral theory, it is observed that in real situations the behavior of decision-makers is characterized by bounded rationality, since their capacities are limited in relation to the problem that is being solved (Simon, 1959).

In fact, the behavioral perspective leads to the understanding of the fact that the behavior of the actors of the decision-making process in real situations often significantly differs from rational choice and is based on the application of the simple

decision-making rules. These conclusions have led to the assumption about the bounded rationality of decision-makers that arises as a consequence of the problem related to the information asymmetry and the limited cognitive capacities of the actors of the decision-making process. As the founder of the concept of bounded rationality, Simon (1955) describes the limitations arising from human nature and the inability of rational decision-making. The foregoing means that the quality of decisions is determined by the degree of the limitation of the decision-maker's cognitive abilities (Huber, 1980, 25). This attitude originates from the understanding of the fact that a decision-maker can only consider a limited number of information at one moment; that he/she has to make a decision in a limited period of time, and also that a decision-maker cannot possess all of the relevant pieces of information. In the stated context, it is more difficult for decision-makers to find satisfying, not optimal solutions (Simon, 1959). Starting from the concept of bounded rationality, a conclusion can be drawn that decision-makers act on the basis of the simplified mental models shaped under the influence of personal attitudes, perceptions and biases. In fact, research in the decision-making process in real situations implies the discovery of the different perceptions or understandings of the world, as well as the manner in which these perceptions change over time and differ between the actors of the decision-making process (Zlatanović, 2010). It means that ambiguity, inconsistency and independence become the key characteristics of the decision-making process, which leads to the confirmation of the assumption on the bounded rationality of decision-makers.

In order to overcome the limitation of cognitive capacities, decision-makers often simplify decision-making, relying on the application of heuristics (De Neys, 2010). In many cases, these "mental shortcuts" lead to a rough approximation related to the optimal solution (Pavličić, 2015, 301). In accordance with the above-stated, one of the direct effects of bounded rationality is related to the attitude that in real situations decision-makers do not make the optimal choice (Campitelli & Gobet, 2010). In fact, they use the simplified procedures and rules of decision-making. One such rule is the choice of the satisfying

alternative, which means that the alternative that satisfies decision-makers' demands is chosen, whereas only in exceptional cases do decision-makers opt for searching for and selecting the optimal alternative (March, 1994, 18). Also, as a consequence of bounded rationality, decision-makers often make only the minimum of the incremental adjustment necessary to reduce the problem to such a degree at which the difference between the wanted and the existent aims is acceptable. Such an approach can be efficient in the short-term, but observed in the long-term, such a behavior can cause unwanted consequences.

Another direct effect of bounded rationality is the application of the inadequate models of decision-making. It means that, due to limited cognitive capacities, decision-makers use an approximate, simplified model of a real situation (Bresnick & Parnell, 2013, 33). The application of such models helps decision-makers to solve complex problems through the application of the different "mental shortcuts" that enable their simplification (Levinthal, 2011; Menon, 2018). The models of decision-making based on heuristics are less efficient than the optimization models whose application in solving problems implies the collection of all of the relevant pieces of information, as well as the mathematical specification of alternatives. Contrary to that, the application of heuristics is based on "ignoring information" for the purpose of faster and simplified decision-making regarding the application of optimization methods (Maitland & Sammartino, 2015). The application of the simple rules and inadequate models of decision-making as a direct consequence of the phenomenon of the bounded rationality of decision-makers leads to a decrease in the quality of a decision. The stated consequences of bounded rationality can be related to certain psychological factors that affect decision-makers in the process of collecting and analyzing the information relevant to the decision-making process. Psychological factors, such as the ungrounded self-confidence of decision-makers, excessive bonding to the initial information, connecting alternatives with stereotypes, giving support to wrong choices and dependence on the form of displaying problems can, to a great extent, shape the perception of decision-makers in the decision-making process and the final

outcome (Bresnick & Parnell, 2013, 35). It is about the biases arising as a consequence of the cognitive limitation of decision-makers and causing the filtrated collection and subjective evaluation of information in favor of those who confirm their attitude about certain problems, ignoring the information contrary to their opinions. In accordance with the said, the influence of the information asymmetry leads to the information barriers that cause the filtrated collection of information. Under the influence of information barriers, decision-makers form their own personal preferences that can lead to a distortion in the information analysis (Jamieson & Hyland, 2006). Also, the amount of information available to decision-makers often exceeds their cognitive abilities necessary for processing information. Due to cognitive limitations, decision-makers are incapable of processing all of the relevant pieces of information, but under the influence of biases as mental shortcuts to the solution of the problem, they do process them by simplifying the decision-making process. In the stated context, decision-makers make a choice based on the application of the simplified rules and inadequate models of decision-making, which negatively affects the outcome of the decision-making process (Figure 1).

BIASES AS THE BEHAVIORAL ASPECTS OF THE DECISION-MAKING PROCESS

For the purpose of discovering the causes and consequences of the biases arising under the influence of certain mental mistakes, certain authors have been researching this field for more than two decades now. Making general conclusions is not a simple process, since it is necessary that not only the economic, but also the psychological dimension of certain phenomena and occurrences, as well as the personal characteristics of decision-makers that can influence their behavior, should be perceived. Starting from numerous empirical studies in this field (Tversky & Kahneman, 1974; Kahneman & Tversky, 1979; Chi & Fan, 1997; Busenitz & Barney, 1997; Hodgkinson, Maule, Bown, Pearman & Glaister, 2002; Roxburg, 2003; Korte, 2003; Forbes, 2005; Hammond, Keeney & Raiffa, 2006; Jamieson & Hyland, 2006; Chira, Adams & Thornton, 2008; Henman, 2008; Maqsood Finegan & Walker, 2008; McKenzie, van Winkelen & Grewal, 2011; Sklad & Diekstra, 2013; Bresnick & Parnell, 2013; Riaz & Iqbal, 2015; Fiedler & von Sydow, 2015; Howard & Abbas, 2016; Mustilli, Piccolo & D'Angelo, 2018), the framing effect, the availability bias, representativeness, the anchoring effect and adjustment, the status quo, the sunk costs effect, a confirmation, a false consensus, overconfidence and

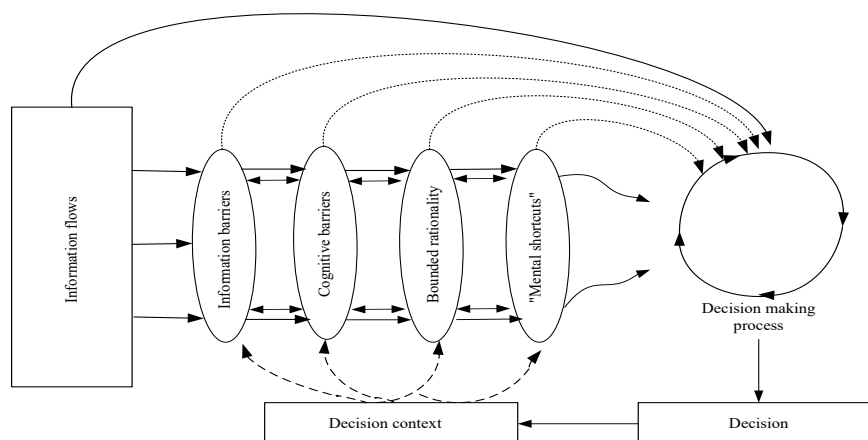


Figure 1 Bounded rationality in decision-making

Source: Author, based on Jamieson & Hyland, 2006

the illusion of control have been identified in this paper as the most common biases that shape the outcome of the decision-making process.

The Framing Effect

The first step in the decision-making process is the formulation of the problem that is to be solved. The manner in which decision-makers identify the problem can depend on the influence of the manner in which "the problem is being framed" (Henman, 2008; Pavličić, 2015, 314; Howard & Abbas, 2016, 357). The most common obstacle to an objective insight and a correct problem diagnosis, as the basic steps in the phase of the problem identification, is the shaping of the decision-maker's perception depending on the manner in which the information has been presented (Bresnick & Parnell, 2013, 36). This effect is also known as the axiom of invariance, according to which the redefining of the problems will not affect the result of the choice, which means that the preferences of decision-makers are independent of the manner in which problems are described (Tversky & Kahneman, 1974). However, the axiom of invariance is often disputed, since the preferences are variable, and when comparing alternatives, it often leads to the variation of the attributes that are being subjected to consideration, which all taken together affects the occurrence of the intransitivity of preferences. In practice, a fact has been established that decision-makers prefer the positive to the negative frame of the problem formulation, and that, together with a change in the manner of the interpretation of information, they also change their attitudes (Tversky & Kahneman, 1974; Kahneman & Tversky, 1979; Jamieson & Hyland, 2006; Hammond *et al*, 2006; Chira, Adams & Thornton, 2008; McKenzie *et al*, 2011; Bresnick & Parnell, 2013, 36). As the the frame in which possible outcomes have been shown changes, the reference point changes as well, which leads to the shaping of the preferences of decision-makers and their relation to the risk (Božović & Gvozdenović, 2009). The observed aversion towards losses is related to a greater tendency of decision-makers to avoid a loss rather than realize a gain (Tverski & Kahneman, 1979). The tendency towards risky decisions will also

be more expressed when the problem is "negatively framed". A. Tverski and D. Kahneman (1974) are first to have confirmed that losses are emotionally experienced twice as strongly in comparison to comparable gains, which can distort the perception of decision-makers in the phase of the problem identification.

The Availability Bias

Under the influence of the availability bias, decision-makers estimate the probability of one event depending on their own memory, namely depending on the extent to which they can remember similar events (Hammond *et al*, 2006; Sklad & Diekstra, 2013). If the same or a similar event often occurred in the past, decision-makers can more easily imagine its occurrence, while they remember rare events with more difficulties. Consequently, a high probability of occurrence is attributed to the event that frequently occurred in the past, whereas a low probability of occurrence is attributed to the event that rarely occurred in the past (Pavličić, 2015, 301). The consequence of such a perception is a distorted opinion of the decision-maker's and the unbiased estimation of the probability of events, due to which he can make wrong choices (Korte, 2003). The estimation of future events, as well as risks, is more dependent on the memory of decision-makers than on the unbiased evaluation of possible events (Fiedler & Sydow, 2015). Decision-makers predict the frequency of some event depending on the information available in their memory, the one which shapes their judgment and leads to a selective perception (Hammond *et al*, 2006; Henman, 2008; Maqsood *et al*, 2008; Bresnick & Parnell, 2013, 37). The foregoing means that decision-makers wrongly estimate and predict the probabilities of future events which the outcome of decision-making depends, under the influence of the selective memory of past events (Howard & Abbas, 2016, 351).

Representativeness

Representativeness is the application of mental shortcuts in determining conditional probabilities on the basis of the estimation of the extent to which some

event is a result of a certain process, i.e. of the extent to which a certain process generates the analyzed event (Maqsood *et al*, 2008; Sklad & Diekstra, 2013; Fiedler & von Sydow, 2015). In fact, it is about the estimation of the probabilities of conditional events often based on the incorrect similarity and connection of certain events and occurrences (Howard & Abbas, 2016, 352). Representativeness was for the first time described by A. Tverski and D. Kahneman (1974), who described it as one of the most common biases. These authors indicated the occurrence in which, in certain situations, decision-makers show a tendency to generalize the conclusions on the observed phenomenon on the basis of the analysis of but a few attributes or selective observations regarding a certain occurrence. Certain studies dealing with the examination of the influence of representativeness have shown that decision-makers tend to ignore the basic information about a certain occurrence (Chi & Fan, 1997). Decision-makers underestimate the possibility of an error with such estimations, as well as the unreliability inherent to small data samples. In fact, a special form of representativeness is related to the readiness of decision-makers to generalize the attitudes on the basis of the examinations based on small samples or personal experience (Busenitz & Barney, 1997).

The Anchoring Effect and the Adjustment Bias

The bias known in theory as the “anchoring effect” is that related to the shaping of the decision-maker’s perception depending on the available information and the initial attitude (Maqsood *et al*, 2008; Howard & Abbas, 2016, 355). Decision-makers’ initial estimations have a greater specific weight in relation to the pieces of information collected in a later course, due to which decision-makers become biased in judgment (Hammond *et al*, 2006; Henman, 2008; McKenzie *et al*, 2011; Sklad & Diekstra, 2013; Pavličić, 2015, 302). It means that the chosen value representing the so-called anchor is the starting point, only to subsequently be corrected, depending on other relevant factors. The adjustment process is most often such that the judgment of decision-makers

depends on the initial anchor (Fiedler & von Sydow, 2015). The anchors can have different forms. One of the most common types of anchor is a past event or trend (Hammond *et al*, 2006, 119). Old data have the anchors corrected by decision-makers, whereby the need for an objective adjustment to a new situation is disregarded (Bresnick & Parnell, 2013, 37). In the conditions characterized by fast changes on the market, the application of the anchor leads to bad predictions and wrong choices (Roxburg, 2003).

The Status Quo

Decision-makers demonstrate a strong bias towards the alternatives that support the *status quo*, especially in the situations when changes need to be implemented (McKenzie *et al*, 2011). Decision-makers prefer the *status quo* state as a less risky alternative, due to which taking actions whose implementation would disturb such a state is often avoided (Samuelson & Zeckhauser, 1988; Hammond *et al*, 2006; Henman, 2008). The change of the *status quo* state means taking actions, and therefore assuming responsibility and the consequences that occur as a result of the taken action (Maitland & Sammartino, 2015). Maintaining the *status quo* state is in the majority of cases an easier way to solve problems since it implies a lesser risk, due to which fact decision-makers most often look for reasons which they can call upon to justify such a behavior of theirs (Bresnick & Parnell, 2013, 37). Still, it does not mean that the choice of the *status quo* state is always wrong. It is really challenging for decision-makers to make a difference between the *status quo* option, which at a certain moment is a rational choice, and the *status quo* option which is the resulting aversion towards risk and changes (Roxburg, 2003).

The “Sunk Cost” Effect

The effect of sunk, i.e. unjustified costs is a consequence of the observed phenomenon that decision-makers often try to justify the outcomes of their bad decisions in the past by presenting new choices (Roxburg, 2003; McKenzie *et al*, 2011; Pavličić, 2015, 315). It means it comes to the favoring of the choice of the alternative that supports the decisions

promulgated earlier, even when they are not justified. In that way, past decisions become what is defined as sunk costs, i.e. "old investments that cannot be restored". The costs that occur as a consequence of the decisions made in the past are irrelevant for future decisions, and yet they determine the decision-making process and its outcome. The sunk cost effect is related to the phenomenon of an aversion towards risk, which leads to the decisions whose application means the minimization of the already lost resources, not the maximization of the expected usefulness. This manner of decision-making is most frequently present in a situation when a decision-maker has to take responsibility for the bad outcome. In other words, there is a significant correlation between the taken responsibility and the amount of the invested assets in a certain design (Chira *et al*, 2008). The sunk cost effect appears because decision-makers consciously or unconsciously do not want to admit their own mistake and take responsibility (Hammond *et al*, 2006; Henman, 2008). It most often arises together with the *status quo* effect, if the *status quo* alternative is precisely the one which a decision-maker has excessively invested in and which he/she wants to justify.

The Confirmation Basis

The need for confirmation implies a search for information supportive of the decision-maker's attitude, whereas the information that indicates possible mistakes and a bad outcome is ignored (McKenzie *et al*, 2011). This bias arises as a consequence of the tendency of decision-makers to find arguments that confirm the established problem diagnosis, while those arguments against the acceptance of such an attitude are rejected, even if they are convincing and rational (Pavličić, 2015, 372). It means that the need for confirmation leads to a biased choice to be made by decision-makers, i.e. the one based on the unreal confirmation of the original attitude or the decisions already made (Bresnick & Parnell, 2013, 37). This effect often occurs as a consequence of the excessive self-confidence of decision-makers with respect to the correctness of a decision and their infallibility when the estimation

of alternatives is concerned. A selective and biased analysis of the content of information which the initial attitude is supported by commonly occurs in the decision-making process (Jamieson & Hyland, 2006; Hammond *et al*, 2006). Decision-makers only accept the information that justifies the decisions they have made in a prior period and reject and/or have a critical and negative attitude towards the pieces of information that could question their prior choices (Chira *et al*, 2008).

A False Consensus

Decision-makers subjectively and biasedly estimate the degree to which their associates follow and support their attitudes and beliefs (Hammond *et al*, 2006). Such a behavior is only positive if decision-makers make a rational choice. The research studies have shown that there are many factors whose influence causes the abovementioned effect (Roxburg, 2003, 26): the tendency of decision-makers to only accept the opinions and arguments that support their attitudes, ideas and suggestions; selective memory, i.e. the habit of only remembering the facts and experiences that strengthen the original assumptions; a biased evaluation, i.e. the fast acceptance of proofs in favor of the set hypotheses, whereas contradictory proofs are exposed to rigorous evaluation and almost certain rejection; a group opinion, i.e. pressure to reach a high level of consent within a single group. High cohesion encourages the occurrence of a group opinion and can negatively affect the rationality in the judgment of the group members as decision-makers, since it reduces their ability to objectively perceive the problem under the influence of the opinion expressed by the other members (Henman, 2008; Pavličić, 2015, 439).

Overconfidence

Overconfidence is related to the high self-confidence that affects decision-makers when they estimate personal abilities and knowledge boundaries. Under the influence of too high a level of the self-confidence based on the attitude that their abilities are exceptional, decision-makers as limitedly rational individuals

have a tendency to overestimate their ability to make good decisions, and make hasty and imprudent decisions instead (Chira *et al*, 2008; Riaz & Iqbal, 2015). In fact, when decision-makers have an unrealistically high opinion of their own abilities and think they know more than it is objective, they most often make bad decisions that arise as a result of the biasedly estimated probabilities and outcomes of future events (Roxburg, 2003; Hammond *et al*, 2006). Overconfidence relates to the overestimation of favorable against unfavorable outcomes without observing and without an analysis of all of the relevant pieces of information (Busenitz & Barney, 1997; Jamieson & Hyland, 2006; Chira *et al*, 2008). The estimation of the probability of events and the predicting of future outcomes are not completely reliable; they are often the result of the overconfidence that arises when decision-makers either do not notice the dangers or ignore them (Golden, Milievcz & Herbig, 1994). This effect has negative consequences to the development and implementation of long-term strategies, since most of them are based on unreal, optimistic estimations of future events (Roxburg, 2003; Henman, 2008). However, although overconfidence can be observed as a widely spread cognitive bias, certain research studies have confirmed the fact that the level of self-confidence and optimism varies between individuals and can be related to the personal characteristics of decision-makers, such as their sex, age and education (Simon & Houghton, 2003; Forbes, 2005).

The Illusion of Control

The illusion of control occurs when decision-makers overestimate the level at which the outcomes of a decision are under their own control. It is related to the overestimation of decision-makers' personal ability to successfully solve complex problems and make effective decisions. The abovementioned effect is most often manifested with decision-makers who have made good decisions in a prior period. Decision-makers are often under the influence of the illusion of control, while simultaneously ignoring the uncontrolled factors that can affect their final choice (Jamieson & Hyland, 2006; Henman, 2008). The illusion of control can be understood as a tendency

of individuals to unrealistically believe that they can control and/or affect the outcomes in the situations that are beyond their own control. The mentioned bias makes decision-makers believe they can affect the outcome, even when it is impossible (Chira *et al*, 2008; Pavličić, 2015, 401). This bias is related to decision-makers' ungrounded self-confidence and optimism, since the influence of overconfidence encourages the occurrence of the illusion of control, i.e. an excessive belief in personal success, even when it is contrary to the objective facts (Riaz & Iqbal, 2015).

RECOMMENDATIONS FOR OVERCOMING BIASES IN THE DECISION-MAKING PROCESS

Pursuant to the review research of the influence of biases on the decision-making process, it is possible to conclude that mistakes in individual decision-making arise due to routine problem solving, the irregular application of heuristics and different deformations in thinking caused by certain psychological factors (Table 1). Starting from the negative effects of the analyzed biases, one of the basic research challenges in the field of strategic decision-making is that related to the exploration of the possibilities of overcoming them. The basic assumption of the mitigation of the systematic mistakes that lead to bad outcomes is that decision-makers prevent the negative effect of biases.

It is primarily necessary for everyone to be aware of the influence of biases on the ability to judge and predict a future event, and also to apply a critical approach in the decision-making process. On the basis of the analysis of the causes of the identified biases, the possibilities of overcoming them have been identified (Table 1). The collection and analysis of all of the relevant pieces of information which the outcome of the decision-making process depends on, as well as the raising awareness of decision-makers regarding their opinion that their own decisions can be wrong is the starting point in the process of overcoming the identified biases (Hodgkinson *et al*, 2002; Roxburg, 2003; Hammond *et al*, 2006).

For the purpose of overcoming the negative influence of the framing effect, decision-makers should observe a problem from different perspectives in order to notice all of the relevant aspects of the set problem. When the manner of the formulation, i.e. presentation of a problem is concerned, one should think of it in all the phases of the decision-making process, not only in the problem identification phase. For the purpose of finding new alternatives for problem solving, in the final phase of the decision-making process it is purposeful to return to the initial problem identification phase and change the perspective of observation. The stated recommendation is in accordance with the understanding that the "problem frame" determines the decision context in which a problem is subjected to observation and shapes the choice of the elements that are important in the analysis of the problem. Since the decision-making process is a cyclic process, not a set of linear activities, a change in the problem frame can affect the course of decision-making.

The negative influence of the availability bias and representativeness can be reduced if decision-makers determine the probability of events on the basis of an objective analysis of the relevant data, regardless of the frequency of their arising in the past. The basic assumption is one's possession of the necessary knowledge and skills, as well as a rational analysis of the related events and processes independently of the decision-maker's prior experience. In fact, it is necessary to give less importance to the pieces of information already collected in relation to the need for collecting new information that can lead to changes in predicting the probability and the outcome of future events.

One of the ways to eliminate the anchoring effect is to apply the alternative approaches in the process of problem solving that do not rely on decision-makers' past experiences. Decision-makers should be open to new ideas and suggestions. It is desirable to hear different opinions in order to expand the original ideas and the approach in exploring the problem that should lead to the best solution. Also, decision-makers should be objective when considering their associates' suggestions, and should not impose their own ideas as possible solutions.

The choice of the *status quo* option can, in certain situations, be the best solution, but it does not mean that it should always be followed. The *status quo* should not be observed as the only alternative, but it is necessary for decision-makers to identify and analyze a greater number of different options, carefully evaluating the advantages and disadvantages of each of them. In situations when decision-makers support the *status quo*, they should ask themselves the question whether they would choose such an alternative if it meant a certain level of risk. Except for the abovementioned recommendation, decision-makers should also reconsider the set aims in order to objectively observe whether they are satisfied with the existing state or it is necessary that certain changes should be made regardless of the effort and the costs demanded by such changes.

The decisions that have a certain "history" are very hard to objectively observe since certain psychological factors that determine their ability to judge and the manner of decision-making affect decision-makers. In that sense, overcoming the effect of sunk costs is based on respecting the opinion and suggestions of those actors of the decision-making process who were not included in making previous decisions. A decision-maker should reconsider the reasons why he/she does not want to admit the mistake and bear relevant consequences. Most often, the key reason is the damaged reputation and self-respect of decision-maker. In that sense, the culture that causes the fear of failure and leads to the fact that decision-makers do not want to admit their mistakes should be discouraged.

The influence of confirmation is possible to overcome if decision-makers are ready to critically reconsider the decisions made earlier. One should primarily check whether all of the alternatives are assessed on the basis of the same criteria and then examine the arguments that support the suggested alternative. Decision-makers should objectively analyze the personal motives that support the decision made. The recommendation is that a decision-maker should observe whether he/she collects information for the purpose of improving the quality of choice or his/her basic motive is to confirm the chosen course of

Table 1 The review research of the influence of the biases on the decision-making process

RESEARCH OF BIASES	MEANING OF BIASES	RECOMMENDATION FOR OVERCOMING BIASES
Framing effect		
Tversky & Kahneman, 1974; Kahneman & Tversky, 1979; Hammond <i>et al</i> , 2006; Henman, 2008; Chira <i>et al</i> , 2008; McKenzie <i>et al</i> , 2011; Bresnick & Parnell, 2013; Howard & Abbas, 2016	The preferences of decision-makers are independent of the ways of describing problems. Different approaches in defining the problem lead to change in decision-makers' preferences.	In the problem identification phase, decision-makers should observe the problem from different perspectives. In the final phase of the decision-making process, it is purposeful to return to the initial problem identification phase and change the perspective of observation in order to generate new options.
Availability bias		
Tversky & Kahneman, 1974; Korte, 2003; Hammond <i>et al</i> , 2006; Henman, 2008; Maqsood <i>et al</i> , 2008; Bresnick & Parnell, 2013; Sklad & Diekstra, 2014; Fiedler & von Sydow, 2015; Howard & Abbas, 2016	The estimation of future events, as well as their outcomes, is more dependent on the decision-maker's memory than on the unbiased evaluation of possible events.	Determine the probability of events on the basis of an objective analysis of the relevant data, regardless of the frequency of their arising in the past and the decision-maker's experience. It is necessary to give less importance to the already collected information.
Representativeness		
Tversky & Kahneman, 1974; Chi & Fan, 1997; Busenitz & Barney, 1997; Maqsood <i>et al</i> , 2008; Sklad & Diekstra, 2014; Fiedler & von Sydow, 2015; Howard & Abbas, 2016	Determine conditional probabilities on the basis of the estimation of the extent to which some event is a result of a certain process, i.e. the extent to which a certain process generates the analyzed event.	Determine conditional probabilities on the basis of an objective assessment, not on the basis of a subjective conclusion. Examine the causal connection between conditional events.
Anchoring effect		
Roxburg, 2003; Hammond <i>et al</i> , 2006; Henman, 2008; McKenzie <i>et al</i> , 2011; Bresnick & Parnell, 2013; Sklad & Diekstra, 2014; Fiedler & Sydow, 2015	The shaping of the decision-maker's perception depending on the available information and the initial attitude, which have a greater specific weight in relation to the information collected later.	Apply alternative approaches in the problem solving process. Decision-makers should be open to new ideas and suggestions that may affect change in the initial state.
Status quo		
Samuelson & Zeckhauser, 1988; Roxburg, 2003; Hammond <i>et al</i> , 2006; Henman, 2008; McKenzie <i>et al</i> , 2011; Bresnick & Parnell, 2013; Maitland & Sammartino, 2015	Decision-makers show a strong bias towards the alternatives that support the <i>status quo</i> state as a less risky alternative. It can be associated with risk aversion and the implementation of changes.	The <i>status quo</i> option should not be seen as the only alternative, but it is rather desirable to develop a number of options and carefully evaluate their benefits. Examine whether the <i>status quo</i> is really the best option when it means a certain level of risk.

Sunk costs effect		
Roxburg, 2003; Hammond <i>et al</i> , 2006; Chira <i>et al</i> , 2008; Henman, 2008; McKenzie <i>et al</i> , 2011	Decision-makers are trying to justify the outcome of earlier bad decisions made by the new choices – the favoring of the choice of the alternative that supports the decisions made earlier in the past.	The culture that causes the fear of failure and leads to the fact that decision-makers do not want to admit their mistakes should be discouraged. Engage individuals who have not been involved in making previous decisions.
Confirmation		
Hammond <i>et al</i> , 2006; Jamieson & Hyland, 2006; Henman, 2008; McKenzie <i>et al</i> , 2011; Bresnick & Parnell, 2013	Biased information gathering and decision-makers' choice based on the unrealistic confirmation of the original attitude or the decisions already made.	Check whether all of the alternatives are assessed on the basis of the same criteria. Examine the arguments supportive of the suggested alternative and also encourage a critical view of the choice of the best alternative.
False consensus		
Roxburg, 2003; Hammond <i>et al</i> , 2006; Henman, 2008	Decision-makers subjectively and biasedly estimate the degree to which their associates follow and support their attitudes and beliefs.	Creating a culture that encourages a creative conflict. The actors of the decision-making process should encourage constructive criticism.
Overconfidence		
Golden <i>et al</i> , 1994; Busenitz & Barney, 1997; Roxburg, 2003; Simon & Houghton, 2003; Forbes, 2005; Hammond <i>et al</i> , 2006; Jamieson & Hyland, 2006; Henman, 2008; Chira <i>et al</i> , 2008; Riaz & Iqbal, 2015	Overconfidence relates to the overestimation of favorable against unfavorable outcomes. It occurs when decision-makers unrealistically and optimistically overestimate future events without analyzing all of the relevant pieces of information.	The application of a rational approach to the prediction and evaluation of the probabilities of events. It is necessary to reconsider the justification of one's personal assumptions and estimation of outcomes. Reconsider the established cause and effect relations resulting from decision-makers' too high self-confidence.
Illusion of control		
Jamieson & Hyland, 2006; Henman, 2008; Chira <i>et al</i> , 2008; Riaz & Iqbal, 2015	Decision-makers overestimate the level at which the outcomes of a decision are under their control.	The encouragement of the critical reconsideration of personal abilities and the power on the part of decision-makers.

Source: Author

action. The incentive for a decision-maker's critical attitude is the necessary assumption of overcoming the mentioned influence.

The best way to mitigate the false consensus influence is to create a culture that encourages a creative conflict. The actors of the decision-making process should encourage constructive criticism, as well as new creative suggestions. A critical approach should be observed as useful and desirable, not as "an act of the enemy". The recommendation is that,

for each argument in favor of the chosen option, a counterargument should be presented; this is also desirable for the purpose of carrying out a comprehensive and objective analysis.

One of the recommendations for the purpose of overcoming overconfidence is the application of a rational approach in the prediction and evaluation of probabilities. All decision-maker's assumptions should carefully be examined and compared with relevant data in order to reduce the influence of

personal impressions. The recommendation for decision-makers is not to be biased in the process filtration and the analysis of the collected information. It is necessary to reconsider the established cause and effect relations that are often the product of decision-makers' too high self-confidence as well as the justification of their personal assumptions and attitudes. Starting from their interconnectedness of overconfidence and the illusion of control, a similar approach to overcoming the negative consequences of the illusion of control is recommended. The encouragement of the critical reconsideration of one's personal abilities and the power that decision-makers have is considered as the basic assumption of the mitigation of the abovementioned negative effects of the illusion of control that can cause the promulgation of bad decisions.

CONCLUSION

In spite of the effort indicating that the rational models of choice should be applied, decision-makers often make bad decisions. The basic reasons for making bad decisions are a lack of the commitment and the bounded rationality of decision-makers. The effects of bounded rationality determine the manner in which decision-makers make a choice. Depending on the context which decisions are made in, different behavioral factors shape the manner in which decision-makers collect, filtrate, process and analyze information in the decision-making process and make choices. The abovementioned means that, due to the limitation of their cognitive capacities, decision-makers lean on the simplified solving of complex problems through the application of mental shortcuts. Cognitive limitations lead to predictable and consistent mental mistakes caused by such a simplified collection, analysis and processing of information. Some of the defined cognitive limitations refer to the formulation of a problem, others are related to the evaluation of the probabilities of relevant events, whereas there are those that arise as a consequence of the wrong perception of decision-makers' personal abilities. Decision-makers consider a problem through the prism of their own subjective

opinions and beliefs, relying on prior events and the existing information.

This kind of opinion refers to the conclusion that mistakes in decision-making arise due to having problems solved in a routine manner, the application of heuristics as mental shortcuts and the different deformations in thinking caused by certain psychological factors, by which the starting hypothesis is confirmed. In accordance with the foregoing, the contribution of the paper in the theoretical sense reflects in the identification of different biases and the understanding of their influence on the outcome of the decision-making process. In the practical sense, the defined recommendations for the mitigation of the negative influence of the biases on decision-makers' perceptions and attitudes can help decision-makers improve the decision-making process in real situations. Also, the derived conclusions stand for a good basis for the implementation of the research study, by which the causes and consequences of the analyzed biases would empirically be tested. Still, the basic limitation of the research study is reflected in drawing conclusions on the basis of the literature review and the secondary data, without the implementation of the original empirical research. In accordance with the above-stated, the directions of a future research study rely on the development of a research model based on the drawn conclusions of the implemented quality analysis of the influence of the identified biases for the purpose of the empirical verification of the set hypothesis.

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Review paper

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INFORMATION AND COMMUNICATION TECHNOLOGIES IN EDUCATION AS A STIMULUS TO ECONOMIC DEVELOPMENT

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Education has always been a driving force behind economic prosperity. However, this has become especially important in a globalized knowledge- and new-technology-based economy. The research presented in this paper focuses on the relationship between ICT, population education, and economic growth and development. The analysis of this relationship is based on the latest data collected from relevant national and international institutions. The results obtained from a survey conducted at the Faculty of Economics, University of Belgrade, are also analyzed. The paper highlights the challenges faced by the education systems in general, and the education system of the Republic of Serbia in particular, confronted with the new wave of technological innovation which is fundamentally changing the nature of work and imposing new requirements with regard to the necessary knowledge and skills. Our research results indicate that ICT and education have been recognized by the Government of the Republic of Serbia as the important determinants of economic and the overall social development.

Keywords: information and communication technologies (ICT), education, economic growth, economic development

JEL Classification: O14, M15, L63

INTRODUCTION

Information and telecommunication technologies (hereinafter referred to as ICT) are dramatically transforming the world, enabling better connections between people and communities, innovation and productivity increases, as well as improving the global standard of living. While changing the ways

people interact and do business, ICTs have been shown to be the key pre-requisite for economic and societal modernization and fostering competitiveness, as well as an important element of overcoming social and economic divides (WEF, 2011, 6).

ICT can be regarded both as a consequence and one of the causes of economic growth, i.e. the strength which acts as a driving force behind economic progress. These technologies contribute to economic growth and foster competitiveness, and they are particularly important to developing countries since they

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accelerate their necessary transformation and allow them to more quickly join the globalization process. ICTs are the key element of economic growth as they contribute to the infrastructure and human potential building and development. However, without skilled labor and the accompanying infrastructure, ICTs alone are an investment loss and only if they complement one another can they generate economic growth. ICTs can also be regarded as a result of economic growth. In developed economies, ICTs are increasingly gaining in significance in an attempt to optimize the rising labor costs.

Why is education essential for economic growth and development? To answer this question, that population education is simultaneously a development instrument and a development goal should be emphasized. On the one hand, education has the key role in enabling a country's economy to absorb new technologies and build a capacity for sustainable growth and development. On the other hand, it is the key development goal and an important dimension of human well-being (Todaro & Smith, 2011, 359; McCowan, 2016, 506).

Investing in education is investing in human capital, and it is future-oriented. A more narrowly defined concept of human capital includes knowledge and skills, embodied in people through the process of formal education and training, which is in accordance with Becker's minimalist definition of this form of capital (Hanushek & Woessmann, 2008; Laskowska & Dańska-Borsiak, 2016). Research has shown that \$1 invested in knowledge and skills acquisition generates earnings and health benefits of as much as \$10, depending on the level of a country's economic development (Education Commission, 2017, 35).

The main issue addressed in this paper is the relationship between ICTs, population education, and economic growth and development.

Due to the complexity of this relationship, in addition to the main goal of the paper, which is to examine the effects that the introduction of ICTs in the education system has on economic growth and development, there are also some sub-goals relating to the following

relationships: the impact of ICTs on education, the impact of education on economic growth and development, as well as the impact of ICTs on economic growth and development.

In line with the main issue discussed in the paper and its research goals, the following main hypothesis will be tested:

H0: In order to create a more effective and more efficient education system, it is necessary to integrate ICTs in all of the aspects of the educational process.

This hypothesis and the research goals set have induced an additional hypothesis:

H1: Efficient operation in the digital working environment increases the interestedness of young people in acquiring new knowledges of and skills for information-communications technologies.

Testing the main hypothesis required a detailed analysis of education development and information society strategies from the global to the national level, whereas in order to test the additional hypothesis, a research study was carried out in the form of a survey conducted among students.

The paper is structured in the three main sections. After certain introductory remarks dealing with the main issue discussed in the paper, the first section focuses on the different projections of the future of education, as well as on education for the future, in the context of sustainable economic development. In the second section, the ways and models of introducing ICTs in the educational process with the aim of preparing workforce for using ICTs in the workplace are analyzed. The focus of the third section is on the Republic of Serbia (RS) and the impact that the application of ICTs in education has on achieving national economic development. In the concluding section, a summary of our research results particularly pointing out the importance of introducing ICTs in education systems with the aim of better preparing the young to operate in the digitized

workplace and contribute to the macroeconomic and social performances of the country is provided.

THE FUTURE OF EDUCATION AND EDUCATION FOR THE FUTURE IN THE CONTEXT OF (SUSTAINABLE) ECONOMIC DEVELOPMENT

Education for the future is paid a lot of attention to in development strategies from the national to the global level. At the UN General Assembly in September 2015, the global leaders of 193 UN member states unanimously adopted the 2030 Agenda for Sustainable Development, aimed at achieving steady and high-quality economic development, based on solid economic foundations, environmental responsibility and meeting the criteria for social justice. This is not the present development achieved at the expense of the future one, but the development which meets the needs of the current generations without compromising the future generations' ability to meet their own needs (Mulamula & Amadi-Echendu, 2017, 123). The above-mentioned global agenda for sustainable development encompasses 17 goals, 169 sub-goals and 244 progress-monitoring indicators. From the perspective of this paper, Goal 4 is especially important - to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, with its sub-goal 4.4. - by 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship (UN, 2015, 20).

The European Union has recognized the importance of education for the future and its role in achieving sustainable development, which has now been accepted as a universal development model at the level of this regional integration. Consequently, education and training have a prominent place in the EU strategy for the next decade, entitled Europe 2020, which puts forward the following priorities: "Smart growth: developing an economy based on knowledge and innovation. - Sustainable growth: promoting a more resource efficient, greener and more competitive

economy. - Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion" (EC, 2010, 8).

In the EU strategies, higher education, research and innovation play the key role in fostering economic growth, global competitiveness and social cohesion. As European societies desire to become knowledge-based, higher education is an essential component of socioeconomic and cultural development. An increasing demand for skills requires higher education to respond to this demand in new ways (EURASHE, 2015, 6).

The Bologna process plays the crucial role in the European higher education development. It is a process of the European higher education reform, aimed at constructing a common area for higher education ("European Higher Education Area, EHEA"). In 2014, the "Bologna Follow-up Group, (BFUG)" adopted the "Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)", also adopted by the EHEA Ministers in 2015. The key goal of these standards is to contribute to the common understanding of quality assurance for learning and teaching across borders and among all stakeholders.

Providing broader access to higher education, which is emphasized in the above strategies, is an opportunity for higher education institutions to make use of increasingly diverse student experiences. This diversity and growing expectations for higher education require a fundamental shift in the way it is provided: "a more student-centred approach to learning and teaching, embracing flexible learning paths and recognizing competences gained outside formal curricula. Higher education institutions themselves also become more diverse in their missions, mode of educational provision and cooperation, including growth of internationalization, digital learning and new forms of delivery" (ENQA, 2015).

According to a report of the Education, Audiovisual and Culture Executive Agency (EACEA), in 47 countries of the European Higher Education Area, there are around 37.2 million tertiary students, out

of whom 82% are enrolled in theoretically-based programs, whereas only 15.6% of them are in more occupationally specific programs. Those enrolled in doctoral programs account for 2.6% of the total student population (EACEA, 2015, 38).

European higher education institutions are predominantly funded by public sources. More than half of the countries spend over 1.3% of their GDP on higher education, with the Nordic countries spending the most (from 2% of the GDP in Sweden to 2.4% of the GDP in Denmark). Annual public expenditure on higher education is the lowest in Bulgaria, Croatia, Italy, Romania and Slovakia, namely below 1% (EACEA, 2015, 29-31).

The same report states that the number of young adults with tertiary education as a share of the unemployed is very low in Denmark, Great Britain, The Netherlands, whereas Germany is even facing a shortage of such people. On the other hand, young adults with tertiary education in Bosnia and Herzegovina, Greece, Croatia, Cyprus, Portugal, Romania and Serbia are being faced with a high unemployment rate.

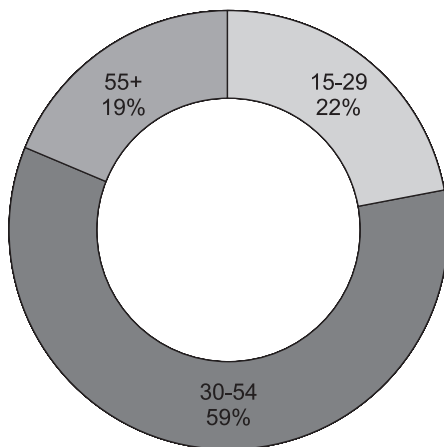


Figure 1 The share of the unemployed by age group in the total number of the unemployed, 2017

Source: Nacionalna služba za zapošljavanje (RSZ - DevInfo, 2018, 3).

According to data obtained from the Statistical Office of the Republic of Serbia and the National

Employment Agency, young adults in RS aged 15-29 account for 22% of the total number of people unemployed (Figure 1). Unemployment is one of the reasons for leaving the country by young adults and especially increased talent outflows.

In line with the need to adapt its education system to modern requirements and in accordance with the strategies approved of in a wider context, especially in the EU area, the Government of Serbia adopted the Strategy for Education Development in Serbia 2020. The Strategy deals with establishing goals, objectives, directions, tools and mechanisms for the development of the education system in the Republic of Serbia until 2020. The Strategy particularly emphasizes the following development goals (Vlada RS, 2012):

- directing the structure of educational and research activities towards meeting the developmental needs of the economy and society;
- increasing the share of population with tertiary education in the total population;
- directing the financing system towards the formation of creative, innovative, responsible people with tertiary education necessary for the achievement of economic growth and reducing unemployment.

INFORMATION AND COMMUNICATION TECHNOLOGIES IN EDUCATION

ICTs require different knowledge and skills in order to fully exploit their power both in private and professional settings. This relationship may be viewed from the two perspectives: firstly, ICTs are required for the improvement of the teaching and learning process, and secondly, there is a need to learn through the education process how to make the best use of these technologies in various areas of human activities, including business.

The use of ICTs makes the education process go beyond the traditional instruction and the barriers of time and the location, which is why it is often referred to as e-education.

The term e-education is most frequently defined as educational activities conducted by using ICTs or as electronically assisted learning. E-education has the following goals: independent and permanent learning, improving instructional efficacy, the flexible organization of instructions and the inclusion of a larger number of people willing and able to learn in the instruction process.

Some of the benefits of e-education are the following: the ability to access the instruction process at any time or place; a better teacher-student interaction; time saving; an improved efficiency; flexible learning; an individual approach to students and respecting different learning styles; the adjustment of content and the pace of learning to individual students (adaptive learning); fostering analytical thinking and independent problem-solving skills in students; synthesizing the acquired knowledge; the easy monitoring of student progress; easier training and retraining; offering new opportunities for lifelong learning; easy access to lectures by world-renowned experts by means of video-conferencing; a greater learner diversity (the employed, students from remote areas, mobility-impaired students, etc.).

Some of the modern technologies used in e-education are as follows: smart learning environments, the Internet of things, a virtual learning environment, virtual reality technologies, mobile technologies, etc.

Another dimension to learning has been added by Virtual Learning Environment (VLE), a web-based system which creates an environment designed to facilitate the learning course management. The VLE also includes distance learning.

Also used in education are new technologies such as IoT (Internet of Things) and Cloud Computing, which create Smart Learning Environments. The Internet of things (IoT) is a concept which expands the virtual world and the Internet to real-world physical things, thus enabling resource virtualization. Cloud Computing is a technology that enables interaction between users and different services available on the Internet.

The power of Virtual Reality (VR) technologies is particularly manifested in opportunities for learning

by experience through conducting experiments which can teach students how to solve complex problems in the ways different from traditional teaching methods.

The use of mobile technologies in education is another way of learning transformation. Mobile technologies can significantly impact the development of the learning environment.

Respecting the needs of the EU education systems, in its document *Opening up Education: Innovative Teaching and Learning for all through New Technologies and Open Educational Resources*, the European Commission points out that technologies and open educational resources offer an opportunity to reshape education (EC, 2013).

This document sets out an agenda for stimulating the high-quality, innovative ways of learning and teaching through new technologies and digital content. *Opening up Education* proposes actions towards creating more open learning environments to ensure the education of a higher quality and efficacy, thus contributing to the Europe 2020 Strategy's goals, predominantly related to boosting the EU competitiveness through better skilled workforce and increased employment. The main goals are reducing early school leavers and increasing the number of people with tertiary education. The document also proposes actions at the EU level: helping learning institutions, teachers and learners to acquire digital skills and learning methods; supporting the development and availability of open educational resources; deploying digital devices and content in the classroom; mobilizing all stakeholders (teachers, pupils and students, families, companies and social partners) in order to change the role of digital technologies at educational institutions (EC, 2013).

New technologies in higher education contribute to creating the workforce necessary for a significant economic impact on the ICT sector development (Kvochko, 2013): the GDP growth; the emergence of new services and industries; business innovation; workforce transformation; job creation. This is why the document *Strategy for Education Development in Serbia 2020* sets the following as one of its goals - the harmonization of academic study programs with

the needs of the economy, as well as cooperation in the implementation of the practical training of students, so that students at university acquire more knowledge, skills and competences that are relevant to employers' needs (Vlada RS, 2012).

The Strategy for Education Development in Serbia 2020 emphasizes the importance of digital technologies for the overall development of the education system. However, the first official document which thoroughly deals with the integration of digital and online learning in education was adopted by the National Education Council of the Republic of Serbia in 2013 and presented to the public - Guidelines to Improve ICT in Education.

ICT IN EDUCATION AS A STIMULUS TO SERBIAN ECONOMIC GROWTH AND DEVELOPMENT

ICTs have for many years now been a central issue in debates about economic growth and the functioning of developed, and also of undeveloped and developing economies.

The deployment of ICTs in education and raising the level of the knowledge and skills necessary for using new technologies by the wide population have been recognized by the Government as a significant driving force behind the development of the Serbian economy and society.

The most important goals of the fuller implementation of ICTs in education in Serbia have been put forward in the Information Society Development Strategy in the Republic of Serbia 2020. These goals are the following: establishing a modern education system adapted to the needs of information society; enabling the use of ICTs in the workplace in a way which raises the level of efficiency, improves work quality and ensures better jobs; and introducing the concepts of e-learning and open distance learning.

To meet the social and economic objectives, competencies are required. These competencies are acquired by reforming the education sector in

such a way as to create preconditions for building a knowledge economy and stimulating ICT training programs. Consequently, changes need to be made in education in order to modernize the learning process and encourage creativity and innovation. The connection between the ICT sector and education will help young people to acquire the skills necessary for the digital work environment.

The current state of the Serbian ICT sector is presented in the below analysis.

According to the data obtained from the Statistical Office of the Republic of RS (SORS), and the Chamber of Commerce and Industry of RS (CCIS), in 2015, there were 3,401 enterprises operating in the RS ICT sector, accounting for 3.7% of the total number of the registered enterprises in the Republic of Serbia. Out of this number, the most registered enterprises operate in the field of computer programming (54.9%), then computer, electronic and optical products manufacture (26.8%), only to be followed by telecommunications (11.5%).

As can be seen in Table 1, the micro- and small-sized enterprises accounted for 97.0% of the total number of the registered enterprises, whereas the highest turnover was generated by the largest enterprises. It can also be seen that the number of the employees is the highest in large and medium-sized enterprises (Table 1).

Table 1 The structure of the enterprises in the electronic communications and information society sector - 2015

	Total	Micro 1-9	Small 10-49	Medium 50-249	Large 250+
Enterprises	3,401	85.6%	11.4	2.4	0.6
Employees	55,159	10.5%	14.1	15.5	59.8
Turnover (in RSD bn)	418.9	7.8%	14.2	21.4	56.6

Source: RSZ and APR, calculation based on the PKS data.

In 2016, the ICT sector in RS employed 61,077 persons, which was a rise of 2.5% compared to 2015. A significant increase (23.9%) in the number of employees relative to the period January-December 2015 was recorded in computer programming, consulting and related activities (PKS, 2017).

In the period January-March 2017, the highest gross salary paid in the ICT sector was RSD 205,259 in computer programming, consulting and related activities, which is about three times higher than the Republic average (RSD 62,588) (PKS, 2017).

According to the RSZ and PKS data (PKS, 2017), the year 2015 recorded a positive contribution of all ICT sectoral activities to the interannual growth of the GDP. A significant interannual growth of gross value added was recorded in computer programming and consulting activities (25.3%) and information services (27.9). The gross value added created in computer programming, consulting and related activities in 2015 totaled EUR 402.2 mil. The total fixed assets investment in all of the IT-related activities was EUR 476.8 mil in 2015, of which the largest share (EUR 225.3 mil) was invested in domestic and imported equipment (47.3%), while 41.8% was invested in intellectual property (research and development, software, databases, etc.) - EUR 199.2 mil. In computer programming, consulting and related activities, almost 69.2% of the total investment accounted for those made in research and development, software and databases.

According to the RSZ and PKS data (PKS, 2017), in industries comprising electronic communications and information society in 2016, there was a foreign direct investment net inflow by non-residents in the amount of EUR 100.2 mil. In the three-year period between 2014 and 2016, there was an average annual rise in the foreign direct investment net inflow of 70.1%.

According to the NBS and PKS data (PKS, 2017), Serbian telecommunications, computer and information services exports in 2016 totaled EUR 739.5 mil. In the four-year period 2013-2016, these exports rose at an average annual rate of 19.2%. There was a trade surplus of these services worth EUR 407.3 mil. In the four-year period 2013-2016, the trade surplus in

these services increased at an average annual rate of 36.9%, with the largest surplus recorded in trade in computing services (43.2%).

Based on the data presented, a conclusion can be drawn that the ICT sector in RS, although accounting for 3.7% of the total number of the registered enterprises and 3.2% of the total number of the employed in our country, recorded exports worth EUR 739.5 in 2016, with a trade surplus in the services in the ICT sector worth EUR 407.3 mil. In addition, in RS, a country characterized by high unemployment, IT-related positions are among the rare ones where demand exceeds supply.

At the global level, the ICT sector is one of the fastest-growing industries, which directly impacts job creation and encourages the development of the other sectors of the economy. In order to be competitive on the global market, modern companies need to use the latest technologies, simultaneously keeping their costs at a low level. This has resulted in the transfer of such technologies from the economically most developed countries to India, China and other Asian countries with cheap and skilled workforce. These trends are now affecting RS as well, as a country which has an insufficient number of the highly educated people capable of using ICTs in business (Bartlett, 2009, 33).

As can be seen from the above analysis, computer programming and providing a variety of information services are becoming the increasingly important factors of the Serbian economic development. IT-related occupations are the most in-demand in the labor market. Therefore, the Serbian IT industry is offering important opportunities to young talents and highly educated people to develop their careers in the country and be satisfied with their social status and a chance to contribute to the country's prosperity. However, there are important shortcomings of the Serbian ICT industry: a large number of micro-enterprises with a low financial capacity and insufficient technological and managerial skills, as well as a shortage of skilled labor.

Yet another shortcoming should be mentioned here: the fact that we are not capable of retaining talents in the country, because, according to the World

Economic Forum data showing a country's capacity to retain talents, RS ranks the 134th of 137 countries (WEF, 2017, 257).

However, we should bear in mind the fact that the conclusion that investment in education is worthwhile and that it will result in an accelerated economic growth is only valid under the assumption that people will be given jobs and thus simultaneously an opportunity to contribute to economic development. The positive experience of some countries indicates that, instead of directing the whole economy, it is much better for countries to focus on the sectors capable of ensuring progress, such as the ICT sector in Serbia. Consequently, this entails the need for adjusting the education system accordingly.

FORMAL IT EDUCATION IN THE REPUBLIC OF SERBIA

In primary school grades 1-4, there is an optional subject entitled From Toys to Computers. In September 2015, Informatics and Computer Programming was introduced in primary school grade 5 as a compulsory subject. This subject will also be a part of the curricula of primary school grades 6-8.

In high school grades 1-4, as well as in secondary vocational school grade 1, Informatics and Computer Programming is taught as a compulsory subject. In secondary vocational school grades 2-4, the informatics-related subjects have been adjusted to a particular field. Thus, for example, Business Informatics is taught in vocational schools offering the economics, law and administration programs.

Technical faculties and faculties of mathematics lie at the core of ICT tertiary education, research and development. These faculties focus on engineering informatics, whereas the study programs in business informatics are still scarce.

The fact that study programs in the field of business informatics, particularly at state-owned faculties, are still scarce is mainly due to the fact that informatics

engineers in RS are recognized as IT experts, while business informatics professionals have not been sufficiently established yet. Nevertheless, commendable changes have been made in this respect, mainly being manifested through precisely defining the skills and knowledge deemed essential by the employer in the field of business informatics. Namely, a business component in informatics is increasingly in demand, which can be concluded on the basis of job advertisements posted on poslovi.infostud, one of the leading job search websites in Serbia. Out of the total number of the IT jobs offered (around 300), approximately 200 are those requiring competencies both in the ICT and a particular business areas that students are supposed to have upon graduation (INFOSTUD, 2018).

Currently, Serbia's labor market is faced with a shortage of informatics experts oriented towards the use of information technology in business, developing business software, IT project management and the business information system development. The factors that have contributed to such increased demand for these occupations are as follows:

- the number of domestic and in particular international IT companies dealing with business software development has significantly increased in the last several years in RS, which offers IT professionals an opportunity to work from RS for companies worldwide;
- quality university programs in the area of business informatics could significantly improve the Serbian software industry;
- an increased interest in the university courses providing the knowledge and skills that integrate economics with information technology and offer good job opportunities after graduation.

Based on the data about the Serbian labor market's needs presented in this paper and aiming at obtaining more information about the students' interest in the subjects liaising ICT and economics, a survey was conducted among 535 students at the Faculty of Economics, Belgrade University. The survey contained a large number of questions, but for the purposes of

this paper, only the questions referring to the subjects connecting ICT and economics were selected.

The analysis of the students' interest in the subjects oriented towards the use of ICT business, included in the Business Informatics Module (Business Informatics, Databases, Data Analysis, Object-Oriented Programming, Mathematics for Programming, Web Design, Information Systems and Business Analytics, E-Business, Software Development, IT Project Management, ERP Software, New Information Technologies, E-Commerce, E-Payment Systems. Digital Marketing and Accounting Information Systems), indicate that the students are particularly interested in the following subjects: Digital Marketing - 63.6% of the students surveyed, E-Commerce - 60.9%, Web Design - 60%, E-Business - 54.9%, IT Project Management - 51.6%, E-Payment Systems - 49.6%, New Information Technologies - 47.1% of the students surveyed. The details of the students' interest in these subjects are accounted for in Tables 2-8 below.

Table 2 The level of the students' interest in Web Design

	No	%	% of valid responses	% of total
Valid responses	Not interested	45	8.4	8.6
	Somewhat interested	50	9.3	18.2
	Moderately interested	106	19.8	38.5
	Interested	130	24.3	63.4
	Very interested	191	35.7	100.0
	Total	522	97.6	100.0
Missing data	13	2.4		
Total	535	100.0		

Source: Authors

Table 3 The level of the students' interest in E-Business

	No	%	% of valid responses	% of total
Valid responses	Not interested	39	7.3	7.4
	Somewhat interested	53	9.9	10.1
	Moderately interested	139	26.0	26.5
	Interested	158	29.5	30.1
	Very interested	136	25.4	25.9
	Total	525	98.1	100.0
Missing data	10	1.9		
Total	535	100.0		

Source: Authors

Table 4 The level of the students' interest in Object-Oriented Programming

	No	%	% of valid responses	% of total
Valid responses	Not interested	133	24.9	25.4
	Somewhat interested	131	24.5	25.0
	Moderately interested	120	22.4	22.9
	Interested	87	16.3	16.6
	Very interested	52	9.7	9.9
	Total	523	97.8	100.0
Missing data	12	2.2		
Total	535	100.0		

Source: Authors

Table 5 The level of the students' interest in Software Development

	No	%	% of valid responses	% of total
Valid responses	Not interested	130	24.3	25.0
	Somewhat interested	118	22.1	22.7
	Moderately interested	123	23.0	23.7
	Interested	93	17.4	17.9
	Very interested	56	10.5	10.8
	Total	520	97.2	100.0
Missing data	15	2.8		
Total	535	100.0		

Source: Authors

Table 7 The level of the students' interest in E-Commerce

	No	%	% of valid responses	% of total
Valid responses	Not interested	31	5.8	5.9
	Somewhat interested	49	9.2	9.4
	Moderately interested	118	22.1	22.5
	Interested	161	30.1	30.7
	Very interested	165	30.8	31.5
	Total	524	97.9	100.0
Missing data	11	2.1		
Total	535	100.0		

Source: Authors

Table 6 The level of the students' interest in New Information Technologies

	No	%	% of valid responses	% of total
Valid responses	Not interested	55	10.3	10.6
	Somewhat interested	94	17.6	18.1
	Moderately interested	119	22.2	22.9
	Interested	131	24.5	25.2
	Very interested	121	22.6	23.3
	Total	520	97.2	100.0
Missing data	15	2.8		
Total	535	100.0		

Source: Authors

Table 8 The level of the students' interest in Digital Marketing

	No	%	% of valid responses	% of total
Valid responses	Not interested	33	6.2	6.3
	Somewhat interested	48	9.0	9.2
	Moderately interested	102	19.1	19.5
	Interested	138	25.8	26.4
	Very interested	202	37.8	38.6
	Total	523	97.8	100.0
Missing data	12	2.2		
Total	535	100.0		

Source: Authors

As the survey results indicate, the students are especially interested in the business-oriented informatics subjects, i.e. the subjects focusing on the use of ICTs in a particular business area.

CONCLUSION

This paper points out the key role of the high-quality inclusive education necessary for achieving dynamic and sustainable development and defining a desirable direction of change in line with the demands of the new age.

Investing in education is investing in the future. A strong impact of new technologies on education and the world of work is a global trend. These changes are manifested by the emergence of new job and occupation categories, which will partially or entirely replace the existing jobs. The required knowledge and skills will also significantly change. It is essential to promptly deal with the challenges of the new age in order to avoid enormous economic and social costs imposed on individuals, companies and the economy. The paper points out that the new wave of technological change offers tremendous opportunities to countries across the globe, including those less-developed, to significantly enhance their economic and social performances by transforming their education systems. In this context, education is recognized as a development opportunity for the Republic of Serbia. This is corroborated by our research results, as well as by the necessity for change, ranging from the way education is treated in the society, via the reforms in the education system itself, to the construction of relevant economic, legal and political institutions so as to motivate young people to acquire knowledge and thus increase the country's capacity to retain and attract the most qualified workforce.

The paper also stresses the necessity to integrate new technologies in all of the aspects of the education process, with the goal of providing more efficient and more effective education. New technology skills are decisive for the global competitiveness of the national

economy and the maximizing of the job-creating potential.

In addition, changes need to be introduced in schools, universities and other educational institutions in order to modernize the learning process and encourage students' innovation and creativity by fully exploiting the opportunities provided by new technologies. The introduction of new technologies in education should enable young adults with tertiary education, equipped with the adequate knowledge and skills and capable of using cutting-edge technology, to contribute to the development of their country's economy.

This paper contributes to the scarce literature on the indirect effects that the application of ICTs in education has on economic growth and development as these effects have not been researched extensively and in their entire complexity.

The systematic analysis of education and information society development strategies conducted in this paper from the global level (UN) and the EU level to the level of RS and the particular curriculum applied at the Faculty of Economics of the University of Belgrade has confirmed our basic hypothesis: in order to create a more effective and more efficient education system, it is necessary that ICTs should be integrated in all the aspects of the educational process.

The detailed analysis of the ICT sector and the labor market in Serbia based on the data obtained from the relevant institutions (NSZ, NBS, PKS, NEA, etc.), as well as the survey data, has confirmed our additional hypothesis referring to the increased interest of young adults in acquiring the ICT-related knowledge and skills necessary for their efficient working in a digitized workplace, which will enable them to contribute to the country's economic growth and development.

The research study conducted and presented in this paper provides the answer to the question of how the application of ICTs in education fosters economic growth and development. However, one open question still remains, relevant for further studies, which refers to measuring the extent to which the use of ICTs in education fosters economic growth

and development. Additionally, a more precise analysis of the students' interest in applying ICTs in the economy would benefit from a broader and more comprehensive survey designed after that conducted at the Faculty of Economics, Belgrade University, encompassing several higher-level educational institutions in the Republic of Serbia.

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PERSPECTIVES OF THE INTERNATIONAL MONETARY SYSTEM

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During the 20th century, the dollar gained the status of the world's most important currency. Therefore, the Bretton Woods International Monetary System was based on the dollar. However, in the 1970s, the situation changed significantly - demand for dollars declined, the currencies of the most important European countries became convertible, the volume of international trade increased greatly, international capital flows were liberalized, the external convertibility of the dollar to gold was abolished, and the currencies began to fluctuate. In this way, the original Bretton Woods international monetary system ceased to exist. In addition to the changes, the functioning of the international monetary system is greatly impacted by the fact that the United States recorded an increasing amount of current account deficits from year to year and, in the 1980s, moved from the position of the net creditor to that of the net debtor, that the euro was created on the soil of the EU and that China became the world's largest exporter and one of the largest (if not the largest) world economies. For this reason, the theoretical assumptions of the international monetary system are systematized in the paper, the role of other world currencies is examined, and the question of why the dollar continues to be the dominant world currency is answered.

Keywords: Bretton Woods International Monetary System, dollar, euro, yuan, world currency

JEL Classification: F31, F32, F33, F62, F65

INTRODUCTION

The status of the world currency is not entirely defined by the relative size of the country and its presence in international markets. For this reason, although the United States surpassed Great Britain in size in the early phase of the 20th century, at that time the dollar failed to take over the leading currency role

from the pound sterling; however, this happened later (Goldberg, 2011). The Bretton Woods International Monetary System emerged after the Second World War, when it became clear that the former, in some way, self-regulating version of the gold standard could not last. Insufficient reserves to guarantee the convertibility of the total paper money to gold have in the meantime conditioned the emergence of the gold-bar and gold-foreign exchange standard. At the same time, the events during and after the First and the Second World Wars contributed to the United

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States becoming a military, economic, financial and technological power, so it should not be surprising that the dollar nevertheless became the most important world currency of the 20th century. The following two facts were crucial: there was hunger for dollars and there was the convertibility of dollars to gold. Simply, the dollar became the world money - the foreign exchange parity of other currencies was expressed in dollars, international payments were made in dollars, prices were invoiced in dollars, monetary reserves were kept in dollars, the savings were kept in dollars and the gold exchange system became the gold and dollar system.

However, already in the early 1970s, a lot changed - the currencies of the most important European countries became convertible, the volume of international trade increased multiple times, international capital flows were liberalized, the foreign convertibility of the dollar to gold was abolished, currencies started fluctuating - in a way, the original Bretton Woods International Monetary System ceased to exist. Nevertheless, in addition to all of these changed circumstances and the fact that the United States record an enormous foreign trade and budget deficit from year to year, the dollar continues to enjoy general confidence in the world and is accepted as a means of payment, account, and reserves. Thus, in the 21st century, the dollar remains (for now) the most important world currency. The question arises as to how this is possible when no one likes the dollar standard. Although many years have passed since the abandonment of the original Bretton Woods International Monetary System, no other has been officially established. It is considered necessary that certain reforms should be made - to create an international monetary system that will reduce the impact of the dollar and take into account all of the new changes in international economic relations. According to R. Triffin (1978), when it comes to the international monetary reform, there are two main approaches - a monetary reform at the world level and a regional monetary cooperation or integration. For now, the creation of some kind of world money seems unlikely - it is not known who would create it, nor is it known who would control it. Simply, there is no consensus at the global level. On the other hand, there are thoughts on the creation of a kind of multi-

currency international monetary system, where, owing to their position in the international economic order, the euro and the Chinese yuan should take their positions.

The aim of this paper is to clarify the theoretical assumptions about the existence of the Bretton Woods International Monetary System and to also point out the significance of the changes that have occurred in the meantime.

According to the abovementioned aim of the research, the following hypothesis can be singled out as crucial:

H: Despite the facts that there was the abolition of the foreign convertibility of the dollar to gold, that the euro was created as the common currency of the eurozone, and that China became the world's largest exporter, the dollar remains the most important world currency.

The qualitative methodology based on the study and descriptive analysis of the research problem will be used in the paper. The research study will examine the relevant foreign and domestic literature based on the theoretical generalizations and experiences of the authors who have dealt with the subject matter. Starting from the relevant literature, whether, in addition to all of the changed circumstances in the international monetary system, the dollar remains dominant, i.e. what is needed in order for other currencies (primarily the euro and the yuan) to create a multi-currency international monetary system, will be analyzed.

The rest of the paper is organized as follows: the most important characteristics of the original Bretton Woods International Monetary System will be discussed in the second part of the paper; the third part deals with the causes and consequences of the imbalance in the current accounts of certain countries; the fourth and the fifth parts examine the potential of the euro and the yuan as international currencies, while the sixth part is dedicated to the impact of globalization on the international monetary system. The drawn conclusions are presented in the seventh part.

THE ORIGINAL BRETTON WOODS INTERNATIONAL MONETARY SYSTEM

Classical economists argue that money has its three functions - it serves as a means of exchange, as a unit of account, and as a value guard. The role of international money is the same - it is used for settling international payments, fixing prices and is kept as liquid assets for international transactions. An additional dimension is provided by the difference in the behavior of the private sector and central banks. Based on the abovementioned, the dollar, as the most important international currency, can be said to perform six functions. The dollar as a means of exchange in the private sector represents the intermediary between the currencies, while with the purchase and sales by the central banks it represents the currency used for an intervention in the market. Trade agreements denominated in dollars represent the dollar as the invoice currency (in the private sector), while the central bank uses it to express a local currency in dollars (pegged it to the dollar - exchange rate). Finally, if viewed as a value guard, private individuals keep liquid assets denominated in dollars (some sort of a banking role), while central banks keep the dollar as a reserve currency (Krugman, 1984).

As long as there was a complete exchange of the dollar to gold, central banks accumulated dollar assets and the Bretton Woods Monetary System operated smoothly. Confidence in the US willingness to convert dollars to gold influenced an increase in the share of the dollar in foreign-exchange reserves. However, at the beginning of the 1960s, the problem of long-term confidence in the sustainability of such a system appeared. Due to an increase in the world central banks' dollar assets, the amount of dollar reserves surpassed the US gold reserves, which prevented the American Central Bank (FED) from repurchasing all of the dollars (if foreign central banks wanted to replace all of their dollar reserves with gold) (Kovačević, 2015). In this manner, the United States was forced to abolish the foreign convertibility of the dollar to gold, thus destroying one of the pillars of the original Bretton Woods International Monetary system. In the following period, it was a system that was increasingly gaining in trust - it was necessary

to believe in the stability of the dollar. As soon as there would be a disturbance, a crisis of confidence, such a system would no longer work properly. On the other hand, the significant use of the dollar is exactly what led to this instability of the system. The growing need for international liquidity was satisfied with an increasing amount of dollars, which remained outside the US, which, on the other hand, increased the US balance of payments problem. The cumulation of the US balance of payments deficit and the increase in foreigners' dollar receivables have led to reduced confidence in the dollar. Such a situation can be said to be one of the significant disadvantages of this established international monetary system (a "factory error", as some authors point out) - the currency of a country with a large (and increasing) deficit should enjoy general trust in the world and be accepted there as a means of payment, accounting, and reserves (Jovanović Gavrilović, 2012).

At that point, the question arose as to the position of the dollar after the end of dollar to gold convertibility, i.e. whether the dollar would remain to be the generally accepted currency and whether the US would continue to be able to finance the current account deficit without cover. However, the US used its influence over the OPEC countries (primarily Saudi Arabia) and committed them to sell oil exclusively in dollars. Instead of gold, oil ("black gold"), as the driver of the world economy and trade, has become the backbone of the modified international monetary system. Given the fact that there was no fixed link between oil and the dollar, the United States was allowed to lead a more loose fiscal policy, and due to the so-called Petrodollar standard, the dollar remained the most important world reserve currency (Filipović i Garić, 2014).

Some economists believe that a lack of the diversification of reserve currencies is the weakness and vulnerability of such an international monetary system, as this can lead to a lack of liquidity, excessive privileges, erroneous capital flows and the encouragement of a weak fiscal discipline in the countries whose currency is used as the reserve. However, according to others, the dominance of several currencies is good and the dominant

currencies provide high-quality and safe assets during a financial crisis. Nevertheless, regardless of these opposing attitudes, the global economy is becoming increasingly multipolar. Significant structural changes have supported this transformation - including the rapid expansion and the increased connection of the global economy and financial markets. In this context, the key question is whether the transformation of the global economy will result in a more diversified reserve currency system (Tovar & Nor, 2018)?

The conclusion is that there is a great paradox about the use of the dollar. Although no one likes the dollar standard, the dollar continues to be used. The country that fixes its exchange rate against the dollar will tend to intervene in the foreign exchange market in dollars and accumulate reserves in dollars. This country will choose the dollar for commercial and financial transactions, thus limiting the risk of a foreign exchange rate (Farhi, Gournchas & Rey, 2011). Despite the turbulence in markets around the world and significant fluctuations in the value of the dollar in the past period, the importance of the dollar has not significantly decreased (neither if used as a currency linked to the value of the domestic currency nor as an international reserve currency) (Goldberg, 2010). For this reason, the established procedures of clearing and the mechanism of international payments help the dollar to retain the position it gained in international trade. As the main monetary mechanism, it ensures that international trade remains in some way multilateral, rather than narrowly bilateral. Simply put, this system is still too valuable to be lost and too difficult to be replaced (McKinnon, 2013).

THE CAUSES AND CONSEQUENCES OF A LARGE IMBALANCE IN THE CURRENT ACCOUNTS OF CERTAIN COUNTRIES

The imbalance in the current account of certain countries is one of the key macroeconomic imbalances that significantly influenced the emergence of the last financial crisis. In most cases, the imbalance is concentrated in a small group of regions or countries, but the right picture is obtained if we look

at the countries concerned. Due to the size of its own economy, the US and the US current account deficit can pose a major problem for the sustainability of the existing system. There is no clearly defined limit of the sustainability of the current account deficit. Simply, someone's deficit will be sustainable as long as creditors have confidence in debtors. However, some economists believe that a current account deficit greater than 5% of the GDP is a problem. In 2006, the US current account deficit exceeded that limit and reached nearly 6% of the US GDP. At that time, the deficit accounted for about 75% of the current account surpluses of Germany, Japan, China and all of the world's other surplus countries (Obstfeld & Rogoff, 2005). By definition, a current account deficit (surplus) is equal to negative (positive) net savings. In this way, the global imbalance can be seen as the continuing financing of the US consumption by the net savings of the surplus countries.

The global imbalance has allowed global aggregate demand to keep pace with the rapid expansion of the global aggregate supply (primarily) due to the integration of China and India into the world economy (Adams & Park, 2009). In those years, the two most important things that affected the large US current account deficit were the increase in the US demand for foreign goods and the increase in foreign demand for US assets (Blanchard, Giavazzi & Sa, 2005). Many economists regard this kind of global inequality as unsustainable. It is considered that, if foreigners (governments and the private sector) cease to buy dollar assets for some reason, this may trigger a significant decline in the value of the dollar in foreign exchange markets and jeopardize the ability of the US to borrow from abroad. At the same time, although foreign central banks keep almost one-half of the outstanding US Treasury securities, the United States is one of the few countries that can borrow even more, because it borrows in its own currency and because it is immune to the usual risk faced by other debtor countries, whose debts are in a foreign currency. In addition, there is a possibility that the FED will print enough money to repay the debt (McKinnon, 2013).

Surprisingly, despite some political and economic disagreements with the United States, it can be

concluded that China has become more or less inadvertently the pillar of this established dollar standard. This assertion is reflected in the following (McKinnon, 2013):

- The snowball effect: The great expansion of Chinese trade with other emerging markets and countries producing primary products throughout the world, where the dollar is both the invoice currency for goods and the clearing currency for making international payments. This reduces transaction costs and increases the liquidity of dollar-based markets.
- The macro-stabilization effect: Since 1994, China has succeeded in following a countercyclical fiscal (credit) policy so as to stabilize its own GDP growth at a higher level, which somewhat buffers the cyclical instability emanating from the United States.
- The finance effect: China provides finance for the large US fiscal deficit. If, following China, foreigners collectively ceased to buy Treasury bonds and other dollar assets, a credit crisis in the United States would ensue.

There is no unanimous opinion about the impact of China on the world economy. While some economists

believe that China has already become the leading economic power, there are those who consider it is necessary for many years to pass so that, realistically speaking, the Chinese influence could be greater than (above all) the American. Certainly, China has become the largest creditor of the United States, and the following figures support the fact that in the 21st century, viewed through the relationship between the two countries, much has changed in terms of the redistribution of economic power in the world.

Figure 1 displays the movement of the GDP in the two countries between the years 2000 and 2017, measured in the current prices, according to the purchasing power parity. Although at the beginning of the observed period China's GDP was 2.7 times smaller than that of the US, in only 15 years China's GDP became larger, and in 2017, according to the IMF's estimates, this difference was almost 4,000 billion dollars. In the observed period, China's GDP grew 6.25 times, whereas America's GDP only grew 1.88 times. The only indicator that the US is still far ahead of China is the GDP *per capita* (also the current prices, according to the purchasing power parity) - Figure 2. According to the International Monetary Fund's (IMF) estimates in 2017, the GDP *per capita* in the United States was 59,495.34 dollars, and 16,624.41 dollars in China. Nevertheless, there

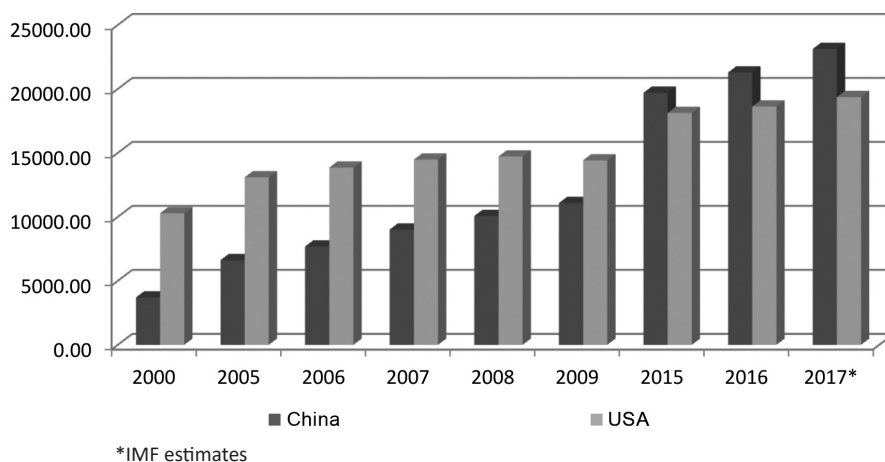


Figure 1 The GDP, the current prices, the PPP, in billions of dollars

Source: International Monetary Fund, 2017

is also a significant difference here when comparing the increase at the beginning of the observed period. The GDP *per capita* in China increased 5.7 times and in the United States there was only an increase of 1.63 times; so, the conclusion is that this difference is decreasing. Based on the above data, it is noticeable that the financial crisis had significant consequences for the US economy - there was a decline in these indicators in certain years in the United States, while China has been experiencing constant growth. Figure 3 best illustrates the aforementioned redistribution of economic power. The share of these two economies

in the global GDP increased (according to the IMF's estimates) in the observed period by over 5% and amounted to around 33.55%. However, this increase occurred as a result of a reduced share of the US GDP by more than 5% (from 20.62% to 15.29%) and a significant increase in the share of China's GDP of almost 11% (from 7.42% to 18.26%). In addition to the significantly high share of China's GDP, based on the above data, it can be concluded that there has been an increase in the concentration of economic power, so that the EU GDP, together with that of these two countries, represents about 50% of the world's GDP.

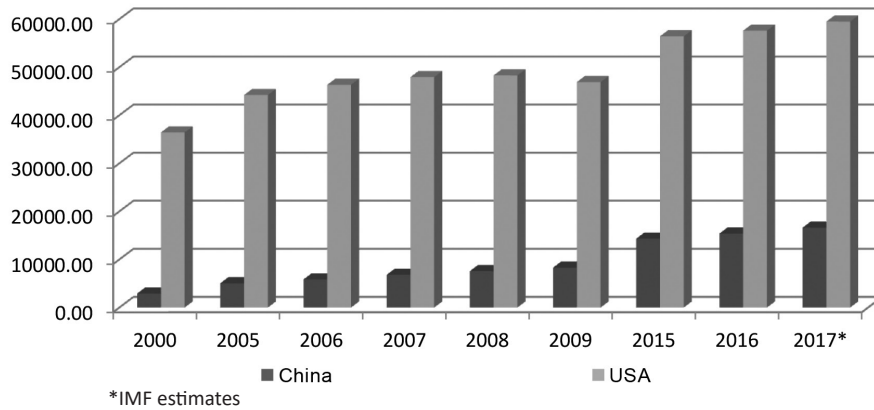


Figure 2 The GDP *per capita*, the current prices, the PPP, in dollars

Source: International Monetary Fund, 2017

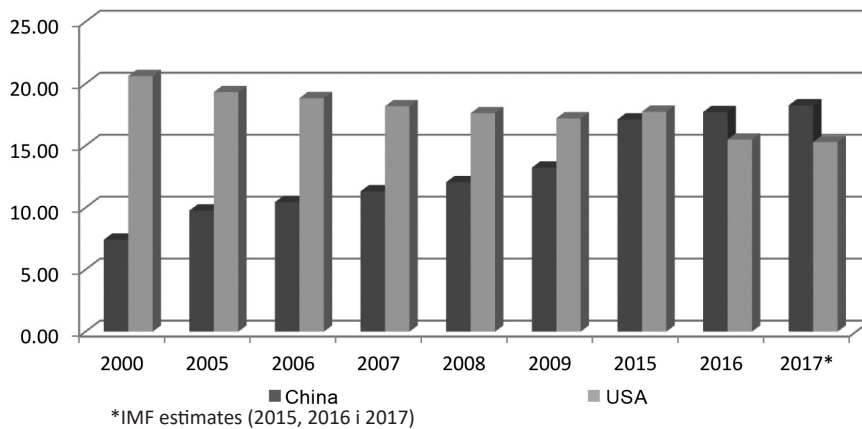


Figure 3 The GDP (PPP), the share in the world GDP

Source: International Monetary Fund, 2017

The following Figures 4, 5, 6 and 7 show why the abovementioned large imbalance in the current accounts of certain countries exists. Theoretically, in the long run, one country should spend as much as it produces, and invest as much as it saves. However, in practice, this is usually not the case, and therefore there are deficit countries and surplus countries. Due to the size of their economies, the US and China are very important representatives of these groups. In the observed period, investments in China amounted

to an average of 42.19% of the GDP, whereas in the United States they amounted to only 21.83% of the GDP. At the same time, in China, savings accounted for the GDP at an average of 47.23%, unlike those in the US, where this share was 17.05%. The asymmetric position of these two superpowers is obvious - China has a significant surplus for foreign investments (it invests most of it in the US Treasury securities), whereas the US investment activity largely depends on someone else's money. China invests most in the

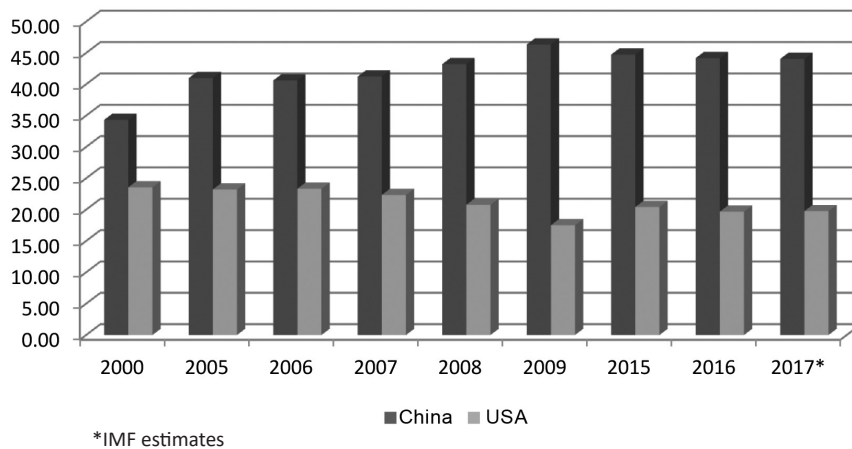


Figure 4 The total investments, in % of the GDP

Source: International Monetary Fund, 2017

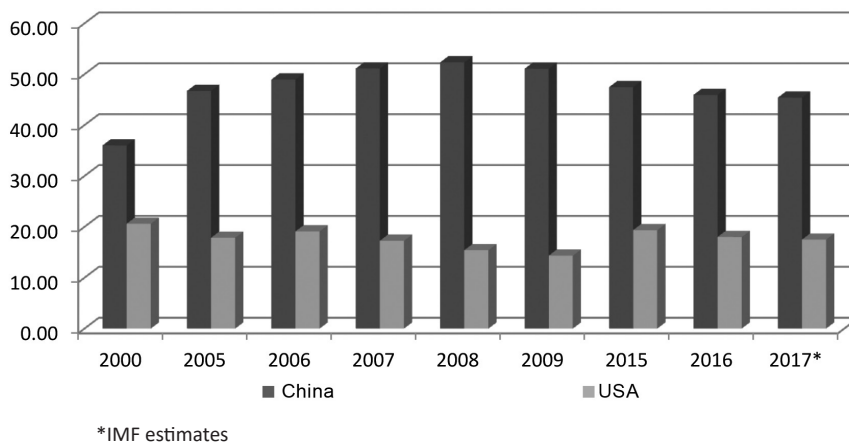


Figure 5 Gross national savings, in % of the GDP

Source: International Monetary Fund, 2017

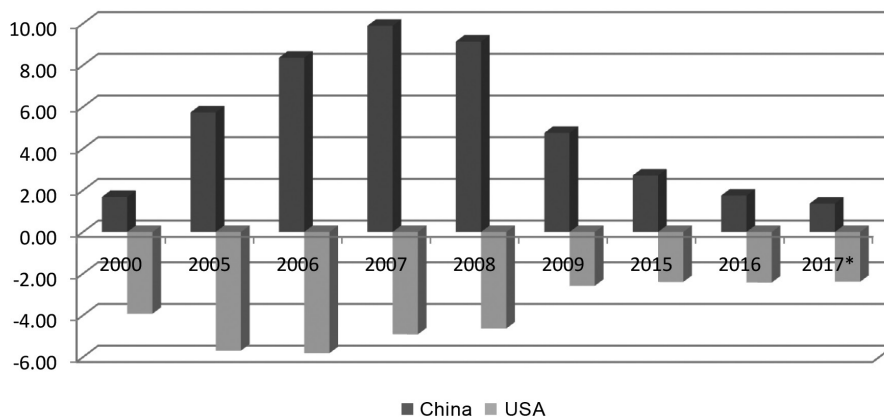
US financial market due to the dollar status and the fact that it is the most developed market in the world. This raises the liquidity of the market and reduces the level of the interest rate in the market. However, in this way, the consumption of the US economy is generated, which is largely compensated for by import from China. On the other hand, China increases demand for the dollar and leads to the appreciation of the dollar against the yuan, which makes the yuan even more underestimated, and China's exports to the US market even more competitive. Precisely this (un)proven underestimation of the yuan is one of the key points of the dispute between these two countries (Filipović i Garić, 2014).

The public debt of both countries has increased - it could be said to have doubled compared to the beginning of the observed period. However, the starting points were different - in 2001, the total public debt in China amounted to 24.38% of the GDP, and the IMF's estimates for 2017 amounted to 47.61% of the GDP. In the United States, the public debt amounted to 53.022% of the GDP in 2001, and as of 2012, it was over 100% of the GDP, and the estimates for 2017 amounted to 108.14% of the GDP (China has a significant share in this debt, of course). Thus, the above-stated fact that China is currently one of the world's largest investors and creditors of the US is confirmed. On the other hand, in the observed

period, the United States constantly consumed more than they produced, which is reflected in the current account deficit (Figure 6) and the net international investment position (Figure 7). Although the current account deficit after the global financial and economic crisis was reduced and amounted to about 2.5% of the GDP, in 2005 and 2006, the deficit was over 5% of the GDP, so the question of its sustainability could be raised. In particular so when we look at the absolute amount of the deficit - in those years, it was about 800 billion dollars. The data are even more important when the net international investment position of the US is included in the analysis. The US switched from the position of the international net creditor (in 1980, the net international investment position amounted to a maximum of 296.8 billion dollars) to the position of the international net debtor in 1989 (33.7 billion dollars). Since then, the US debt was rising steadily to reach a maximum of 8,318.4 billion dollars in 2016. Given the size of the US economy, the good thing is that, in relative terms, it is still not such a large amount (about 45% of the US GDP).

THE POTENTIAL OF THE EURO

The common European currency (the euro), introduced by 11 countries (currently 19), has been



*IMF estimates

Figure 6 The current account balance, in % of the GDP

Source: International Monetary Fund, 2017

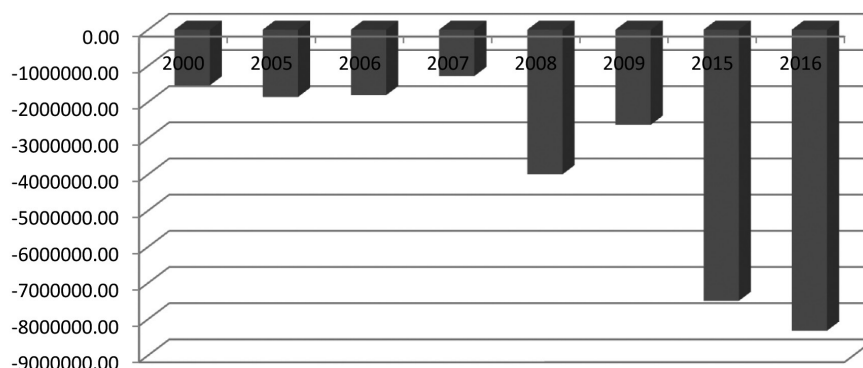


Figure 7 The net international investment position of the US, in millions of dollars

Source: Bureau of Economic Analysis, 2018

seen by its creators (and the wider economic public) as the currency that should stop and reduce the dollar's dominance as a world currency. The euro has taken its position in the international market and is the most important currency after the dollar. However, after all these crisis years, it has become obvious that the euro had been introduced before all the necessary conditions were met. During the introduction of the euro, its creators were probably aware of the fact that this was incomplete and a semi-solution. Namely, the greater economic and political integration of the eurozone countries should take place or its breakdown will occur. The introduction of the euro should not be the goal, but a means to achieve greater goals. It was considered that the introduction of the common currency would accelerate economic integration and prepare a favorable ground for deeper political integration; however, instead of that, there were opposite effects - the growth rates were not at a satisfactory level, the divisions still remain. If the GDP *per capita* is taken as one of the basic indicators of the economic progress of a country (or, in this case, of a group of countries), when it comes to the eurozone, the data are devastating - between 2007 and 2015, the decline in the real GDP *per capita* of 1.8% was recorded in the eurozone (simultaneously, there was an increase in the US by more than 3%, although the global financial and economic crisis emerged in the USA) (Štiglic, 2016). In addition, although the new Member

States recorded higher growth rates than the old member countries, a low starting point was the major problem; therefore, there is still the division between "the core" and "the periphery", "the west" and "the east", and "the north" and "the south". In addition to economic inequalities and the problems created by such a situation, there are disagreements on the other, very important issues that make the functioning of the EU, and especially the EMU, more difficult. Currently (the beginning of 2018), great pressure can be said to be created by the problems concerning the independence of Catalonia, the withdrawal of Great Britain from the EU, and the influx of migrants. The Great World Financial Crisis revealed certain weaknesses of the EMU, and for several years after that, the euro was losing its significance as a world currency. Only in 2016 was the recovery recorded and did the euro record an increase in the share in the total world foreign exchange reserves (according to the constant foreign exchange rate, after 6 years of reduction in the share (from 22.3% in 2009), in 2016 an increase (19.7%) was recorded compared to 2015 (19.4%) and global payments (from 29.4% of the share in 2015 to 31.3% in 2016) (ECB, 2017).

In order for the euro to continue to strengthen its role in the international monetary system, it is necessary to overcome the problems of the state debts of the peripheral member states, carry out

reforms, primarily in the fiscal field, and create sufficiently reliable assets (the euro bond) that will be able to match the depth of the US financial market. Investors continue to have great confidence in the US government bonds and because of their high liquidity and security they practically identify them with money, as the most liquid asset (Kovačević, 2011). Because of all of the abovementioned, Dž. Štiglic believes that, in order for the eurozone to survive, and later even further jeopardize the position of the dollar, it is necessary to carry out the structural reforms of the eurozone itself: to establish a banking union, consolidate the debt, create a common framework for stability, lead the right convergence policy that will lead to structural realignment, promote full employment and growth for the whole of Europe and have full commitment to common prosperity. The agreement on the banking union has been reached - in addition to joint supervision, it is necessary to have joint deposit insurance and joint problem solving (the same procedures for banks that cannot fulfill their obligations).

However, it is essential that a common regulatory system be set up in the right way - not to act as an automatic destabilizer, but to, with certain (greater) authorities and adequate instruments, stimulate expansion (limit lending) where necessary. Debt consolidation should also be approached cautiously. Any form of successful economic integration certainly implies some sort of assistance that stronger countries provide to the weaker (stronger member states must be aware of that).

In doing so, it is extremely important to properly use this consolidated debt - limit it if necessary, spend it on investment exclusively in certain parts of the economy (e.g. the infrastructure and education), and for any over-indebtedness to comply with the prescribed procedure. The fulfillment of the Maastricht criteria have proved insufficient to maintain the stability of the eurozone as a whole, so that the common framework for stability implies action in the following directions: the fundamental reform of the Maastricht convergence criteria (primarily through the creation of a common fiscal framework), a collective action for solving the basic problems through the Stabilization

Solidarity Fund, commitment to progressive automatic stabilizers, increasing the flexibility of the monetary policy, the introduction of regulations to control market-generated instabilities, and leading a stabilizing fiscal policy.

The real convergence policy involves the adoption of certain measures that will discourage countries from maintaining a surplus of current accounts. Achieving the current account balance for the region as a whole is not good enough. Individually, this can mean that there are countries with both a surplus and a deficit, which can lead to problems in time (primarily with respect to the financing of the deficit) so that the goal should be to prevent excessive imbalances within the eurozone. Full employment and continuing growth are the major problem for the eurozone. Change in the ECB's authorization is highlighted as the key macroeconomic reform that should enable a solution to this problem. Instead of only focusing on inflation, the ECB should, with its wider authorization, allow the financial sector to operate in the direction of crediting primarily productive parts of the economy, thus encouraging full employment, growth, and stability. Commitment to common prosperity means that we need to work on eliminating the growing inequality problem that is present everywhere in the world. The fact is that the economic, legal and political frameworks of the eurozone do not allow the mitigation of this problem. In other words, the free flow of goods and capital, without tax harmonization, reinforces the problem (Štiglic, 2016).

THE INTERNATIONALIZATION OF THE YUAN

The growing role of Asia in the world economy (primarily the position of China - the world's largest exporter and the dynamic growth of the Chinese economy) has contributed to the increase in the internationalization of the yuan and an attempt to reduce the impact of the dollar. As there were attempts in the 1980s and 1990s to internationalize the yen, it is considered that in the 21st century China has taken certain steps leading to the gradual

internationalization of the yuan. The National Bank of China sees the complete convertibility of the yuan as a process consisting of three steps:

- the yuan as a global trading currency - as the yuan develops as a trading currency, companies outside China will gradually become used to using it for paying for goods and services;
- the yuan as a global investment currency - the goal is to allow more free investment of the yuan. Investors will be able to use their reserves in the yuan across the border. Global companies want their earnings in China to be convertible to other currencies;
- the yuan as a global reserve currency - the government wants the status of its currency to match the position of the country that is becoming an economic leader.

In a way, China wants to challenge the dollar as a reserve currency (Love and Chen, 2017). Although the complete internationalization of the yuan is probably still far away (the question arises as to whether China wants this now and how long should it take this to achieve), it is certain that what has been done is changing the situation on the international scene. The growing role of the yuan is primarily reflected in the fact that exporters can invoice the goods they sell in the yuan, gradually opening the gate for a foreign capital inflow (the yuan is used for the calculation of investments through offshore zones), bilateral swap arrangements in the yuan are created with the central banks of the main trading partners, enabling the calculation and payment in the yuan in mutual trade and spreading the circle of currencies which the yuan is directly exchanged for without the intermediation of the dollar (Kovačević, 2014).

In the last two years, two very important things have happened, both in favor of the internationalization of the yuan - the International Monetary Fund has included the yuan into the basket of the currencies that determine the value of special drawing rights and the European Central Bank, as one of the most powerful central banks in the world, has invested a certain portion of its foreign exchange reserves in the yuan, selling a small portion of dollar receivables. It is part

of the ECB's strategy to diversify its foreign exchange reserves and add China's currency. Although this investment represented only about 1% of their total foreign exchange reserves (of around 68 billion euros), and the dollar still makes up the majority of the foreign exchange reserves of this institution, this was the major incentive for China. This points to the growing confidence in the yuan market as a world reserve currency and the acceptance of China as a global economic power in Europe. For this reason, the yuan is accepted by an increasingly greater number of countries as a reserve currency. However, this still does not mean that the yuan will become the dominant reserve currency instead of the dollar (even the euro) in a near future (Figure 8). As an accounting unit, it is used for about 2% of international payments, although the share of China's GDP in the world in the last few years has been much higher and has amounted to over 17%. Although the largest trader in the world, China only accounts for 20% of its foreign trade in the yuan, which is much less than about 60% of the eurozone foreign trade in euros, or about 40% of Japan's foreign trade in the yen (Huang, 2017).

The international role of the yuan is considered to still be limited in comparison with the dollar and the euro. The further internationalization of the yuan will depend on whether China will succeed in diverting the economy from investment to consumption in order to avoid a medium-income trap. In addition, the still-present restrictions in the capital account diminish the attractiveness of the yuan for foreign investors (Kovačević, 2015).

The full convertibility of the yuan, i.e. its being a reserve currency to a proper extent, requires further work in the following areas: maintaining economic stability in terms of stable economic growth, a stable exchange rate, and a low inflation rate. China is increasing its share in world trade and an increase in the size of its national economy is important to its trading partners, which clearly justifies a greater use of the yuan; deepening capital markets and accelerating the integration of its own and offshore capital markets; increasing efforts to create solid and reliable legal and regulatory frameworks. The internationalization of the yuan is a decisive goal of the national policy

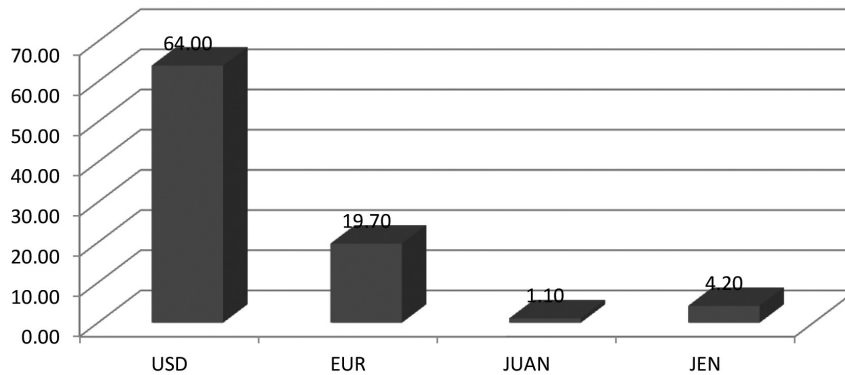


Figure 8 The percentage share of the most important currencies in the world foreign exchange reserves, 2016.

Source: ECB, 2017

of China's government, which is taking place at a faster pace than expected. In the upcoming period, the improved industry infrastructure, reinforced financial regulations, well-structured deposit insurance schemes, improved market-driven exit mechanisms for financial institutions etc. (Huang, 2017) should be expected.

THE IMPACT OF GLOBALIZATION ON THE INTERNATIONAL MONETARY SYSTEM

Over the past half-century, globalization has had a significant (primarily positive) impact on people's lives. The problem is that the resulting gains are not evenly distributed at either the regional or the national level. Over time, an increase in international trade and financial openness has happened in parallel. On the one hand, financial connections in the form of international payments and loans have greatly facilitated trade, whereas at the same time the accumulation of international assets and liabilities has occurred. All of this has made the countries that are more open-minded become more financially open. The relationship between real and financial openness developed with the degree of integration and development. In this context, we can speak of the three phases of globalization so far. The first, the most basic phase involved trade in goods and finished products and correspondingly

simple international financial links, such as cross-border payments. The second phase involved more complex trade and financial links. It involved trade in semi-finished products and services, linked to the fragmentation of production between the countries that was led by efficiency and with the corresponding financial arrangements. The third phase concerned the increasing use of financial transactions to actively manage balance sheet positions. All of the three phases of globalization share some common elements. One of them is the use of the world currency.

As the dominant world currency, the dollar is used for the denomination of not just about one-half of the world trade, but also about one-half of global cross-border banking receivables and over 60% of the foreign currency assets of central banks, as well as over 90% of transactions in the foreign exchange market. As a result, the dollar continues to play the key role in determining global financial conditions. Globally active financial institutions are another common element. They function in many countries, across continents. Due to their international presence and sophistication, they facilitate the transfer of funds and financial risks at a global level. The balances managed at a consolidated level create close international financial links (Bank for International Settlements, 2017). The major problem is the growing separation between the real and the financial sectors, significantly higher turnover in financial markets and an insufficiently good regulation at the global

level. On the one hand, new financial instruments and significant financial transactions enable easier financing, whereas on the other hand, this leads to a faster transfer of problems between certain parts of the market.

In addition to all of the foregoing changes that occurred in the international financial market, according to the data of 2016, the dollar remains the world’s most important currency (Figure 9). Although it has managed to rank the second, the euro, as the unique European currency, has not yet created a major synergy effect and is still too far behind the dollar. On the other hand, as far as the Asian block is concerned, it is notable that there is no unity (the yen is still present), the internationalization of the yuan has only recently started and it needs time to pass for China’s yuan to achieve a more significant share.

CONCLUSION

Globalization, present in all segments of society, greatly influences the significant spillovers of the monetary policy effects between countries. For this reason, the strengthening of international cooperation, as well as the occasional joint actions of monetary authorities, has become inevitable. The important question of how the international

monetary system will develop in the coming period remains. Will the euro and the yuan be able to expand their influence? Will this be a sustainable process and will this happen by reducing the impact of the dollar? In addition, some new instruments, such as virtual currencies (primarily bitcoins), can also be a form of a challenge in the upcoming period.

At present, the dollar can be said to still have the two major advantages when retaining the central role in the international monetary system is concerned (even if China’s economy is considered to be larger than America’s). The first advantage is that the existence of single dominant international money is considered as a natural monopoly and that the introduction of the second or third reserve currency would raise the administrative costs of making international payments between different countries around the world. Second, there is a great advantage for the national currency that already has the status of an international currency. When most banks in private transactions use the dollar as an intermediate currency in exchange for a second and third currency, transaction costs decrease in these markets and their liquidity increases as well. With this decrease in costs, the remaining banks are attracted to using the dollar (McKinnon, 2013).

As far as Europe is concerned, it must act collectively in order to move forward (and as quickly as possible).

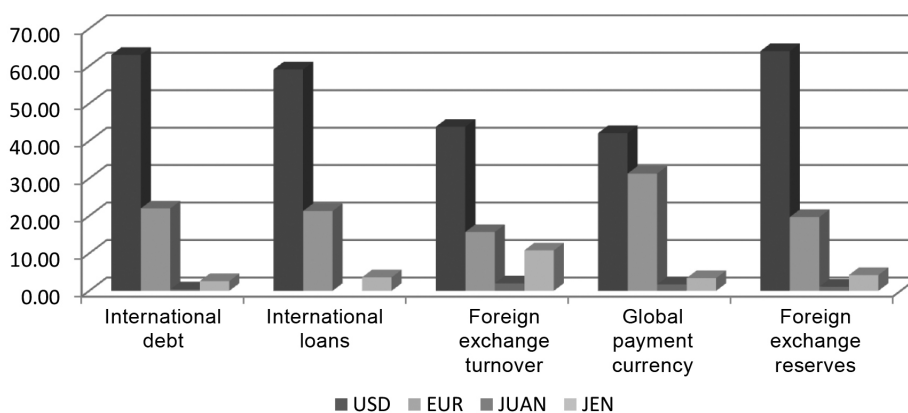


Figure 9 The percentage share of the most important currencies in the international monetary system, 2016.

Source: ECB, 2017

The goal is for the EU as a whole to be greater than the sum of its parts (individual countries) in economic, social, technological, commercial and political terms. The euro as a common currency, or the EMU, can be very important on this path. However, in order for this to happen, serious economic and political reforms are necessary.

China's yuan is obviously increasing its international impact, especially among the BRICS countries. In spite of that, we still cannot speak of an Asian block linked to the yuan. However, some kind of the transition of the international monetary system from the bipolar (the US dollar and the euro) to the tripolar currency block (including the yuan) is obviously in progress.

In addition to the fact that a lot has changed since the beginning of the Bretton Woods International Monetary System and that it is constantly criticized for the significant benefits that the United States has for the reason of the fact that the dollar has the key role in the international monetary system and global liquidity, it is concluded that the position of the dollar as the most important world currency has not yet been endangered, which confirms the established hypothesis. The liquidity, reliability and depth of the US financial market continue to put the US government securities at the forefront. Although developing countries and countries in transition increase the amount of foreign exchange reserves (as a response to the increasingly more frequent crises and a faster transfer of these crises) and want to make the currency diversification of their assets, the above presented facts enable the dollar to retain the position of the dominant currency of the world's foreign exchange reserves (Kovačević, 2014). Although the US current account deficit is large and there is the so-called "factory error" when the dollar is concerned (having confidence in the currency of a country that has a huge current account deficit), a conclusion can be drawn that the position of the dollar does not depend on the abovementioned deficit as much as it does on the fact that no other currency is still significantly increasing its share in the international financial market.

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Conference announcement

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CONTEMPORARY ISSUES IN ECONOMICS, BUSINESS AND MANAGEMENT - EBM 2018

November 09-10, 2018, Faculty of Economics, University of Kragujevac,
Kragujevac, the Republic of Serbia

Dejana Zlatanovic*

The Fifth International Scientific Conference entitled Contemporary Issues in Economics, Business and Management (EBM 2018) will be held at the Faculty of Economics, University of Kragujevac, on November 9 and 10, 2018.

Numerous challenges and problems that contemporary organizations and national economies are being faced with imply the need for an appropriate theoretical and methodological response. Thus, an increasing variety of new concepts, methodologies, methods, models and tools can be observed in the field of economics, business economics and management. Aiming to provide an adequate response to the various challenges of the business environment, the Conference will enable researchers to present the latest results of their research studies, exchange their respective ideas, knowledge and experiences and also verify their results through different publications. In addition, the informal discussion that will give

the participants an opportunity to identify common research interests and possibilities of a future cooperation is of relevant importance.

Taking into account the complexity and diversity of contemporary issues in economics, business economics and management, the Conference will include the four thematic areas as follows:

- Globalization and Regionalization,
- Key Issues in Management and Marketing,
- Accounting and Business Finance,
- Applied Informatics and Quantitative Methods in Economics and Management.

By encouraging both conceptual and empirical papers, the Conference will enable the participants to point to the actual development trends in the theory and practice of economics, business economics and management.

The EBM 2018 Conference will be taking place for two days. On the first day, a plenary session and four parallel sessions will be held. At the same time,

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undergraduate and graduate students will be able to present the results of their research studies since the students' conference entitled the Challenges of Contemporary Economics and Management will simultaneously be organized. Through the evaluation and selection processes, the best scientific-research paper written by a student will be chosen.

Respecting the importance of innovation to the development of businesses and economics, the particular focus on the second day of the Conference will be put on improving innovativeness in the Republic of Serbia through a panel discussion entitled How to improve innovativeness in Serbia. The discussion will involve the representatives of the academic community, the representatives of the Government of the Republic of Serbia, as well as eminent businessmen and experts. The participants' interaction with one another is expected to contribute to the identification and application of appropriate solutions and tools for the purpose of encouraging the innovativeness and competitiveness of the economy of the Republic of Serbia.

As distinguished researchers in the appropriate fields of economics and management, the keynote speakers at the Conference will be as follows:

Darko Tipuric, Faculty of Economics, University of Zagreb, Croatia

Boris Begovic, Faculty of Law, University of Belgrade, Serbia

Vadim Kufenko, Institute of Economics, University of Hohenheim, Germany

The submitted manuscripts should be original and previously unpublished. All of the submitted manuscripts will be the subject matter of the double-blind review process. The publication opportunities are the following:

- All of the accepted abstracts will be published in the Conference Book of Abstracts.
- The accepted papers will be published in the Conference Proceedings.
- The authors of the selected high-quality papers will be subsequently invited to submit the papers for publishing in the Economic Horizons, the journal issued by the Faculty of Economics, University of Kragujevac.

The dates below are important to potential participants at the Conference:

May 30, 2018	Abstract submission
June 15, 2018	Abstract acceptance notification
August 30, 2018	Paper submission
September 30, 2018	Paper acceptance notification
November 9-10, 2018	Conference dates

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NOTES FOR CONTRIBUTORS

Introduction: Manuscripts submitted to the Editor-in-Chief of the journal should be original, unpublished, and they must not be in the review process by any other journal. Manuscripts should be written in the standard grammatical and stylistic **Serbian and English**, i.e. only in **English**, for the authors whose native language is not **Serbian**. Authors are advised to comply strictly with these journal requirements. All manuscripts are subjected to double-blind review process.

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Length of the submissions: Manuscripts should contain between 5,000 and 7,000 words.

Title of the manuscript: The title should not exceed two lines in length.

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JEL classification: According to Journal of Economic Literature (JEL) Classification System: http://www.aeaweb.org/journal/jel_class_system.php, the author should classify his/her manuscript.

Figures, Tables and Graphs: Figures can take any of the following formats: TIFF, GIF, JPG, PDF, and CDR. Their resolution should be over 300 dpi. Tables and graphs can take any of the following formats: Word, Excel, Corel, Visio, and SPSS. Figures, tables, and graphs should be numbered consecutively; every figure and graph should be titled, and the source (where appropriate) should be acknowledged; every table should be supplied with a heading and its source (where appropriate) should be acknowledged.

Acknowledgements: The title and number of the project within which the paper originates, as well as the name of the institution financing the project, or acknowledgement to the reviewers, should be included following Conclusion, i.e. preceding References.

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