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INNOVATIVE ABILITY AS A FACTOR OF IMPROVING COUNTRY COMPETITIVENESS

Abstract: *The paper discusses the interdependence of Innovation capability of the economy and national competitiveness based on the data according to Global Competitiveness Index 4.0 (GCI 4.0) in 2019. Correlation analysis examined the interdependence of innovation ability and GC 4.0 on the example of 141 countries. First, an analysis of the interdependence of innovation capacity and competitiveness of the countries that were in the lead according to the criterion of the achieved level of competitiveness is given, and then an identical procedure was conducted on the example of ten selected countries in Southeast Europe in 2019. The research showed that the most innovative countries are also the most competitive countries in the world. What is more, the research revealed the fact that innovation is the basis of the competitiveness of the Republic of Serbia and other selected countries of Southeast Europe.*

Key words: *innovation ability, country competitiveness, fourth industrial revolution, GCI 4.0.*

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1. INTRODUCTION

During the last decades, the category of competitiveness of the country has been talked about more often in the economic literature. It is quite clear that improving national competitiveness means increasing the competitiveness of domestic companies, because only companies create new forms of competitive advantage, while governments can shape a business environment that is more or less conducive to business development (Soltes, Gavurova, 2015). In short, a competitive economy can be created exclusively by highly competitive companies which place manufactured goods on the domestic and especially on the international market (Vojtovic, 2016).

Competitiveness is the ability to create and materialize new value in conditions of competition. It is a complex, multidimensional phenomenon that can be observed at the national and regional level, sectors, and companies. Due to the fact that it has no specific meaning, competitiveness can be viewed in different ways using different methodologies and indicators. But, we should take into account the fact that the basis of all forms of competitiveness is the competitiveness of the company (Cvetanović, Nedić, & Despotovic, 2019).

The country's competitiveness is the ability of the economy to achieve long-term sustainable economic growth and increase the well-being of the majority of the population in order to build an economic structure that effectively adapts to international trade and world market requirements. The ability of the national economy to achieve satisfactory rates of economic growth in the long run and to increase the welfare of the majority of the population in order to build an economic structure that effectively adapts to international trade and the world market speaks of its global competitiveness. In other words, competitiveness is the country's ability to produce products and provide services that meet the needs of domestic and foreign markets in conditions of free competition and equal market conditions, while increasing real incomes in the long run. Economic development based on competitiveness is not only based on inherited comparative advantages (e.g. natural resources and cheap labor), but also on knowledge, developed infrastructure, high technology and innovation (Cvetanović & Novaković, 2017).

In order to monitor the competitiveness of countries, on the one hand, and especially to identify its most important drivers during the fourth industrial revolution, on the other hand, the World Economic Forum (WEF) in 2018 promoted GCI 4.0. It can be said that GCI 4.0 is a kind of illustration of the factors that determine productivity, economic growth and social development in today's economic conditions. GCI 4.0 was obtained by combining the values of 103 individual indicators (Schwab, 2018).

The subject of this paper is the consideration of innovation as a factor of national competitiveness. The research question is: Is there an interdependence of Innovation ability and GCI 4.0 of countries with different levels of economic development? In order to find an answer to this defined research question, the paper analyzes the data related to Competitiveness Index 4.0 for 2019 (Rank and Score) and Innovation ability for the 10 most competitive countries, as well as a group of ten countries in Southeast Europe and the Republic of Serbia.

The work structure consists of five sections. After introductory remarks, in the second section of the paper, we talk about the structure of GCI 4.0. In the third section of the paper, a brief overview of recent research on economic innovation as a factor in improving

the competitiveness of countries is presented. Then, in the fourth section, the results of the discussion and the results of the research on the interdependence of the competitiveness of the two groups of selected countries are presented, based on the data contained in the GCI 4.0 Report in 2019 (the last year for which data exist). The concluding considerations are presented in the fifth section.

2. REVIEW OF RESEARCH ON THE INTERDEPENDENCE OF INNOVATION CAPACITY AND COMPETITIVENESS OF COUNTRIES

There is a large number of papers exploring innovation ability as a driver of improving countries' competitiveness. Sener and Saridogan (2011) proved in their research that national economies that implement an economic development strategy at the heart of an effective innovation policy are more competitive compared to countries where such practices are lacking. Also, more innovative economies are characterized by incomparably higher rates of economic growth compared to countries that do not have an appropriate strategy and policy for building innovation capacity.

Cvetanović et al. (2014) explored the relationship between innovation and competitiveness of the Western Balkans and selected European Union countries. Using correlation and cluster analysis, the authors proved the significant interdependence of innovation ability and competitiveness of all countries involved in the work.

Sredojević (2016) analyzed the innovative ability of the economy as a limiting factor in the growth of competitiveness of Southeast European countries. The paper confirms the existence of a positive correlation between innovation ability and competitiveness of countries, as well as that the low level of innovation ability is a pronounced limiting factor in the growth of competitiveness of selected countries in Southeast Europe. A similar research was conducted by Ivanova and Čepel (2018) on the example of four countries of the Visegrad Group (V4). They concluded that the innovation performance of the V4 countries is a significant factor in improving their competitiveness.

Ivanová and Čepel (2018) conducted a similar study entitled *The Impact of Innovation Performance on the Competitiveness of the Four Countries of the Visegrad Group (V4)*, and concluded that the competitiveness of V4 countries is affected by a wide range of economic, political and social factors.

Vukosavljević (2019) researched the innovation of the economy as a determinant of the growth of the competitiveness of the Balkan countries. She came to the conclusion that innovation ability has a decisive effect on improving the competitiveness of the Balkan countries. However, the author concludes that it is not possible to speak of this interdependence as a universal rule independently of other factors that can decisively affect the growth of countries' competitiveness in different time periods.

3. RESULTS AND DISCUSSIONS

Countries that are leaders in competitiveness provide a more favorable innovation ecosystem, i.e. they better encourage the emergence and application of new technologies in

all sectors of the economy. It is therefore not surprising that innovation is at the heart of any competitiveness, especially when looking at the medium and / or long-term perspective. The importance of innovation for the growth of economic competitiveness is evidenced by the fact that innovation ability is one of the 12 pillars of competitiveness of countries considered according to GCI 4.0. Although formally, as one of the pillars of a complex concept of competitiveness, such as this index, Innovation capability have effect of 8.3% on the value of the final GCI 4.0. The importance of innovation is many times greater because it permeates the prospects of other 11 pillars of competitiveness.

The current level of economic development requires many countries to focus on qualitative factors in an effort to increase their competitiveness, although most European countries base their competitiveness on improving qualitative factors, as a reflection of their high economic development. The development of the world economy led by the fourth industrial revolution creates new opportunities for improving international competitiveness, but also increasingly complex challenges and requirements, especially in the field of strengthening and improving the innovation capacity of countries as one of the key factors of their sustainable competitiveness.

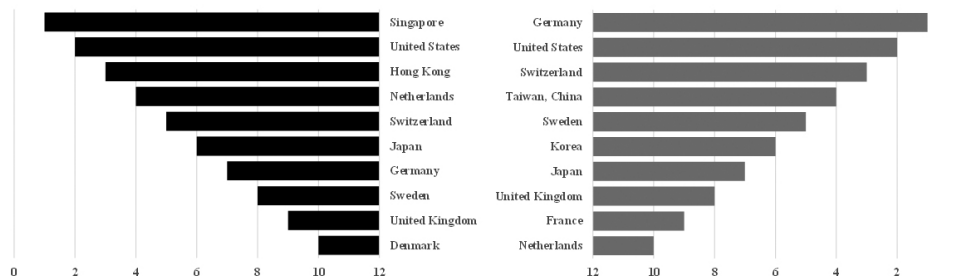
Strengthening innovation capacity helps countries not only accelerate the process of structural change and thus create conditions for dynamic economic growth, but also improve national competitiveness as a basis for long-term sustainable development in the increasingly complex challenges of global business and competition. Innovation is an important factor of competitiveness because it allows existing knowledge and technologies to be used to a greater extent and is a good basis for the development of new knowledge and technology. In the era of the fourth industrial revolution, companies are forced to produce highly sophisticated high-quality products in order to improve competitiveness in the international market, thus contributing to solving many acute economic and social problems. Sustainable economic growth of economically prosperous countries in modern economic conditions is largely based on strategies to improve competitiveness based on the achievements of the Fourth Industrial Revolution, whose manifestations are the comprehensive application of increasingly powerful information and communication technologies and growing connectivity of digital production systems and robots (Bazić, 2017).

In 2019, the 10 most competitive countries in the world were: Singapore, the United States, Hong Kong, the Netherlands, Switzerland, Japan, Germany, Sweden, the United Kingdom, Denmark and Finland, and the countries with the highest Innovation capability: Germany, the United States, Switzerland, Taiwan, Sweden, Korea, Japan, the United Kingdom, France and the Netherlands clearly show that the countries with the highest Innovation Capacity are also the most competitive countries, as seven out of 10 countries from the group of countries with the highest Innovation Capacity are among the ten most competitive countries in the world in 2019 according to the Global Competitiveness Index 4.0 (the United States, the Netherlands, Switzerland, Japan, Germany, Sweden and the United Kingdom).

In 2019, the top ten GCI 4.0 countries were: Singapore, the United States, Hong Kong, the Netherlands, Switzerland, Japan, Germany, Sweden, the United Kingdom, Denmark and Finland. The ten countries with the highest innovative capacity were Germany, the United States, Switzerland, Taiwan, Sweden, Korea, Japan, the United Kingdom, France and the Netherlands. This testifies that the countries with the highest innovative ability are at the same time the most competitive countries. This is due to the fact that as many as seven out

of ten from the group of countries with the highest innovative ability were in the group consisting of the ten most competitive countries in the world in 2019.

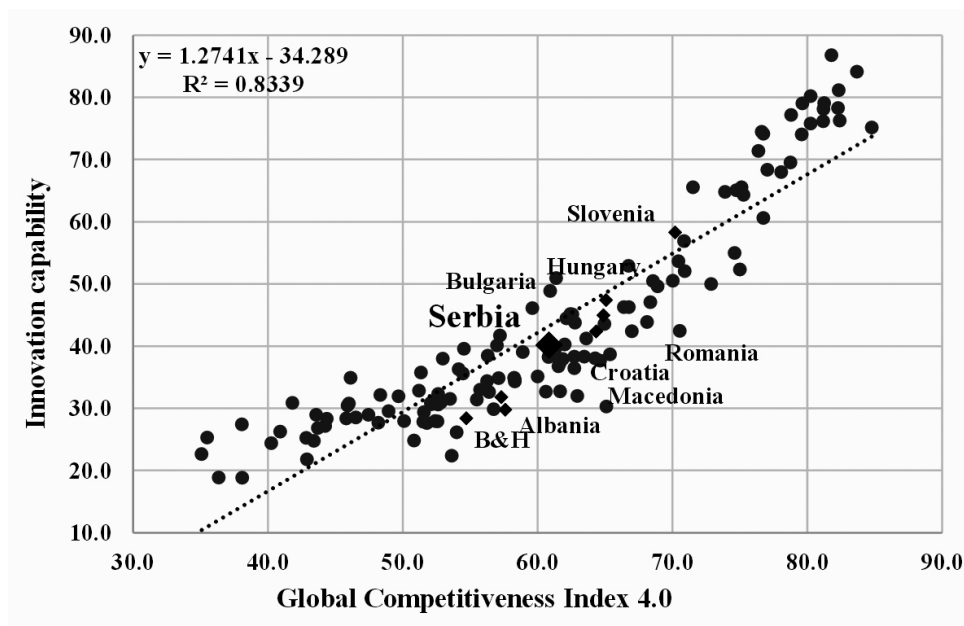
Graph 1: Top 10 countries in the world in terms of Global Competitiveness Index 4.0 and Innovative ability



Source: modified according to WEF, 2019.

The impact of Innovative ability on competitiveness is indicated by a strong correlation between the value GCI 4.0 and Innovative ability on the example of 141 countries in 2019.

Graph 2: Correlation between Global Competitiveness Index and Innovation capability



Source: modified according to WEF, 2019

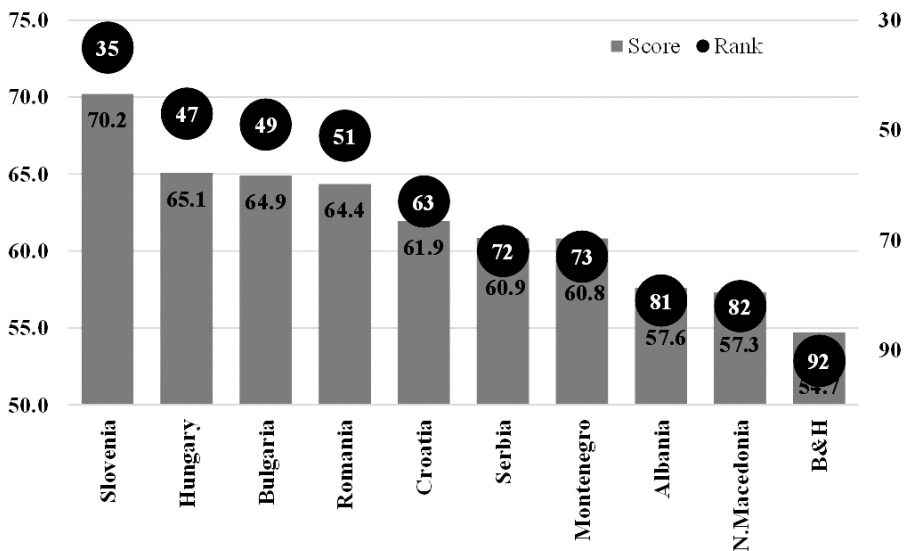
Although the importance of Innovation capability is clearly visible in the most competitive countries today, this importance also exists in less developed, i.e. competitive countries, such as the group of selected countries in Southeast Europe.

Graph 2 shows that the importance of innovative ability was clearly visible in 2019 not only in the most competitive countries in the world but also in a selected group of economically less developed countries in Southeast Europe.

The competitive position of the ten selected countries in Southeast Europe is only a reflection of their real competitiveness, which was measured on the basis of the values of the GCI 4.0. The average value of the GCI 4.0 countries in Southeast Europe in 2019, was 60.4 points, and the highest value among the selected countries of Southeast Europe was recorded by Slovenia (70.2 index points on a scale from 0 to 100), and the lowest Bosnia and Herzegovina (54.7 index points), which shows that there is significant room for improving competitiveness in all countries of Southeast Europe, especially those with lower values of the GCI 4.0. Slovenia also took the leading position among the selected countries of Southeast Europe in terms of Innovative ability (58.2 index points on a scale from 0 to 100) and the lowest Bosnia and Herzegovina (28.4 index points), which shows that there is significant room for improving competitiveness in all selected countries of Southeast Europe, especially those with lower values of GCI 4.0.

In 2019, according to the Global Competitiveness Index, Serbia was ranked 72nd out of 141 observed countries and was more competitive than the surrounding countries. It was more competitive than Montenegro, Albania, Northern Macedonia and Bosnia and Herzegovina, and less competitive than Slovenia, Hungary, Bulgaria, Romania and Croatia, which are members of the European Union.

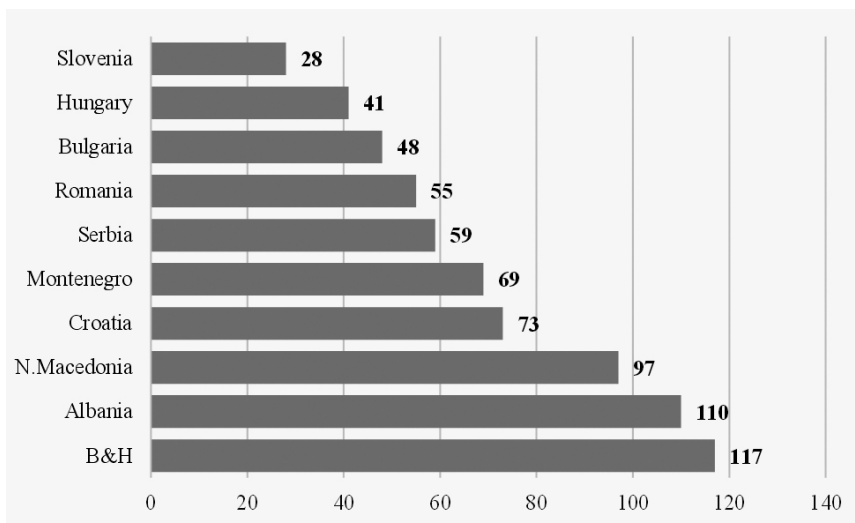
Graph 3: GCI 4.0 for Serbia and the surrounding countries, 2019 - Rank and Score



Source: modified according to WEF, 2019.

In terms of Innovation capability, in 2019 Serbia was ranked better than most countries in the region. Serbia has greater innovation capabilities than B&H, Albania, N. Macedonia, Croatia and Montenegro, but less than Slovenia, Hungary, Bulgaria and Romania.

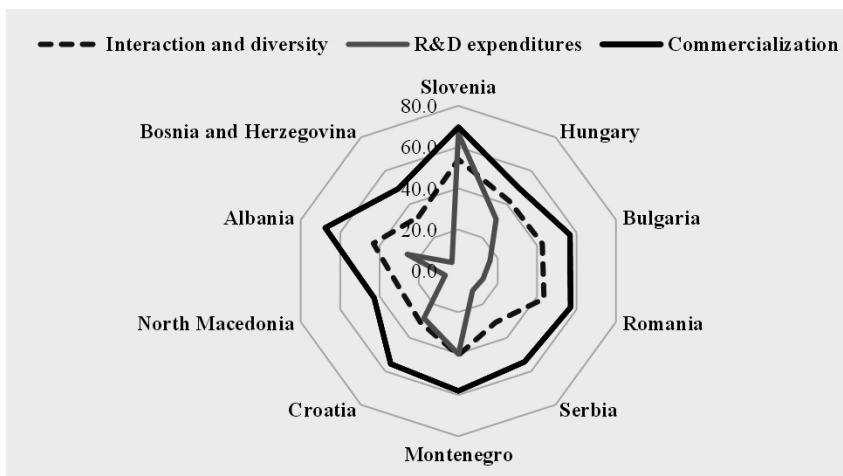
Graph 4: Global ranking of Serbia and neighboring countries in terms of Innovative ability



Source: modified according to WEF, 2019.

Observing the Interaction and Diversity indicator, which consists of four sub-indicators: Diversity of workforce, State of cluster development, International co-inventions and Multistakeholder collaboration for 2019, we get results that show that Slovenia has the highest Interaction and diversity, Romania and Albania, followed by Bulgaria, Hungary, Montenegro, Bosnia and Herzegovina and Croatia, and Serbia is only better than North Macedonia, which is at the back of the observed countries in the region.

Graph 5: Interaction and diversity, expenditures for research and development and commercialization of Serbia and surrounding countries, 2019 – score (0-100)



Source: modified according to WEF, 2019.

Serbia is somewhat better ranked in terms of R&D because it is ahead of North Macedonia and Bosnia and Herzegovina, but still lags behind most countries in the region: Slovenia, Montenegro, Hungary, Croatia, Albania, Bulgaria and Romania.

Table 1: GCI 4.0, Innovation ability and its components (Interaction and diversity, R&D expenditures, Commercialization) for Serbia and surrounding countries, 2019 - score (0-100)

	GCI 4.0	Innovation capability	Interaction and diversity	R&D expenditures	Commercialization
Bosnia and Herzegovina	57.6	28.4	32.5	5.1	49.2
Albania	64.9	29.8	43.2	26.0	67.6
North Macedonia	54.7	31.8	29.4	6.7	42.6
Croatia	61.9	37.8	30.9	28.2	55.6
Montenegro	65.1	38.3	40.8	40.2	58.0
Serbia	57.3	40.2	30.7	11.8	54.4
Romania	60.8	42.3	43.5	12.5	57.0
Bulgaria	64.4	45.0	42.7	16.1	56.7
Hungary	60.9	47.4	41.8	31.0	49.7
Slovenia	70.2	58.2	54.0	66.7	69.6

Source: modified according to WEF, 2019.

The situation is similar with Commercialization (consisting of: Buyer sophistication and Trademark applications) where Serbia is better than Hungary, Bosnia and Herzegovina and North Macedonia, but lags behind Slovenia, Albania, Montenegro, Romania, Bulgaria and Croatia.

4. CONCLUSION

The fourth industrial revolution enabled an increasingly pronounced level of competitiveness of some countries, at the same time causing more and more pronounced development lag of other countries. This is convincingly evidenced by the data on the competitiveness of the countries of the World Economic Forum from 2019, according to which most countries in the world are still far from the target "limit" of competitiveness.

The results of the research showed that seven of the ten most competitive countries (the United States, the Netherlands, Switzerland, Japan, Germany, Sweden and the United Kingdom) in the world in 2019 were also the most innovative economies.

In 2019, the average value of the Global Competitiveness Index of 4.0 countries in Southeast Europe was 60.4 points, and the highest value among the countries of Southeast Europe was recorded by Slovenia (70.2 index points on a scale from 0 to 100), and the lowest Bosnia and Herzegovina (54.7 index points) which shows that competitiveness could be significantly improved in all countries of Southeast Europe, especially those with lower values of the Global Competitiveness Index. Slovenia had the leading position among the selected Southeast European countries in terms of Innovation capability (58.2 index points on a scale from 0 to 100) and Bosnia and Herzegovina had the lowest position (28.4 index points), which shows that there is a significant chance for improving competitiveness in all Southeast European countries, especially those with lower Global Competitiveness Index 4.0 values.

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INOVATIVNA SPOSOBNOST KAO FAKTOR UNAPREĐENJA KONKURENTNOSTI ZEMALJA

Apstrakt: *U radu se razmatra međuzavisnost inovacione sposobnosti privrede i nacionalne konkurentnosti na osnovu podataka iz Globalnog indeksa konkurentnosti 4.0 (GCI 4.0) u 2019. godini na primeru 141 zemlje. Najpre je data analiza međuzavisnosti inovacione sposobnosti i konkurentnosti zemalja koje prednjače po kriterijumu dostignutog nivoa konkurentnosti, a zatim je isti postupak sproveden za grupu zemalja jugoistočne Evrope. Istraživanje je pokazalo da su najinovativnije privrede ujedno i najkonkurentnije zemlje u svetu. Istraživanje je takođe potvrdilo činjenicu da je inovativna sposobnost osnova konkurentnosti Republike Srbije i drugih odabranih zemalja jugoistočne Evrope.*

Ključne reči: *inovativna sposobnost, konkurentnost zemlje, četvrta industrijska revolucija, GCI 4.0.*