

SIGNIFICANCE OF INNOVATION FOR SUSTAINABLE ECONOMIC AND AGRICULTURAL DEVELOPMENT IN THE REPUBLIC OF SERBIA

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Danijela Despotović, Lela Ristić, Miloš Dimitrijević

University of Kragujevac, Faculty of Economics, Kragujevac, Republic of Serbia

Abstract. *Since it is not enough just to achieve economic development, we should strive for sustainable development over a longer period and base it on innovation. It is an extremely important factor of economic and sustainable development. It is particularly important to innovate those economic activities that are crucial for sustainable development and where there are comparative advantages. Because of that, the aim of this paper is to prove that innovation is the key to success and achieving sustainable development. The cluster analysis has highlighted innovative leaders and learners. The Republic of Serbia is a country where agriculture is one of the most important economic activities. In terms of agricultural productivity, it not only lags behind innovative leaders, but also behind other countries of Southeast Europe, distinguished as innovative learners. In addition, in terms of innovation in agriculture, it significantly lags behind other economic activities at the national level, so that special attention should be paid to this issue.*

Key words: *innovation, productivity, sustainable development, economic development, agriculture.*

JEL Classification: 011, 013, 031, Q01

1. INTRODUCTION

In the modern world, it is very difficult to find a unique pattern of progress and the survival of a certain acceptable state for a longer period. That is why this is the time of new ideas, innovations and constant changes.

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Corresponding author: Miloš Dimitrijević

University of Kragujevac, Faculty of Economics, Liceja Kneževnine Srbije 3, 34000 Kragujevac, Serbia

E-mail: mdimitrijevic@kg.ac.rs

Innovation, together with the knowledge that enables it, is an important factor in increasing competitiveness (Dajić, 2017). Innovation is the key for economic development and increasing employment, which means that this is a very important determinant of sustainable economic development (Despotović et al., 2014).

It is not enough to achieve only economic development, but it is necessary for this development to be sustainable over a longer period, with respect to the ecological and social component. Because sustainable development is a multidimensional concept that relies on all three pillars (Giddings et al., 2002): economic, environmental and social.

Historically, the concept of sustainable development has emerged in the context of environmental problems. Interaction of investments in industrialization and agricultural production, exhaustion of natural resources, increase in the population are just some of the elements that are analyzed and based on which proposals are given for mitigation and solving of environmental problems (Miltojević, 2011, p. 641).

In accordance with the previously mentioned concept of sustainable development, the subject of research in this paper is the relationship between innovation and sustainable development in more economically developed and innovative countries (Germany, USA, Switzerland, Taiwan, Sweden, Japan, UK, Korea, Netherlands, Finland) and countries of Southeast Europe (Slovenia, Croatia, Greece, Romania, Bulgaria, Montenegro, Albania, Bosnia and Herzegovina, Serbia, North Macedonia), with a special accent on Serbia.

The aim of the paper is to prove that new ideas and innovations are necessary for a sustainable development of the economy and agriculture, which can be born only with greater investment and dedication to science, research and development.

Based on the subject and aim of the research, a hypothetical framework is defined:

X₁: Innovative countries are developing more rapidly.

X₂: Innovation is a very important factor for the future development of agriculture in the Republic of Serbia.

2. LITERATURE REVIEW

In addition to research and development (R&D), the growth and innovation capacity of the economy depends on the ability to absorb technology and the demand for its production and use (Radošević, 2004, p. 646). Innovative activities include internal and external R&D, capital expenditure, human resources development, market design and development, etc. (Gault, 2018, p. 618).

The most innovative countries are considered innovative leaders, while the least innovative are innovative learners. Despotović et al. (2016) indicate that the most innovative economies are mainly economically developed countries.

In the innovation segment, the Republic of Serbia should further encourage the development of patents, improve the quality of scientific and research institutions, and at the same time eliminate weaknesses in the connection between science and the economy (Savić et al., 2015, p. 74).

The competitiveness of a nation depends on the ability of its economy to innovate and improve (Porter, 2008, p. 159). This is particularly important if it positively reflects the dimensions of sustainable development, which could best be seen if sustainable development indicators are considered, such as Human Development Index (HDI) and Ecological Footprint vs Biocapacity per person (Moran et al., 2008). The ecological footprint should be less than

bioaccumulation. Since this has not been the case in Serbia for years, then there is an ecological deficit (Global Footprint Network, 2018). It is important to point out that HDI (UNDP, 2005) is used as an indicator of sustainable development, and Ecological footprint (Wackernagel et al., 2002; Wackernagel et al., 2005) as an indicator of sustainable consumption. As a minimum, sustainability requires the avoidance of a global overdraft, or the relationship of the Ecological relationship to bioaccumulation greater than 1, thus ≤ 1 is a necessary condition for sustainability (Ceballos et al., 2005).

Although the significance of GDP is inseparable in economic publications, composite indexes that integrate multiple indicators, such as HDI, the Global Competitiveness Index and others, are increasingly used (Gligorić et al., 2018, p. 1254). Legatum Institute Prosperity Index (LPI) is a relatively newer and more comprehensive indicator that uniquely describes the level and dynamics of prosperity in countries around the world (Gligorić et al., 2018), according to which Serbia is 56th (Legatum Institute, 2018).

Serbia needs to adapt the development strategy to the new development and technological paradigm in order to establish an innovative environment (Bošnjak, 2005a, p. 33). A key element for establishing a more functional interaction between the R&D institutions and the economy is the establishment of a balanced program of long-term technological development that will be complementary to strategic development priorities, especially in the context of integration processes in the European Union (Jakopin, 2011, p. 85). In addition, the acceptance of the new concept of creating and maintaining competitive advantages based on scientific knowledge and technological development is necessary (Bošnjak, 2005b, p. 131).

As the most important analytical framework for expressing the achieved level of economy innovation is using the Global Innovation Index (GII) and the 12th pillar of the Global Competitiveness Index (GCI) (Despotović et al., 2014). In the research of innovation activities, the elements of the 12th Pillar of the GCI are used (Innovation as an innovation indicator): Capacity for innovation, Quality of scientific-research institutions, R&D costs of the company, University-industry cooperation in R&D, Government procurement of advanced technology products, Availability of scientists and engineers per million population (World Economic Forum, 2013, p. 51; Krstić et al., 2019, p. 20).

Innovation is considered the main driver of growth. The global median of the pillar Innovative Capabilities is 36 (out of 100), which is by far the lowest score in 12th pillars of GCI. In 77 countries of 140 Innovation is the weakest pillar. The results show that there are only a few innovation forces in the world, i.e. super innovators whose score is above 80: Germany, USA, Switzerland and Taiwan (China) (Schwab, 2018, p. 7). According to an innovative system based on business sophistication and innovative capability, Europe and North America are predominant (Schwab, 2018, p. 25).

Of the 140 analyzed countries according to the latest Report of the World Economic Forum in 2018, and to the 12th pillar of the GCI, innovation leading countries are: Germany (87.5), USA (86.5), Switzerland (82.1), Taiwan (China) (80.8), Sweden (79.8), Japan (79.3), UK (79.2), Korea (78.2), Netherlands (77.5) 76.3), France (76.1), Denmark (75.4), Canada (75), Singapore (75), Austria (74.3); while at the bottom of the rankings are: Angola (16.8), Congo (18.8), Haiti (20.3) Cape Verde (21.4), Chad (21.6), Liberia (22), Eswatini (22.7), Yemen (22.8), Lesotho (23.7), Burkina Faso (24.9), Zimbabwe (25.5), Mauritania (25.5), Ethiopia (26.5), Benin (26.7), Kyrgyz Republic (26.7). The change in relation to the previous report came for Serbia. It recorded growth in terms of innovation and is now 56th (39.7) (Schwab, 2018).

According to the latest Report GII 2018, Switzerland ranks first, followed by the Netherlands, Sweden, UK, Singapore, USA, Finland, Denmark, Germany, Ireland (WIPO, 2018a, p. 17). The economies which realize at least 10% above the average GDP of other countries are called innovators - achieve innovation (WIPO, 2018a, p. 34). In 2018, among the innovators according to this criterion, Serbia was included (WIPO, 2018a, p. 35). Serbia occupies 57th position according to the global Innovation Efficiency Ratio (which is a progress from the 67th position in 2017 and from 70th place in 2016), which is 11th place among 34 countries with upper-middle income. Serbia is in the ranking of 39 countries in Europe on the 35th place. Compared with the countries of Europe, Serbia is below the average according to the GII (WIPO, 2018b). Therefore, Serbia is a moderate innovator (European Commission, 2018).

From the point of view of innovation, it is important to point out that one country's economic policy should be based on the comparative advantages of the country. It is visible that agriculture and food industry in Serbia are very important in that context (Ančić et al., 2014, p. 306). Accordingly, a strategic commitment is needed to make agriculture one of the important economic sectors based on knowledge and innovation (Ristić, 2016), in order to transform the comparative advantages of agriculture into competitive ones. Creativity and innovation are considered new approaches in the field of rural and agribusiness development (Kvrgić & Ristić, 2018, p. 35).

Modern agriculture becomes the area of information technology use (Praća et al., 2017, p. 43). At the same time, sustainable agriculture is based on the use of technologies that maximize productivity and minimize negative effects on natural resources (land, water and biodiversity) and human resources (rural population and consumers) (Praća et al., 2017, p. 44). The key questions in the field of innovation are why and when it appears, as well as by whom it is initiated. The need for change is an essential component, as well as population growth and environmental change (Van der Veen, 2010, p. 5), which makes innovation in agriculture different from other sectors, with the fact that the production of sufficient quantity of quality of food appears as an extremely important global issue.

3. EMPIRICAL RESEARCH

3.1. Research Methodology

The Statistical program SPSS was used for processing and analysis of collected data. The collected data were analyzed in two levels.

The first level of analysis is the cluster of analyzes of selected countries for the period 2007-2017. For the selection of the innovation indicators, the GCI is used which is divided into 12 pillars, arranged in three subindices. For the innovation of the economy, the most significant are the 11th and 12th pillar (innovation and business sophistication) as the pillars of the third subindex (innovation and sophistication) that is crucial for country innovation (Schwab, 2017, p. 12) (Fig. 1).

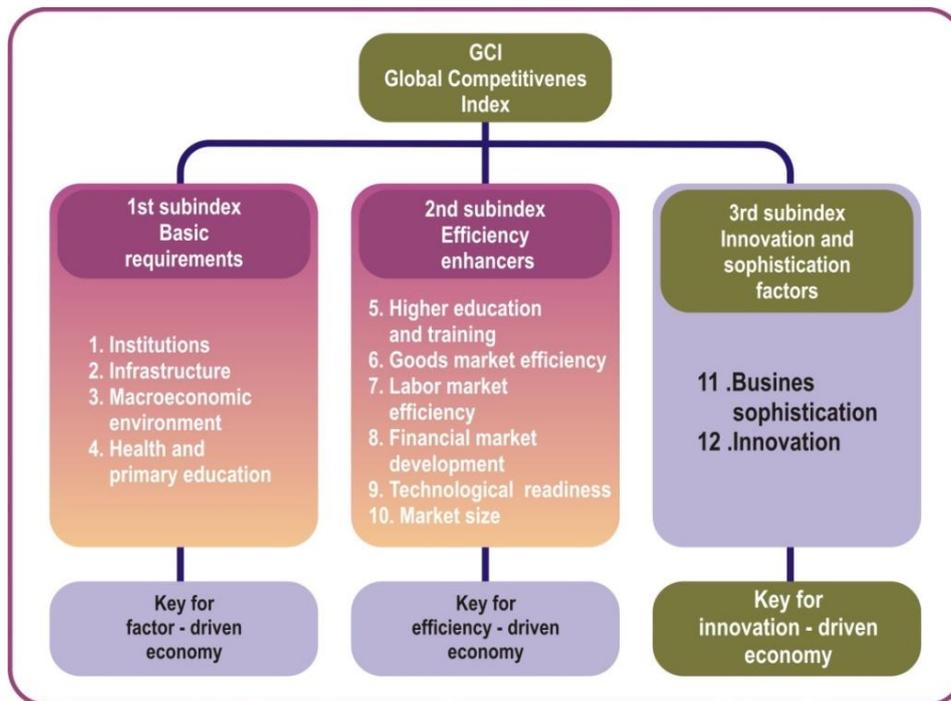


Fig. 1 GCI framework structure

Source: Schwab, 2017, p. 12.

The aim of this analysis is to indicate the differences between innovative leaders and innovative learners (Despotović et al., 2016). The innovative leaders have been selected based on the latest Report of the World Economic Forum 2018, according to the 12th pillar of the GCI (Schwab, 2018). The innovative learners are countries of Southeastern Europe. There are 10 countries in both categories. By multivariate linear regression, the influence of innovation parameters on economic development (measured by GDP per capita as a still significant indicator in economic publications) has been explored (Gligorić et al., 2018, p. 1254). Many authors, such as Savić et al. (2015) use the GII, GCI and GDPpc PPP to explore innovation as a potential for growth. Despotović et al. (2016) analyzed innovation using the 12th pillar of GCI and their impact on GDP per capita, which was also useful for this research. In this paper, comparison was made with innovative leaders and learners. The analysis also includes the HDI, which is a wider measure and a better indicator of sustainable development, as Stiglitz points out (2013). Secondary data for this level of analysis were collected from: World Economic Forum, UNCTADstat and United Nations Development Programme (UNDP) (Fig. 2).

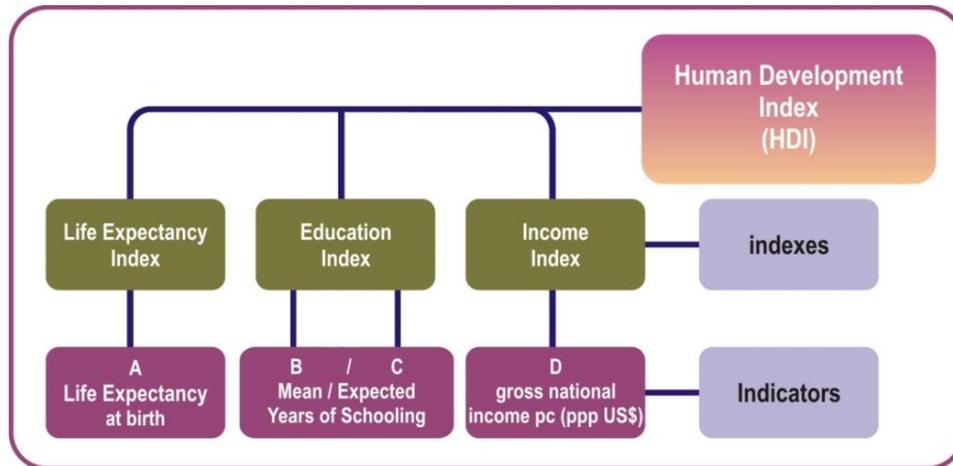


Fig. 2 HDI framework structure

Source: UNDP, 2017

The second level of analysis in this paper was used to examine statistically significant differences between the observed variables, using appropriate statistical tests. Firstly, the Gross Value Added (GVA) generated by agriculture (measured as percent of GDP) is compared with the other economic activities by using data of the Statistical Office of the Republic of Serbia (National Accounts), for the period 2007-2017. Subsequently, a comparison of productivity in the agriculture of the Republic of Serbia was made in relation to other countries of Southeast Europe and the innovative leaders. The GVA of agriculture per worker was used as a measure of agricultural productivity because information technology (IT) has a direct impact on productivity in agriculture, as pointed out by Jurjević et al. (2019). This further leads to the ultimate goal, which is an increase in the profits of agricultural producers and the sustainable development of the agrarian sector.

Serbian agriculture significantly lags behind the developed European countries (Jurjević et al., 2019, p. 45), so it is very important to pay attention to the innovations of Serbian agriculture. Analysis of technological development, production and use of new technologies, efficiency of R&D systems and realization of scientific-technological policies have traditionally focused on input indicators (R&D costs, human resources, etc.) and outcome indicators - results (patents, etc.), whose measureability is standardized and widely used, over the last decades (OECD, 2005). Despite constraints, input and output indicators (because of statistical monitoring) continue to be a significant source of information about the content and trends of technological development. The measuring of general innovation of a particular economy is limited by using only quantitative data (Kutlača&Semenčenko, 2015). Bearing all this in mind, in this paper gross domestic expenditures for R&D in the field of science were used as an indicator of input. For the output indicator, the inventions and patents used for the first time in practice (according to the scientific field), were used, in order to pay special attention on agricultural science. In addition, gross domestic expenditures (for R&D by activity) were observed. Secondary data for this level of analysis were collected from Statistical Office of the Republic of Serbia - Science, Technology and Innovation - Research and Development.

3.2. Research Results

3.2.1. Cluster and Regression Analysis

Cluster analysis¹ in this paper is based on the parameters of innovation for the 20 selected countries in the period 2007-2017. In the process of grouping the hierarchical clustering method, the countries were grouped according to similarities, based on the selected parameters. The Dendrogram showed that the first two clusters included 10 countries that were singled out as innovative leaders (UK, Netherlands, Germany, Taiwan, Korea, USA, Finland, Switzerland, Japan, Sweden), and in the other two were countries of Southeast Europe - SEE (Slovenia, Croatia, Greece, Romania, Bulgaria, Montenegro, Albania, Bosnia and Herzegovina, Serbia, North Macedonia). Slovenia is the only one of the SEE countries that has been completely isolated within a single cluster, which means it is the leader in innovation in SEE. Nevertheless, the differences between countries in each of the four clusters are not large. Observed by the level of separation between clusters of less than five, there is a connection between the first two clusters and the other two clusters. At the level of the difference of more than five, first two clusters of innovative leaders are merged into one and the other two clusters of countries of Southeast Europe also in one. Therefore, we get two clusters, innovative leaders and innovative learners. There is a big difference between them. That is why in the further analysis they are separately examined i.e. the impact of innovation on their economic development using multiple regression.

The assumption about the size of the sample ($N > 50 + 8 * m$) was fulfilled (Palant, 2009), where m is the number of independent variables ($110 > 50 + 8 * 2$).

Table 1 Importance of Innovation for Economic Development

	Observed Countries of Southeast Europe			Observed Innovative Leaders Countries		
	B	T	Sig (p)	B	t	Sig (p)
Innovation (12th GCI)	-21.119	-.010	.992	11004.339	2.542	.012**
Business Sophistication (11th GCI)	17479.17	7.238	.000*	28089.287	5.694	.000*

Note: The value is significant at 1% (*), 5% (^), and 10% (***) confidence level

Source: Authors' research

In both cases (Table 1) is the appropriate model ($p = .000$). In addition, the assumption of multicollinearity is satisfied, so the model is suitable for application. In the case of Southeast Europe, there is no impact of innovation on economic development, but only business sophistication as one part of the subindex of innovation and sophistication. In the case of innovative leaders, innovation and business sophistication have an impact on economic development, which suggests that innovation has a major impact on economic development. It means that more innovative countries are economically developed. On the other hand, the countries of Southeast Europe need to increase their innovation to reach higher levels of economic development. On this basis, the first hypothesis is proven.

¹ This research results are not tabulated for reasons of space.

Table 2 Importance of Innovation for Sustainable Development

	Observed Countries of Southeast Europe			Observed Innovative Leaders Countries		
	B	t	Sig (p)	B	t	Sig (p)
Innovation (12th GCI)	.051	3.864	.000*	.012	2.260	.026**
Business Sophistication (11th GCI)	.072	5.033	.000*	.015	2.220	.029**

Note: The value is significant at 1% (*), 5% (°), and 10% (***) confidence level

Source: Authors' research

In both cases (Table 2) is the appropriate model ($p=.000$). In addition, the assumption of multicollinearity is satisfied. Innovation has a full impact on sustainable development, both in the case of the countries of Southeast Europe, as well as in the countries of innovative leaders (here Taiwan is omitted from the sample, because of the undisclosed HDI data from China). This means that the importance of innovation is even greater for sustainable development, where sustainable development is a broader concept than economic development (Stiglic, 2013, p. 316).

Innovation and business sophistication can be combined into one factor, and by simple linear regression their impact on economic and sustainable development can be examined.

Table 3 Factor of Innovation and Sophistication (3rd subindex of GCI)

	Economic Growth (GDP per capita)			Sustainable Development (HDI)		
	B	T	Sig (p)	B	T	Sig (p)
Observed Countries of Southeast Europe	16613.160	10.635	.000*	.122	13.896	.000*
Observed Innovative Leaders Countries	37703.582	9.017	.000*	.027	4.935	.000*

Note: The value is significant at 1% (*), 5% (°), and 10% (***) confidence level

Source: Authors' research

In both cases in the Table 3 is the appropriate model ($p=.000$). The factor of innovation and sophistication has an impact on the economic and sustainable development of the observed countries.

3.2.2. Statistical Tests

For the second level of analysis, Kolmogorov-Smirnov and Shapiro-Wilk tests for the distribution normality found that no indicators have a normal distribution, so nonparametric techniques are needed.

Kruskal-Wallis test was used to determine the contribution of agriculture to the economic development of the Republic of Serbia in relation to other economic activities, as well as the state of Serbian agriculture in relation to the countries of Southeast Europe and the economically developed countries.

Table 4 Importance of Agriculture for Economic Development and Agricultural Productivity

GVA		Agriculture Value Added per worker		
Chi-Square	222.042	201.099		
Asymp. Sig. (p)	p=.000*	p=.000*		
Economic Activities	Mean rank	Country	Mean rank	
Agriculture	194.45	Serbia	32.45	
Mining	62.86	Montenegro	125.55	
Manufacturing Industry	226.00	North Macedonia	50.91	
Electricity, Gas and Steam Supply	111.68	Albania	15.82	
Water Supply	50.86	B&H	32.91	
Construction	155.14	Croatia	75.64	
Trade	210.95	Bulgaria	66.09	
Traffic	164.27	Romania	9.36	
Accommodation Services and Meals	43.00	Slovenia	77.36	
Information and Communication	158.23	Greece	100.18	
Financial Activities	99.59	Germany	147.09	
Real Estate Business	206.59	USA	196.80	
Professional, Scientific, Innovation and Technical Activities	124.23	Switzerland	130.27	
Administrative and Support Service Activities	78.82	Sweden	188.82	
State Administration	123.14	Japan	123.30	
Education	131.09	UK	160.36	
Health and Social Protection	174.64	Korea	95.55	
Art, Entertainment and Recreation	40.05	Netherlands	185.00	
Other Service Activities	57.41	Finland	172.73	
Activity of the Household as an employer	17.00			
The Activity of Extraterritorial Organizations and Bodies	6.00			

Note: The value is significant at 1% (*), 5% (*), and 10% (***) confidence level
(The analysis excluded Taiwan because of the lack of separate data from China)

Source: Authors' research

In the observed period 2007-2017, it is visible that agriculture has a significant impact on the economic development in the Republic of Serbia (Table 4). From the economic activities classified in the 21 group, agriculture is on the 4th place, behind the manufacturing industry, trade and real estate business. On the other hand, productivity in the agriculture of the Republic of Serbia not only lags behind the more developed countries, but also behind many countries of Southeast Europe. Behind Serbia are only Albania and Romania. Because of the fact that agriculture contributes significantly to the economic development of Serbia, productivity should be increased primarily in agriculture by introducing new technologies and innovations, because they have direct impact on productivity in agriculture (Jurjević et al., 2019). This proves the second hypothesis of this paper.

Simple linear regression has determined that gross domestic expenditure on R&D has an impact on inventions and patents that were firstly used in practice (Table 5), according to the scientific field ($p = .000$), which means that more should be invested in agricultural science. Kruskal-Wallis test was used to determine the ratio of investments in agricultural science in relation to other sciences in the Republic of Serbia, in terms of an indicator distribution that is not normal.

In the observed period (2007-2017) investing in R&D in Agricultural Sciences (Table 5) was behind the Natural, Engineering and Social Sciences, and in front of Medical and Humanistic Sciences. Agricultural Sciences according to inventions and patents have

surpassed Social Sciences, from which it is concluded that Agricultural Science has achieved better results than the level investment for R&D.

Table 5 Research and Development Vs Inventions and Patents (according to the Scientific Fields in the Republic of Serbia)

	Research & Development	Inventions and Patents
Chi-Square	46.520	36.012
Asymp. Sig. (p)	.000*	.000*
Scientific Fields	Mean rank	Mean rank
Natural Sciences	51.64	37.59
Engineering Technology	53.95	58.50
Medical Sciences and Health Sciences	18.91	31.09
Agricultural Science	20.68	35.64
Social Science	37.73	24.18
Humanities	13.30	14.00

Note: The value is significant at 1% (*), 5% (°), and 10% (***) confidence level

Source: Authors' research

The Kruskal-Wallis test found that the gross domestic R&D expenditures by activities, ranging from 71 business activities, places agriculture on the 34th place ($p = .000$)². This is also insufficient because agriculture is of great importance for the economic development of the Republic of Serbia. Namely, more resources should be invested for R&D in agriculture, as well as in Agricultural Science, especially for the launch of innovations.

The analysis of business subjects according to innovations and business sectors is also very important for the Republic of Serbia.

Table 6 Business subjects towards innovation and sectors of activity in the Republic of Serbia

	Business subjects
Chi-Square	28.427
Asymp. Sig. (p)	.019**
Business Sectors	Mean rank
Agriculture, Forestry and Fisheries	24.25
Mining	18.63
Manufacturing Industry	49.38
Supply of Electricity, Gas and Steam	48.88
Water Supply and Wastewater Management	19.75
Construction	25.88
Wholesale and Retail Trade and Repair of Motor Vehicles	32.63
Traffic and Storage	21.25
Accommodation Services and Meals	30.50
Information and Communication	48.38
Financial Activities and Insurance	42.50
Real Estate Business	10.25
Professional, Scientific, Innovation and Technical Activities	43.88
Administrative and Support Service Activities	38.88
Health and Social Protection	22.17
Art, Entertainment and Recreation	22.17

Note: The value is significant at 1% (*), 5% (°), and 10% (***) confidence level

Source: Authors' research

² This research results are not tabulated for reasons of space.

Businesses subjects according to innovation in agriculture are on the 10th place in comparison with the other sectors (total 16), and it is again insufficient because agriculture is at the top in terms of contribution to economic development.

4. CONCLUSION

In addition to the impact on economic development, innovation has an even more pronounced impact on sustainable development. The influence of innovation on economic development in the innovator countries is visible, and it makes them economically developed countries, unlike the countries of Southeast Europe. This proves the first hypothesis that more innovative countries are the economically developed ones.

Given that the influence of innovation on the economic development in the countries of Southeast Europe is missing, where only Slovenia is distinguished as an innovative leader, the economic lagging of these countries behind more innovative and at the same time economically developed countries is visible. It is necessary to approach this problem carefully, to stop in the long term even greater lag and negative reflection on sustainable development.

For the future research, it is important to analyze how to increase the innovation of Southeast Europe, and analyze all elements of the 12th Pillar of GCI as well as GII, and their impact on economic and the sustainable development of different countries. The analysis should include the relationship between R&D costs, the inventions and patents of the chosen countries, as well as their comparison with economically developed countries.

Agriculture in the Republic of Serbia has many natural resources and significant contribution to GDP, employment and exports. Namely, agriculture is one of the key economic activities for the Serbian economy, but it is lagging behind in terms of productivity. In addition, there is insufficient investment in agriculture and R&D in agricultural sciences. Thereby, agricultural businesses lag far behind other sectors of the economy in terms of innovation. Considering that many authors emphasize the great importance of introducing modern technologies for increasing productivity in agriculture, it could be concluded that insufficient innovation is one of the important causes of the lagging of agricultural productivity in the Republic of Serbia, not only behind more developed countries, but also behind many countries in the region. Therefore, it is important to introduce innovations in agricultural production process. It could have a very positive impact on productivity growth and sustainable development of the agri-food sector, which is of great importance for economic development of the Republic of Serbia. Accordingly, innovations are very important factors for the future development of agriculture in the Republic of Serbia. This conclusion proves the second hypothesis of this paper and it requires higher investments in agricultural R&D, as well as other accompanying efforts at macro and micro levels.

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ZNAČAJ INOVATIVNOSTI ZA ODRŽIVI RAZVOJ PRIVREDE I POLJOPRIVREDE U REPUBLICI SRBIJI

S obzirom da nije dovoljno samo ostvariti ekonomski razvoj, već održivi razvoj u dužem vremenskom periodu, neophodno je težiti inovativnosti, koja je izuzetno važan faktor ekonomskog rasta i održivog razvoja. Pritom je posebno važno inovirati one privredne delatnosti koje su ključne za privredni razvoj i gde postoje komparativne prednosti. U skladu sa navedenim, cilj ovog rada jeste dokazati da su inovacije ključ uspeha i ostvarivanja održivog razvoja. Klaster analizom su izdvojeni tzv. inovativni lideri i učenici. Republika Srbija je prikazana kao zemlja gde je poljoprivreda jedna od značajnih privrednih delatnosti. I pored toga, po produktivnosti u poljoprivredi ne samo da zaostaje za inovativnim liderima, već i za drugim zemljama Jugoistočne Evrope koje su se izdvojile kao inovativni učenici. Takođe, po inovativnosti u poljoprivredi značajno zaostaje i za drugim privrednim delatnostima na nacionalnom nivou, zbog čega bi posebnu pažnju trebalo posvetiti ovom pitanju.

Ključne reči: *inovativnost, produktivnost, održivi razvoj, privredni razvoj, poljoprivreda.*