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DIGITAL INNOVATIONS IN THE FUNCTION OF THE ECONOMIC SERBIAN DEVELOPMENT

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Abstract: Digital innovations play more and more important role in everyday life of people and of national economic development. They became one of the main factors of maintaining the competitiveness and developing in contemporary conditions. Digital innovations are related on the usage of the new technologies, processes and business patterns in the aim of improving the business and efficiency increasing. Serbia, like many other countries, faces many different obstacles in its economic development. In that sense, digital innovations offer great possibility for economic growth promoting and competitiveness strengthening. However, as well as many other countries in development, Serbia has several obstacles of primary digital progress in its economy. The purpose of this paper is to point out the condition of digital innovations, as well as, the preposition of the measures and instruments for the support of digital innovations development in Serbia.

Key Words: innovation, education, digital, development

1. INTRODUCTION

Digital innovations refer to the usage of technical solutions in different parts of society, business and industry, in the aim of improving the existing services, products and processes, or generation of the totally new possibilities and usages. Specifically speaking, digital innovations involve the usage of contemporary technologies such as artificial intelligence, machine learning, block chain, internet things, virtual and augmented reality, 3D press, and analytics of great data, robots and other technologies.

Digital discoveries enable the new goods production and services, which can revolutionize the market and make completely new ways of business. Digital innovations are of vital importance, as well, for overcoming the social matters and difficulties, such as: climatic changes, poverty and inequality. For example, the usage of digital technology can help in decreasing the greenhouse gases emission and improvement the energetic efficiency.

Digital progress revolutionized the way which the economics around the world are developing and expanding. Considering that the digital technologies became vital component of every day people's life, they became the key characteristic of everyday economy. Digital break through creates new chances and usages, increases the productivity and creates new work places, which can have favorable impact on national economy.

One of the primary ways the digital progress influences the national economy is increasing the efficiency in the production and business. Digital technologies such as, Internet, computer programs, artificial intelligences, robots and other technologies can increase the productivity, speed up the productive processes and decrease productive and business expanses. For example, the introduction of the smart equipment, robots and 3D press, can minimize demand for the manpower and increase the efficiency productivity.

Digital break troughs enable, as well, creating the new goods and services which, other ways, would be difficult or even impossible to provide. For example, mobile phone applications, software platforms and online storefronts, are the new business sectors which evolved thanks to digital innovations. This new goods and services, also, can contribute the demand increasing, creating working positions and favorably impact on economy.

Digital innovations, give potential for developing of new markets, not only the national, but the global level as well. Online platforms enable to the companies to approach the audience around the world, while, at the same time, decrease the expanses of marketing initiatives. This opens new potentials for goods and services selling and distribution, which can contribute the development of national economy.

Digital innovations can have favorable impact on working positions, as well. While some technologies can replace people, the other can create new working positions which require expertise in the usage of new technology. Besides that, digital development can offer more flexible way of employment, such as online work, which can increase productivity and improve working surroundings.

It is important to remember that the innovations are multiple process which involve several sectors and actors, including academics, public and commercial sector and social groups. Therefore, the synergy between several actors is of essential importance, to guarantee that the innovative politics and initiatives will conduct the best possible way. Therefore, the vital importance is to approach the digital development carefully and to take in account their possible

implementation. The vital importance is to create regulatory frames which will ensure the safety and protection of the users, and educate publicity about the advantages and difficulties of digital progress.

2. THE CONDITION OF DIGITAL INNOVATIONS IN SERBIA

Serbia is one of the countries in developing, which means that the digital progress in this country is just starting to produce and use to the considering level. However, in the last few years, Serbia marks certain successes in the field of digital technologies and inventions.

One of the primary movement of digital innovations in Serbia are the young brilliant individuals, which more and more gravitate in IT industry and create companies. In the last few years, in Serbia, a great number of startups were formed, in the area of informational technologies, which evidence the potential of the country in this industry. Besides that, the government of Serbia, works, as well, on the encouraging developing of digital technologies in the country. The office for informational technologies and electronic administration was founded, which works with the growth of digital economy and e-administration. Serbia tends to attract global investors in this field and to help the growth of technological companies.[1]

In the field of digital innovations, Serbia especially outstands in creating the software solutions. Many companies from Serbia are concentrated on the providing software solutions for specialized demands, for domestic and foreign clients, as well. Besides that, the revolutionized products in the field of artificial intelligences, robots and IT are produced.

However, in spite of the growth, there are further significant problems and weaknesses of the digital technologies development in Serbia. One of the main problems is the missing of competitive personnel in this field. There are the challenges with the infrastructure and internet connectivity, which could interfere the growth of digital technologies in the country.[2]

Serbia has the aim to build itself as the center of digital innovations in this field, but more over it has a lot of potential for developing. With the clever individuals and the help of government, Serbia has potential to become an outstanding player in the field of Informational Technologies and digital innovations.

However, one more obstacle for development of digital technologies in Serbia is missing of finances. Although, there are different efforts and programs which give financial support and help to the startups in this field, the missing of finances and investments could distract the growth and development of many innovative ideas and undertaking. Besides that, there is missing of corporation and connectivity between local entrepreneurs and other actors in the field of informational technologies in the region. Missing of collaboration and connectivity could distract exchange of ideas, resources and competitiveness, which could be precious for the current growth of digital innovations in the country.[3]

On the other side, there are different projects which tend to encourage corporation and connectivity in this field. The example for that is the Startit organization, which gather Entrepreneurs and IT experts from the whole country and carry on numerous events and initiatives in order to help their growth.

As far as the infrastructure is concerned, although the Internet approach in Serbia is considerably developed, the speeds are still low, comparing the other surrounding counties and worldwide. This could represent the difficulty for development of digital inventions which demands high speeds of data transmission.

When we speak about the usage of digital technology in the public sector, Serbia, also, made a few steps forward. There are different programs which do the digitalization and modernization of the state services, such as EAdministration. However, there are still room for further improvements in this field.

Although, there are different obstacles and missings, Serbia tends to establish itself as the center of digital innovations in this field. With the great individuals, government help, and numerous programs which encourage corporation and connectivity in this field, Serbia has a great potential to become featured player in the field of information technologies and digital innovations.[4]

According to the study, Digital 2021 Serbia, which was done by Hootsuite and We are social, in January of 2021. There were 7,05 millions of internet users, in Serbia, which is 98 percent of the total population in the country. This statistics shows that the majority of the Serbian population is connected with Internet, which offers correspondent base for digital technologies.

According to the same data, in January 2021, there were 5,05 millions of active users in Serbia, which is increase of 7,6 % in relation the last year. These data suggest that the social networks are very popular in Serbia, which can be useful for the development of digital innovations and business in this sector.

According to the study which was done by Finindexable, Belgrade takes 62. Position on the city list with the best startup ecosystem in the world. According this analysis, Belgrade has 143 active startups. This research reveals that Belgrade has significant potential for the digital innovations growth and technical startups as well.[5]

According „Startup Genome 2020 global Startup Ecosystem Report“, Belgrade takes 72. position in the list of cities with the biggest startup surroundings in the world. According this research, Belgrade has between 400 and 600 technological companies. These data reveal that Belgrade has increasing startup ecosystem which has capability to bloom and to be concurrent on the global level.

According to the study of „Global Talent Competitiveness Index 2020“, which was done by INSEAD, Serbia takes

85. place from 132 countries, on the list of global competitiveness talents. This study investigate the quality of education, talent development and the capacity of the country to recruit and keep the talents. This data reveals that Serbia has enough room for development in the field of education quality and recruitment of talents in the field of digital innovativity.

According the study „Global Innovation Index 2020“, which was carried out by the World organization for intellectual property (WIPO), Cornell Univerzitet and INSEAD, Serbia takes 67. place from 131 countries on the list of global innovations.

3. THE ANALYZE OF SUCCESFUL EXAMPLES OF DIGITAL INNOVATIONS IN SERBIA

Digital innovations are the methods, technologies and products which are implemented in digital area so that we could produce new valubles and improve the life quality. There are numerous examples of successful digital inventions,in Serbia, which were developed in the last few years.

One of the most outstanding examples of succesful digital inventions in Serbia is business „Nordeus“, which produces the games. Their most popular game is „Top Eleven“, which has over 200 millions players around the world. This play earned multiple recognitions for its quality, uniqueness and genius. Nordeus succeeded to maintain itself as a lider in the mobile games industry and to develop big net of dedicated consumers around the world.

One more example of succesful digital innovativity in Serbia is the company „Seven Bridges“, which creates software for genetic analyze . their method is particulary important in medical researches and makes possible fast and accurate investigation of genetic material. Seven Bridges succeeded to attract great inters of investitirs and their software is employed in big reseaching institutes world wide. [6]

The third example of successful digital invention in serbia is the platform Trizma Neuro“, which deals with analyzes of brain data and their usage in the field of marketing. Their program enables following brain activity during reading the marketing material, which helps the organizations to understand better their buyers preferences. Trizma Nero succeed to attract important buyers such as Coca –Cola and Heineken, and their technology is used around the world. The fourth example of successful digital invention in Serbia is Business “Quantox”, which produces software for etrading. Its system offers unique and efficient work online business, and their clients involve some of the best platforms for e-trading in Europe and USA. Quantox succeeded to establish as a lider in the field of e-trading and to attract important investment.

These examples of successful digital innovations in Serbia illustrate that there are great potential l for development of technology and digital goods in the country. With the corporation of investors and developing agencies, Serbia can become important participant in digital market and to attract important technological companies to invest in the country. Besides that, Successful examples of digital innovations can motivate new startups and entrepreneurs to start their initiatives and to contribute the growth and development of digital economy in Serbia. [7]

It is important to mention that digital innovations success in Serbia is not just the product of individual efforts of entrepreneurs, but the huge help which they got from the state and other organizations as well. For example, Initiative support for the creative companies is developed in the frame of initiative “Serbia 2025”, which offers financial help and couching for the development of new ideas and products. There is the idea building the technological park in Belgrade, which would enable the entrepreneurs approach to the contemporary infrastructure and collective resources for their innovations development.

Successful examples of digital innovations in Serbia show that the nation has important potential for growth of digital economy and that it can attract important investments in this sector. Main determinants of success are the government support, financial support and mentorship for entrepreneurs, as well as collective efforts of all players in the ecosystem of digital innovations. If this efforts continue, Serbia might become important participant on global digital market. [8] However, there are different problems we are facing in order to continue development of digital economy in Serbia. One of this matters is the missing of competitive working manpower in the sector of technology, which could brake creativity of new projects and products. Therefore, the vital importance is to invest in education and development of professional skills in order to create qualified manpower for digital sector.

There fewer investors in Serbia in early phase than in other countries, which makes it difficult the financing of fresh ideas and business. In order to solve this difficulty, it is necessary to provide more favorable circumstances for investment , in early phase ,as well as , to increase number of investors in this sector.

Than, we have the challenge of infrastructure, especially in smaller cities and rural regions, which can limit the approach of technology and digital services for individuals and companies. In order to overcome this, it is of vital importance to invest in the development of infrastructure and digital connections to guarantee that everyone has the approach of technology and digital services.

With all this problems, Serbia has significant potential for continuation the growth and development of digital economy. Successful examples of digital innovations in the country illustrate that the skills, professionalism and creativity are necessary to produce supreme goods and services. With the suitable support and investments, Serbia can become great participant in global digital sector and to maintain important economic development.

4. OBSTACLES IN THE DEVELOPMENT OF DIGITAL INNOVATIONS IN SERBIA

Serbia is the nation which has important potential for developing of digital technologies, but there are different obstacles which limit their fast development and usage. This limits are generally connected with infrastructure, education, financing and laws.

One of the primary obstacles is the absence of fast and consistent internet connection around the country. Although the fast internet connection available in the cities, rural regions usually have slow and inconsistent internet, which can significantly limit the growth of digital innovations. One more example in this aspect is the lack of investment in infrastructure, such as development of 5G network, which can limit the potential for innovations which require high speed of the data transmission.[9]

One more obstacle is inadequate knowledge and skills in digital technology. Although, there are increasing demand for experts in the field of programming, data analyze and other digital skills, educational system in Serbia is not adequate coordinated with this demands. Many young people leave nation in order to gain this abilities, and the missing of professionals impact the competitiveness of Serbian companies in digital world. Financial limits can interfere development of digital discovery. The missing of capital for creating the business, as well as the missing of investors which could be ready to invest in creative initiatives, break the development of new technology and services. Besides that, financial means in the field of digital technologies are not correctly directed on researches and development, but it is usually spent on buying previously existing solutions from the other countries.

Some of legislative and administrative structures break as well, development of digital technologies in Serbia. For example, legislation which includes the data protection and privacy, sometimes treat the way which is not friendly toward new technology, which can slow down innovations and creating new services. Besides that, the procedure of obtaining a permissions and licenses for new technologies can be difficult and in long terms, which in addition brake innovations and investment in this field.

The obstacles for the growth of digital innovations in Serbia are numerous and different, but the most of them can be solved by enough investment in infrastructure, education and money, as well as by the change of rules and administrative procedures. For example, the vital importance is to invest in creation the fast and robust internet network world wide, which could enable more significant growth of digital progress in rural regions. The educational system should modify as well in accordance with the demands of digital economy, including creation of new courses and programs which will prepare young people for work in this field. [10]

We can adopt legislation and administration procedure to eliminate bureaucracy and speed up procedure for permission obtaining and license for the new technology. It would be good, as well, to change the data protection and privacy laws in order to stimulate innovations and services creation.

Obstacles got digital innovations growth in Serbia are multiply, but they can be solved with enough investment in infrastructure, education and money, as well as changes of rules and administrative procedures. That would make possible creation of new ideal conditions for development of new technologies and services, which would contribute growth of Serbian economy and it would encourage competitiveness on global digital market. Besides that, it is crucial that state and business sector work together to build innovative ecosystem which will encourage creation of new technologies and services. That could include development of incubators and accelerators for entrepreneurs, keeping competition for creative ideas, as well as the help for opening new research institutions in the field of digital technology.

The other important element is creation of surroundings which will encourage innovations and risk taking in the company. This can include support to the culture of entrepreneurship and innovations, as well as structures providing for startups promoting and innovative companies. The state could create favorable surroundings for investment in digital technology, such as subventions, tax reduce and other encouragement. [11]

It is crucial to keep in mind that for the digital innovations development success in Serbia will be necessary long-term strategy and persistence in challenges facing. But, if it is possible to overcome obstacles which brake development of digital innovations in Serbia, that could bring towards creation of new chances for economy growth and progress, as well as the new working positions opening and improvement of population life.

Besides previous ascertainment, it should point out that Serbia has already shown signs in improving in the digital technology area. For example, Serbia is one of the primary countries in this field which changed electronic trading laws and digital signature, which is essential step towards making favorable surroundings for digital economy growth. There are successful companies in Serbia, also, in the software sector, e-trading, financy and other digital technologies.

There are some initiatives for limits removing which brake digital technologies development in Serbia. For example, Serbian government established national strategy for artificial intelligenc edevelopment till 2025. Which should give directions for development of this subject in Serbia. There are some non governmental organizations and academic institutions which deal with education in the area of digital technology and they help the young etrepreneurs.

In spite of this promising progres, it is neccessary to do more to overcome obstacles which interfere the growth of digital innovations in Serbia. It is of vital importance that the state and Business sector make more in order to improve circumstances for development of digital technologies and to establish innvetive ecosystem which will

stimulate growth and progress in this field. It is necessary as well to continue with the laws reform and administrative procedures, to secure favourable circumstances for new technologies development and services.

In any case, the digital technologies development in Serbia, has significant potential for giving new perspectives for economical growth and development, as well as, for the new working places opening and improving lives of individuals. It requires persistence, creativity and cooperation the state, commercial sector and academic community.

5. PROPOSALS FOR DIGITAL INNOVATIONS MEASURES SUPPORT IN SERBIA

Serbia in the last few years shows increasingly interest for digital technologies creations, especially after corona virus pandemic, which grab all the fields of life and work. Therefore, The government of republic of Serbia, brought many measures which have for its aim support of digital innovations growth in the country.

One of the essential steps is bringing National strategy for skills development in the field of informational-communicational technologies (ICT). This plan has for its aim to stronger educational system in Serbia and to increase number of specialists in the field ICT and to support growth of digital sectors. In the frame of this plan, The government of Serbia, developed Program „Digital Serbia“, which includes range of initiatives for development of digital technologies and infrastructures, as the help for entrepreneurs and startups. [12]

The other action is “Fund for innovative activity” formation, which tends to through financial support and counseling, encourage innovations development in Serbia. This fund offers help to the creative companies and startups in all phases of growth, from the concept to the projects realization. Besides that, fund tends to promote economic surroundings in Serbia and to stimulate corporation in different industries. The third action is “Serbian Startup center” formation, which is intended to the entrepreneurship and startups development. This center offers three different services including training, counseling, mentorship, as well as the help for investors and partners location. The purpose of this center is to help the growth and development of startups in Serbia and to stronger business surroundings.

The fourth action is creation of “Innovative fund for informational society development”, which tends to encourage growth of digital economy in Serbia through financial support by innovative initiatives in the field of informational-communicational technologies. This fund is intended to the firms and startups which deals with new technologies development, as well as creative initiatives which contribute informational society development in Serbia. [13]

Besides this initiatives, Serbian government is focused on the legislative ambience improving for the digital economy and innovations growth. The purpose is set up of the favorable climate for entrepreneurship and startups in the field of digital technologies, as well as stimulation of corporation in different industries and creative initiatives. In that contest, in Serbia, “Scientific-technological park Belgrade” is founded, in order to help high technological companies development and creative ideas as well.

Serbian government encourages IT industry growth, through tax reliefs and subsidies for young experts employment in the field information-communicational technologies. Besides that, Serbia works actively on the digital infrastructure development and improvement, such as broadband networks and 5G technologies, in order to secure fast and consistent internet connection cross the country.

In the aim of digital innovations creation in Serbia, there are several initiatives and events which are undertaken in Serbia, such as conferences, competitions for startups and other events which have the aim to encourage innovativeness and entrepreneurship in the field of digital technology. [14]

All these steps and efforts support Serbian government determination for digital economy and innovations growth, as well as for the encouraging of entrepreneurship and startups in this sector. It is believed, that these steps will help to the continuous Serbian growth as the leader in the field of digital economy and innovations.

With the help of the mentioned measures, Serbia is additionally focused on the development of certain sectors which are of vital importance for continued growth of digital economy. One of those fields is e-trading, which has significant potential for continued growth and development in Serbia.

The second important field in digital technologies development in Serbia is informational security. In that context, Serbia formed National strategy for informational security, which tends to make stronger safety in the informational technologies usage in the country and to harmonize with the world norms in this field. Serbia corporate with other states and organizations, as well, in the field of digital innovations development, such as corporation with EU and their initiative for startups and entrepreneurship promoting in the sector of informational and communicational technologies.

The measures which Serbian government undertakes in the aim to encourage development of digital innovations in the country, show that Serbia recognized the importance of this field for continual economic growth and development.

Through startups support and entrepreneurs, improving the education in the field of informational-communicational technologies, fund establishing for innovative activity and development, digital economy and innovations in Serbia.

6. CONCLUSION

In this paper we were studying the valuable of digital innovations for economic growth in Serbia.

With the terms analyze of the digital innovations and innovative policy, the impact of digital innovations on the national economy development, those applications of digital innovations in the function of Serbian economy development, we made our point in the essential factors which influence on the adoption and the use of digital innovations in Serbia.

The most significant conclusions of the work discover that Serbia is aware of the digital innovations significance important for her economic growth, but there are, still, range of obstacles which slow down adoption and use of digital technologies. The biggest between these obstacles are knowledge and skills missing, finance missing and investment in digital technologies, and bad legislation and infrastructure.

However, In spite of these challenges, there are examples of successful digital innovations in Serbia, such as smart cities creating, e-health, fintecx and other industries which use digital technology for business improvement and increasing of productivity. These examples illustrates that Serbia has great potential for digital progress adoption and use, in its economy.

In order to overcome these difficulties, we suggest range of initiatives and policies which could help in digital technologies adoption and use, in Serbia. Among the most important measures are: education system improving and population education about digital technologies, guaranteed adequate capital and investments for digital innovations development and improving of regulatory frame and infrastructure for support of digital innovations.

7. REFERENCES

- [1] Станикић R. (2019) дигитална пословања у функцији развоја националне економије. Научни скуп ЕКОНБИЗ, (18).
- [2] Соколов- Младеновић, С. (2014). Глобализација и дигитална економија. Синтеза 2014- Impact of the Internet on Business Activities in Serbia and Worldwide.
- [3] Simović, V. & Ilić, M. (2021). Digitalno preduzetništvo. Monographs.
- [4] Petrović, V. & Mišić, C. (2019). Izazovi četvrte industrijske revolucije i posledice za međunarodnu tehnologiju. Zbornik Radova EkonBiz.
- [5] Petrović & Mišić, C. (2019). Izazovi četvrte industrijske revolucije i posledice za međunarodnu tehnologiju. Zbornik Radova EkonBiz.
- [6] Petrović, M. & Bojković, N. (2017). Indeks digitalne ekonomije i društva kao benčmarking alat politike elektronskih komunikacija. U zborniku radova 25. simpozijuma o novim tehnologijama u poštanskom i telekomunikacionom saobraćaju-Postel.
- [7] Đorđević, G. (2012). Uticaj ICT informacionog društva na društveno-ekonomski razvoj. Socioeconomica-Naučni časopis za teoriju i praksu društveno-ekonomskog razvoja, 1(2).
- [8] Đorđević, G. (2012). Uticaj ICT informacionog društva na društveno-ekonomski razvoj. Socioeconomica-Naučni časopis za teoriju i praksu društveno-ekonomskog razvoja, 1(2).
- [9] Anđelković, B., Šapić, J., & Skočajić, M. (2019). Gig ekonomija u Srbiji: ko su digitalni radnici i radnice iz Srbije I zašto rade na globalnim platformama?. Centar za istraživanje javnih politika.
- [10] Butigan-Vučaj, T. (2010). Digitalna tvrđava: Nacionalna strategija digitalizacije u Srbiji. Kultura, (129).
- [11] Butigan – Vučaj, T. (2010). digitalna tvrđava: Nacionalna strategija digitalizacije u Srbiji. Kultura, (129).
- [12] Petrović, M. & Bojković, N. (2017) Indeks digitalne ekonomije i društva kao benčmarketing alat politike elektronskih komunikacija. U zborniku radova 25 simpozijuma o novim tehnologijama u poštanskom i telekomunikacionom saobraćaju-Postel.
- [13] Petrović, M., & Bojković, N. (2017). Indeks digitalne ekonomije I društva kao benčmarketing alat politike elektronskih komunikacija. U zborniku radova 25 simpozijuma o novim tehnologijama u poštanskom i telekomunikacionom saobraćaju-Postel.
- [14] Simović, V., & Ilić, M. (2021). Digitalno preduzetništvo. Monographs.