

Petar Veselinović

Faculty of Economics,
University of Kragujevac,
Serbia

✉ pveselinovic@kg.ac.rs

Nenad Stanišić

Faculty of Economics,
University of Kragujevac,
Serbia

✉ nstanisic@kg.ac.rs

DEVELOPMENT AND PERSPECTIVES OF DIGITAL ECONOMY IN THE REPUBLIC OF SERBIA

РАЗВОЈ И ПЕРСПЕКТИВЕ ДИГИТАЛНЕ ЕКОНОМИЈЕ У РЕПУБЛИЦИ СРБИЈИ

Summary: *The Internet revolution is driving new advances in the digital economy. The new economy must harmonize traditional and modern approaches to the economy in order to respond to the challenge of managing the country based on monitoring technological change and innovation. The digital economy is considered to be the key to solving a large number of social, economic, and other problems in society, as well as to achieving sustainable development and economic growth of the national economy. The evolution of information and communication technology on which the digital economy is based is an essential factor in ensuring labour productivity and economic growth. The main goal of this paper is to present the digital economy in the Republic of Serbia as a possible chance and opportunity for the realization of which it is necessary to establish a new business model, as well as to determine the relationship between the achieved level of digital development and economic development.*

Keywords: *digital economy, competitiveness, economic development*

JEL classification: *F63, O14*

Резиме: *Интернет револуција покреће нова достигнућа у дигиталној економији. Нова економија мора ускладити традиционалне и савремене приступе економији како би се одговорило на изазов управљања земљом који се заснива на праћењу технолошких промена и иновацијама. Дигитална економија сматра се кључем за решавање великог броја социјалних, економских и других проблема у друштву и за постизање одрживог развоја и економског раста националне економије. Развој информационо-комуникационе технологије на којој се темељи дигитална економија важан је фактор у обезбеђивању продуктивности рада и економског раста. Основни циљ овог рада је да представи дигиталну економију у Републици Србији као потенцијалну шансу и могућност за чију реализацију је неопходно успоставити нови пословни модел, као и утврђивање везе која постоји између достигнутог нивоа дигиталне развијености и економске развијености.*

Кључне ријечи: *дигитална економија, конкурентност, економски развој*

ЈЕЛ класификација: *F63, O14*

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1. INTRODUCTION

The digital economy is one of the primary factors in increasing the efficiency of national economies. The benefits of the digital economy are numerous, however, the development of the digital economy requires the fulfilment of certain preconditions and actions in some priority areas, including: modernization of the digital infrastructure based on modern requirements; establishing "digital production" using technology to ensure product quality and competitiveness in industry and increase efficiency; creation and maintenance of efficient small and medium enterprises in the field of digital technologies and platforms and digital services; creating data centres that provide easy, stable, secure and cost-effective data storage and processing services to government, businesses and citizens; introduction of digital data platforms to meet the needs of government, businesses and citizens; complete transition to electronic payment, remote access and other electronic forms of banking and financial activities; ensuring the integration of electronic payment systems with global payment systems.

In a few decades, digital technologies have transformed the way communication, business, production of goods and services function, and the way people live and work. For developing

countries, the digital economy is a way to stimulate economic growth, raise capital and labour productivity, reduce transaction costs and facilitate access to global markets. The development of digital technologies brings numerous benefits to society in terms of wealth creation, technological advancement and improved quality of life. Firms operate in an environment increasingly permeated by digital technology. The inclusion of such technology in products, services and operations has significant implications on the way firms achieve and maintain a competitive advantage. At the same time, the development of digital technology also brings challenges related to skills shortages, fast-growing new markets, consumer protection, industrial reorganization, trust, security and privacy.

Nowadays, one of the outcomes of the rapid development of technologies, including Internet technologies, is the development of Internet entrepreneurship, which has also led to the growth of numerous different models of Internet businesses. The use of Web sites, social networks and various other Internet tools as a means of communication contributes to the gaining of a higher number of users of different products or services (training courses, e-books and materials, membership, etc.). Successful internet entrepreneurs have the same professional approach to their work as entrepreneurs in the traditional sense, though their online presence is specially designed, well planned and directed at target groups.

There are two principal opinions regarding the origin of the term digital economy. According to one of them, this term appeared in the 1990s. According to the second opinion, the concept of electronic or digital economy arose from the ideas that have been developing in the world economic literature since the 1960s, and it reflected the notion of the information economy. In essence, the digital economy is considered to be a type of economy based on digital information. More specifically, the digital economy promotes the circulation of goods and the development of the service industry through the exchange of digital information and e-commerce. In the digital economy, information and communication technology capacities provide a global platform for individuals and organizations around the world, facilitating mutual communication and collaboration between different actors.

Mesenbourg (2001) identified three primary components of the digital economy: e-business infrastructure, e-business itself (computer-driven processes), and e-commerce (online sales). However, it should be noted that nowadays, the boundaries between the digital and real sectors have become less and less clear. Moreover, the digital economy is widely applied to other economic sectors as well. It even spreads beyond economic areas and enterprises to include individuals, communities and societies through social media and in different ways.

The central hypothesis from which this paper rises is that the development and competitiveness of the national economy in the modern world increasingly depends on the degree of development of the digital economy.

The most developed countries in the world recognised that the success of the national economy depends not only on their resources but also on their knowledge, and most importantly, on their ability to quickly learn something new. Those national economies that understood these "changes" in time and implemented them early achieved faster growth and better performance in economic growth and development.

Unless the national economy begins the business transformation process, it will quickly lag behind others in competitiveness, economic growth and development. The panel entitled *Equal Opportunities in the Digital Age* was active at the International Economic Forum in St. Petersburg. The question that arises is whether all countries have the same opportunities to enter the digital age and enjoy the same benefits that the Digital Economy provides in case of its application? Certainly not, because they do not have the same starting points in terms of development so far. Such differences can cause even more drastic differences in the future. That is why the national economies must start activities to develop and implement plans related to the simpler and more efficient work of public administration, simpler and faster business operations, online registration of business entities, simplified and better communication of citizens and institutions. It has to make the access of citizens and the economy to certain services easier and adapt the reform of education to the modern way of doing business.

The technologically driven information communication revolution opens new avenues for transforming life, work, learning and communication and becomes a powerful engine of economic growth. Information and communication technology enables individuals, companies and countries to face economic and social challenges with greater efficiency and imagination.

2. DIGITAL AGENDA OF THE REPUBLIC OF SERBIA

Within the European Union, information technologies are recognized as the main factor influencing economic growth and innovation. Among the seven leading initiatives of the economic *Europe 2020* strategy is the *Digital Agenda for Europe*, which explains the importance of information and communication technologies in the development of the modern economy.

The proper strategy in the Republic of Serbia is *the Digital Agenda for the Republic of Serbia*. Areas, priorities of the strategy, and activities employed to develop the information community should be directed towards priorities within the following areas:

1. Electronic communications, where the following priorities are determined:
 - Open broadband access;
 - Digital television and radio broadcasting and digital dividend;
 - Public sector communication infrastructure..
2. E-government, e-health and e-justice, where the following priorities are set:
 - Electronic identity in public sector services;
 - Application of information and communication technologies in administrative bodies and holders of public authorizations;
 - Application of information and communication technologies in the health care system;
 - Application of information and communication technologies in the judiciary.
3. Information and communication technologies in education, science and culture, where the following priorities are determined:
 - Academic computer network;
 - Information and communication technologies in education;
 - Research and innovation in the field of information and communication technologies;
 - Digital content.
4. Electronic commerce (e-commerce), where the following priorities are determined:
 - Removing normative barriers to e-commerce development;
 - Electronic invoices and electronic payment;
 - Encouraging the development of e-business;
 - Consumer protection in e-commerce;
 - Coordination of e-commerce development.
5. ICT business sector, where the following priorities are determined:
 - Human resource development;
 - Development of start-ups and innovative companies;
 - Exports and cross-border outsourcing;
 - Protection of intellectual property of software and digital content.
6. Information security, where the following priorities are determined:
 - Improving the legal and institutional framework for information security;
 - Critical infrastructure protection;
 - Fight against high-tech crime;
 - Scientific research and development work in the field of information security.

The Strategy for the Development of Digital Skills in the Republic of Serbia for the period from 2020 to 2024 is a national Government strategic program. It comprehensively regulates the development of digital skills of the population to use the potential of modern information and communication technologies to raise the quality of life of all citizens, higher employment, work efficiency and economic growth of society. Digital skills imply having relevant knowledge, skills and behaviour according to the needs of the individual and community in the conditions of the modern rapid development of information and communication technologies in the 21st century.

The strategy reflects the continuity and relies on the Digital Agenda for Serbia, which consists of the Strategy for the Development of the Information Society in Serbia by 2020 and the Strategy for the Development of Electronic Communications in Serbia from 2010 to 2020. This strategic framework, together with the Strategy for the Development of Information Security in the Republic of Serbia for the period from 2017 to 2020, contributes to increasing access of citizens and the economy to information and communication technologies, openness and accessibility of the Internet, and

creating an information society by developing e-business, e-government, e-commerce, e-justice, e-health and digital education.

In addition to the specified strategies, the Government of the Republic of Serbia has also adopted the Strategy for the Development of Artificial Intelligence in the period from 2020 to 2025. It determines the goals and measures necessary for artificial intelligence development and implementation, which should result in economic growth, improvement of public services, and improvement of scientific staff and development of skills for future jobs. Also, the Strategy measures implementation should ensure that artificial intelligence in the Republic of Serbia is developed and applied in a safe manner and in accordance with internationally recognized ethical principles in order to use the potential of this technology to improve the quality of life of each individual and society as a whole, as well as to achieve the Sustainable Development Goals. The strategy is in line with the European Artificial Intelligence Initiative, which sets out the European Commission's policy on artificial intelligence. In that context, the Republic of Serbia, as a candidate for membership in the European Union, but also as a participant in the European Union's framework program for research and innovation, seeks to provide the necessary measure of harmonization with the European Union that will enable full integration into the European Research Area and even closer cooperation.

Such development of the information society must necessarily be accompanied by the expansion of knowledge and skills related to information and communication technologies. It can be influenced by strengthening the role of ICT in education and training, involving all citizens in the information society, especially citizens belonging to vulnerable groups, while providing an appropriate response to the needs of the labour market in terms of possessing relevant digital skills, including constant care for all aspects of security, privacy threats and technological dependence. The development of digital skills leads not only to life quality improvement but also to the strengthening of local initiatives, regional development and the development of society as a whole.

The general goal of the Strategy is to improve the digital knowledge and skills of all citizens, including members of vulnerable social groups, to enable monitoring of the development of information and communication technologies in all areas and to meet the needs of the economy and labour market.

The Strategy specific goals are: improving digital competencies in the education system, improving basic and advanced digital skills for all citizens, developing digital skills concerning the labour market needs and lifelong learning of information technology experts.

Measuring progress in improving the digital skills of citizens is a primary indicator of the performance of the entire Strategy. Namely, the achieved results in terms of computer literacy of citizens must be regularly reviewed to gain insight into the progress made, create further activities and accessible content, but also include as many residents as possible.

3. THE POSITION OF THE REPUBLIC OF SERBIA IN THE FIELD OF DIGITAL ECONOMY DEVELOPMENT

A way to measure digital economy development is the Digital Economy and Society Index (DESI). The DESI index is calculated as a weighted average of the five main DESI dimensions:

- connectivity (25%),
- human capital (25%),
- use of internet (15%),
- integration of digital technologies (20%) and
- digital public services (15%).

The basic parameters based on which the five listed categories are evaluated are:

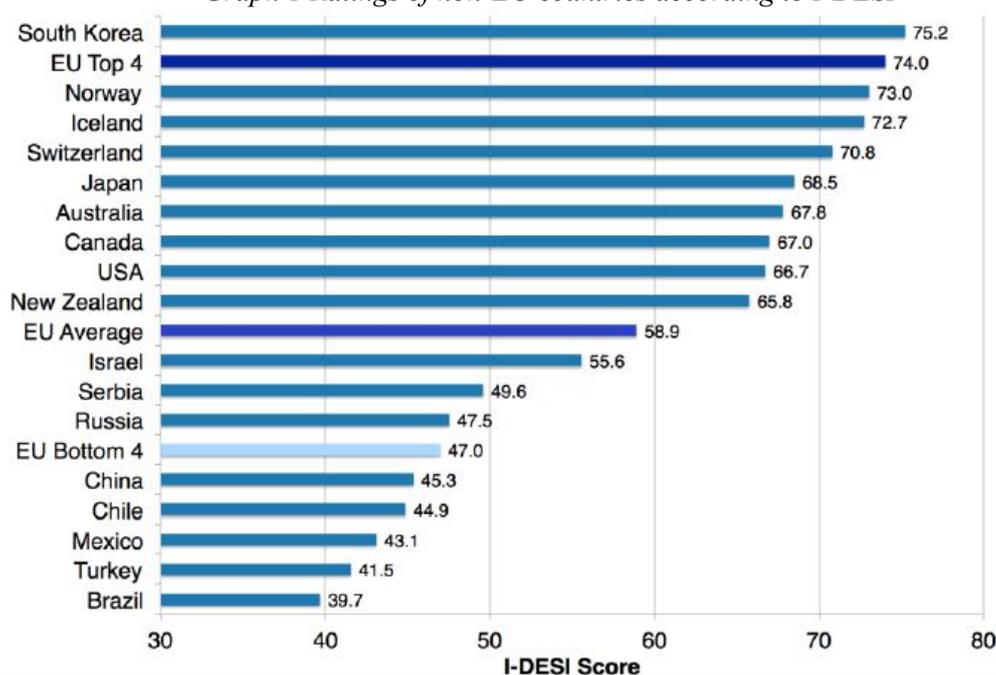
- connectivity: broadband internet access, flow rates and prices;
- human capital: mastery of basic digital skills and literacy;
- use of Internet: communications, transactions and content consumption;
- integration of digital technologies: digitalization of business and e-Commerce;
- Digital public services: public digital services and e-government.

The International Digital Economy and Society Index (I-DESI) measures the digital economic performance of EU member states and compares the European Union as a whole with 17 other countries (Australia, Brazil, Canada, Chile, China, Iceland, Israel, Japan, Mexico, New Zealand, Norway, Russia, Serbia, South Korea, Switzerland, Turkey and the United States).

International I-DESI combines 24 indicators and uses a weighting system to rank each country based on its digital performance to benchmark the development of the digital economy and society.

As expected, with the increasing adoption and use of digital technologies, there has been a steady increase in results between successive surveys. EU member states boosted their results by an average of 16 per cent over four years (2013-2016). Interestingly, the most significant jump in performance was recorded by Serbia, which improved its result by 75 per cent between 2013 and 2016, climbing from the last 45th place to 34th place. Graph 1 gives ratings for all countries that are not members of the European Union in 2016.

Graph 1 Ratings of non-EU countries according to I-DESI



Source: European Commission 2018

Another popular way to measure the degree of development of the digital economy is the Network Readiness Index (NRI). It measures a country's readiness to seize the opportunities provided by information and communication technologies. The index is published annually by the World Economic Forum in cooperation with the European Institute of Business Administration (INSEAD) in the Global Report on Information Technology. The index was originally developed by the Center for International Development at Harvard University in 2002. The authors have suggested several factors that may contribute to the ability of the state to take advantage of the opportunities offered by information technology.

The Network Readiness Index (NRI) is one of the leading global indices of the application and impact of information and communication technology in economies around the world. In its latest version, the 2020 Network Readiness Index Report maps the network readiness landscape of 134 economies based on their performance in four different pillars:

- technology,
- people,
- governance and
- impact.

Each of these pillars consists of three sub-pillars that are filled with a total of 60 variables. Serbia ranks 52nd out of 134 economies covered by the 2020 readiness index. Its main strength is related to people, and the index is 52. Meanwhile, the vastest room for improvement concerns

management and influence, which carry an index of 54. The rank of technologies, according to the network readiness index for the Republic of Serbia in 2020 is 53. Other results evaluated by the network readiness index are presented in Table 1.

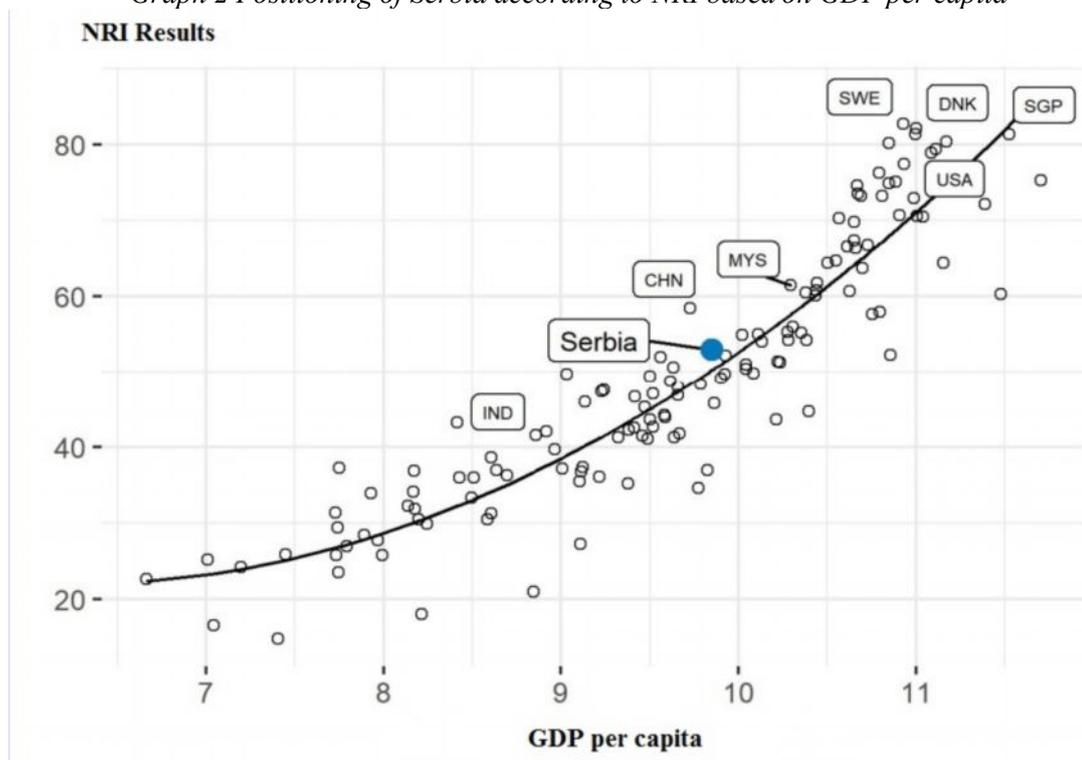
Table 1 Rank of Serbia according to sub-pillars in the network readiness index

Sub-pillars	Rank	Sub-pillars	Rank
Content	42	Inclusion	56
Business	48	Trust	57
Economy	48	Regulation	63
Government	49	Individuals	65
Access	51	SDG Contribution	73
Quality of life	55	Future Technologies	103

Source: Portulans institute 2020

Graph 2 shows the position of Serbia in terms of the results of the network readiness index by gross domestic product per capita. The trend line shows the expected index of network readiness of results concerning the income level in the economy. As can be seen, Serbia is above the trend line, which suggests that it has a greater readiness of the network than would be expected given its income level.

Graph 2 Positioning of Serbia according to NRI based on GDP per capita



Source: Portulans institute 2020

4. CONCLUSION

The application of the new economy removes all restrictions so that there are no longer geographical, time, communication and other limits. Today, digitization with previously eliminated trade barriers and timely links established between participants allows both small countries and their organizations to participate in the competitive game.

The digital economy allows many organizations to avoid traditional steps in development where they are first exclusively domestic and then grow into multinationals. Today, even small companies can opt for a global approach from the very beginning. In practice, there are indeed entrepreneurs who, at the very beginning of their business, started with the application of information

and communication technologies basing a business on the Internet, thus achieving enviable results in a short time. The benefits provided by the digital economy should be used by small and medium enterprises, which in some countries make up 90% of the total number of enterprises, and in accordance with this fact, we conclude that the success of small and medium enterprises has a direct impact on the national economy.

The world's leading countries with highly developed economies immediately recognized the importance of the digital way of doing business and financed projects for the development of internet business of small and medium enterprises in their country, with the goal of higher and more successful use of modern technologies. The application of e-business and information technologies forms a digital gap between developed countries and countries in transition, but also between developed and rural areas, large and small companies, etc. To avoid or reduce this gap, countries can form their national strategy to monitor information technology change and perform activities for the improvement of knowledge and skills as well as the adoption of legal and institutional bases.

Existing indicators of the development of the digital economy testify to the clear link between the level of economic growth and international competitiveness.

The Republic of Serbia has a defined strategic framework for digital economy development and has made significant progress in the field in recent years. Despite that, the level of development of the digital economy in Serbia is not at the level of comparable member states of the European Union, and at the same time, it is far from the set goals in that area. Accordingly, economic policymakers need to make further, continuous efforts to build an adequate business environment that meets modern requirements, improve the living standards of the population, increase the efficiency of their country's economy and thus improve Serbia's competitive position.

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