THE ROLE OF DIGITALIZATION IN GLOBAL AND NATIONAL ECONOMIES

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Abstract: The digitalization should indicate the attitude to the inevitable changes. The study aims to conduct a comparative analysis of national strategies for the digital economy, which will allow, firstly, to develop effective approaches to further globalization development beyond the competition between the subjects of the world economy, and secondly, to develop theoretical views on the global digitalization spread. The study results can be used for mathematical modeling processes of socio-economic priorities for the development of national economies and their regional-continental groupings, which will allow concentrating financial resources on the highest priority areas of national development and humanity as a whole.

Keywords: digitalization, information and communication technologies, artificial intelligence, digital economy, global economy, national economy.

1 Introduction

The modern economy has left the traditional circle when economic processes determined the nature of the country's and society's development. In general, modern economic processes are derived from the information component of society. Within the world, information has occupied an environment that is already capable of determining the nature and trends of development of the entire planet. In other words, the flows of the artificial information field define the market as not a selfregulating system based on the principle of an "invisible hand" but a system that sets the principle of instantaneous total control of all elements not only of the economic component but also of human behavior itself. Traditional approaches in the organization of business and work methods have already changed, and new sectors of the economy, fundamentally changing the economic system itself and the goals of the sphere of human activity, have begun to develop rapidly. The content a supranational strategy creation for the digital economy, defining universal global planning with clearly distributed functions of national economies is increasingly evident.

This study aims to conduct a comparative analysis of national strategies for the digital economy, which will allow, firstly, to develop effective approaches to the further development of globalization beyond competitive disputes between the subjects of the world economy, and secondly, to develop theoretical views on the global spread of digitalization.

Research tasks:

- 1. to assess the nature and trends of digital dimensions in the global economic space.
- to identify the means and approaches to digitalization in overcoming the economic backwardness of underdeveloped national economies.

2 Literature Review

The theoretical basis of the digital economy began in 1995 by Donald Tapscott (Don Tapscott, 1995), but the active publication of this direction began the last 5–6 years ago. Currently, economic science indicates three directions of the study of digitalization:

- assessment of the digital economy's development through appropriate indices (Hanna, N. K. 2011; Foster, C., Heeks, R.,2013; Giannone, D. & Santaniello, M., 2018; Burger-Helmchen, T. & Meghisan-Toma, G. M., 2018);
- an empirical study of the digital economy development by Nicolas C. et al, 2015; Hrustek N. et al, 2019; Penmetsa M., Bruque-Camara S., 2021; Abdelrehim A., Khan (2021);
- the digital economy's impact on the modern economy (Goldmanis, M., et al., 2010; Raza, M., et al., 2020; Su M., Xia, J., 2020);
- Regarding the assessment of the digital economy development, it is worth noting Coyle, D. and Nguyen, D. (2019), who noted the need for a fundamental change in the economic concept.

Let us focus on the impact of digitalization on the economy. Thus, Herrador-Alcaide, T. C.; Hernandez-Solis, M. (2016) estimate such impact by changing the components of accounting costs. The macroeconomic impact of digitalization is indicated in Fidan, H. (2016), examining the growth of the national economies of Turkey and Lithuania using the Ginny method. The specificity of the macro-level aspect change of digital economy development is analyzed in the capital of Rwanda by the authors Otioma, C., Madureira, A. M., Martínez, J. (2019). The creation of surplus-value as a solidification of digitalization result, namely the elaboration of large production data, has become a research priority by Gravili, G., Benvenuto, M., Avram, A., Viola, C. (2018).

The digital economy development also provokes the digital divide in regional economies (Meng, Q., Li, M., 2002; Lopez, F. L.; Nanclares, N. H.; Vaco, C.B., 2003). Antonelli, C. (2003) extends such a theme while proving that the digital revolution creates a global digital redistribution. Van D. et. al. (2014) prove that social inequalities become more pronounced as the Internet develops, using the Netherlands as an example. The difference in digital state regulation for Southeast Asian countries is presented by Apriliyanti, I. D et al. (2020).

3 Materials and Methods

The implementation of the research aims implies the use of the following methods:

- systematization, generalization of scientific publications on the study of the problems of ICT implementation and digitalization in different countries and spheres of socioeconomic development. The assessment is made through the criterion of national socio-economic development of the economy.
- analysis of general normative and legal trends in the implementation of digital technologies through the prism of the search for alternative non-legal space;
- the method of comparative analysis of digitalization implementation options in the direction of the envisaged results;
- system analysis, the method of information synthesis that allowed to carry out analytical comparisons and harmonization of diverse trends and present logical constructions in the global and national digitalization course.
- the quantitative method of research on the chronology of ICT implementation and its basic elements
- the logical analysis of the historical development of digitalization allowed us to form the cyclic nature of this process and highlight its main stages.

4 Results

The study results will focus on the understanding of digitalization as a technological process of collecting, accumulating, and transforming primary data into useful knowledge. Therefore, in the logic of business men, digitalization is nothing but a global rethinking of business organizations to optimize and automate business processes under the control of IT systems. At the government level, the digital economy acts as an economic activity in which the key factor of production becomes the data in digital form. The large volumes of data are processed; the use of their analysis results, compared to traditional forms of economic management, allows to significantly increase the efficiency of various types of production, technology, equipment, storage, sales, delivery of goods and services. Therefore, digitalization is constantly based on the analysis of accumulated data.

In other words, the digital economy is an activity directly related to the development of digital computer technology, which includes online services, electronic payments, Internet commerce, crowdfunding, and others.

Thus, it is quite obvious that the role of computer and communication technologies is growing, especially in large businesses. Consequently, the current state of digitalization on an industry or production scale is assessed in terms of the following aspects:

- continuous information management, including automated collection, storage, processing, and analysis of diverse data;
- end-to-end inter-process integration of data and products;
- predictive management of production and business processes;
- product lifecycle management;
- automation of manual work with the help of robots and electronic document management;
- replacement of full-scale modeling of production objects and processes with their digital counterparts;
- flexible corporate culture based on prompt Internet interaction between geographically distributed employees and business units;
- cybersecurity.

The above-mentioned aspects have formed the basic directions of corporate digitalization. The vast majority of scientists note that the main elements of the digital economy are considered to be e-commerce, online banking, online advertising, and online entertainment. However, the electronic payment system allows all of these elements to function fully. The second basic element of the digital economy is the corresponding infrastructure is the computer equipment and Internet connection. Therefore, thanks to the development and implementation of information technology today, people's daily life is in many cases without an intermediary – mobile banking provides a variety of services, social networks bring the user's daily life into the public domain.

According to the World Bank report, the economic feasibility of digitalization lies in the following benefits (G20 Financial Inclusion Experts Group ATISG Report, 2010):

- increase in productivity;
- improved companies' competitiveness;
- lower production costs;
- creation of new jobs;
- increasing human needs satisfaction;
- overcoming poverty and social inequality.

In general, these benefits to the country constitute a "digital dividend," namely economic growth, jobs, and expanded services. However, the payoffs from digitalization are not being seen quickly enough. There are two reasons for this lag in the payoff. The first is the lack of access of the world's population to the Internet (only 40% of the world's population has such access). The second is the net benefit of business structures due to the lack of clear regulation and limited competition between digital platforms, the rather frequent failures of e-government initiatives, and the use of governments and corporations as a method of control over citizens, narrowing their rights and opportunities.

Therefore, it is not surprising that the summits of the world's most powerful national economies (G7 and G20) prioritize the digital economy, noting that it can fundamentally change human lives and bring prosperity to nations (OECD Digital Economy Outlook, 2017).

The World Bank notes the potential risks of cyberization:

- unauthorized access to information and other cybersecurity threats;
- mass unemployment;
- digital inequality gaps in education and conditions of access to digital services and products between citizens and businesses within countries as well as between nations.

The UN Conference on Trade and Development (UNCTAD) (Trade and development report, 2018) also noted the negative effects of digitalization. Therefore, the development of digital technology creates new opportunities for the national economies of developed countries. And the simple logic of economics notes – the benefit goes to those who implement innovations in their production and further guarantees income through the diffusion of innovations in space and time.

In general, the digital economy in developed countries takes on average 18.4% of GDP (from 10 to 35%). For developing countries, this share is 2–18%. According to forecasts, by 2025, the world economy volume will be about \$23 trillion, or 24.5% of global GDP (UNCDAT. Digital economy report, 2021).

As for economic digitalization, everything is obvious – big business and, above all, foreign businesses are actively pursuing it in their business models.

Another aspect of digitalization is the focus on the formation of big data (Big Data). These processes are developed and actively implemented by specialized platforms by the giants of the Internet industry (Facebook, Google, Amazon, Microsoft).

A separate area of digitalization was the system of regulation. The greatest success of such regulation has been achieved not at the municipal level but at a lesser level at the state level.

Let us characterize the digitalization processes at the municipal level, namely such a phenomenon as "smart city". The greatest achievements in the world in this direction belong to Singapore. Singapore started moving in the direction of digitalization about ten years ago: the government invested in the technology sector through grants and incubators. Within a few years, Singapore created a combination of an advanced IT infrastructure, government support, intellectual property laws, and a multinational pool of talent. Today, Singapore is one real-time testing ground for digital technology. To do this, the government is presenting a business environment and creating an environment for tech innovation. According to the Financial Times, more than 270 venture capital funds invest in 4,000 technology startups that employ about 22,000 people. Consequently, the country's GDP is growing. The Singapore government has launched a single digital platform that connects all financial products, including bank accounts, pensions, and insurance programs.

Singapore has adopted and is implementing a national Digital Government Blueprint (DGB) to expand the local digital economy and develop a smart digital society. The DGB offers an approach to seamlessly integrate e-services and government standards on three fronts: citizens, businesses, and government employees. The process is led by Singapore's Government Technology Agency (GovTech), which has led to the country being ranked among the world's top digital governments for the past five years.

In Singapore, 94% of the city's services are provided digitally through a personal digital passport. Moreover, digitalization is also involved in the incarceration system. Inmates are fully monitored both through external surveillance cameras and through the inmate's tablet, which is issued for use. The inmate corresponds with his relatives through the tablet, can read authorized literature, receive authorized information, electronic roll-call, and identification is conducted. All streaming information about the inmate is processed by elements of artificial intelligence to interpret its behavior for the future. It is essentially a digital prison maintained in a digital cloud, and inmates are psychologically adapted to 24-hour supervision and control, with prison monitors becoming de facto analysts of specific data. In this analogy, human life in Singapore is also fully digitally controlled, with residents convinced that such control is for the good and benefit of their lives. At the same time, such control blocks other behavior and does not allow other opinions, as opposed to this digital control system, without regard to the possibility of being punished in a certain way. And if such control is introduced into a mandatory social rating system, the external perception of each resident of such a digital system will become unequivocally positive and necessary to retain a personal rating in that digital system.

To date, digitalization has fully embraced the sphere of public regulation and governance around the world. As an example of the deployment of this process in the post-Soviet republics, consider the Russian Federation. After all, geographically, it is a vast territory, and economically it is the most developed economy of the post-Soviet republics. The economic and financial potential of the digital transformation is quite powerful. The political aspect should also be noted – power has been concentrated for twenty years in the United Russia party. For Ukraine, the main issue is gaining and retaining power through the election process; for Belarus – the principle of totalitarianism and its content means that digitalization processes are not a priority for the government.

Practically, the processes of Russia's digitalization are becoming a government policy template in the post-Soviet space. Therefore, let us note the main points of this project. Thus, on July 1, 2020, the Federal Law of April 24, 2020, "On experimenting to establish special regulation to create the necessary conditions for the development and implementation of artificial intelligence technologies in the subject of the Russian Federation - the city of federal significance Moscow and amending Articles 6 and 10 of the Federal Law "On Personal Data" (Federal Law of April 24, 2020, No 123-FZ) became effective. As for the law itself, it does not reflect the human rights protection in any way in the relevant mechanisms, as opposed to general phrases about human benefits. The collection of data about an individual is technologically practically perfected, which means that these data can potentially be used by any entity in an unlimited range of uses. Most important thing is that the violation of human rights leads to the impossibility of restoring them. For a year and a half, when quarantine measures were introduced, this was vividly demonstrated. Yes, the human recognition system records the violations, and the case goes to court. The courts' decision is based solely on the probability of recognizing a person more than 50%, and other approaches to human identification are not taken into consideration by the judges. A striking example is a filmmaker Fyodor Yarmoshin, who was identified by the recognition system as a thief solely because of his glasses and outerwear with a probability of 61%. And there are dozens of such cases in Russian cities, in most of which in court the accused could not prove their innocence for violating public order. And this is similar to corporate business management, where control of management is ensured by the principle of ownership of 50% plus one share. In general, this legislative approach forms the principle that humans are always wrong about artificial intelligence (the priority of artificial intelligence over humans). Such a problem has been and continues to be discussed at various levels of conferences, but there are no concrete solutions for the time being. Besides, a face recognition system in laboratory conditions gives a high probability (up to 95%), but in real life, it is simply not effective because many factors from lighting to the psychological state of the person him/herself will affect it.

Note that the philosophical system of artificial intelligence, approved in legislation, indicates that a person does not have consciousness and free will, and so the personality – just operates a set of conflicting elements of the brain and a set of impulses, which can be described by neural network algorithms.

Therefore, in the nearest future, digitalization will lead to complete control over humans by forcibly changing the program code of a particular person's DNA. We should expect to see the initial elements (and systems) of artificial intelligence combined with biotechnology in the human body to fully program both human behavior and life. Eventually, translate it into functioning under the control of artificial intelligence without personal humans' psychology and self-consciousness.

The pandemic quarantine measures put in place are working out a philosophy transferable to state power. Consequently, the flow of big data leads to the fact that decisions will not be made by officials but by an appropriate program, which is based on processed information. Therefore, the sovereignty of the state is lost. In the EU countries, a screen is given to the fight against such initiatives (the so-called protocols on bioethics and the ethics of artificial intelligence), where, according to Nobel laureate Daniel Kahneman, billions of dollars are allocated for this purpose.

In contrast to Russia, there are no such measures, and the implementation of digitalization takes place solely under the control of the controlling tax authorities to take complete control of all income of citizens on a non-alternative basis. Backbone direction and their implementation should not be subject to any criticism, much less opposition. The choice of the backbone path is carried out only by the banking structures. Practically there is a loss of state sovereignty. Activities are dictated either by TNCs or globalist structures (for example, the World Organization "United Cities and Local Governments"). Such and similar management structures carry out remotely (digitized) through the issue of bulletins several times a year, where the institution of state management is not mentioned. These instructions on management are implemented through their website for subscribers with duplication on their e-mail, so sooner or later, at such transformations, state power will gradually pass from state structures to standing structures based on super-artificial intelligence. For the moment, these are the developers who form the codes where the behavior of individual state structures (police, security forces) is laid.

The current methodology for assessing the digitalization ratings is based on a consumer's survey on the comfort of receiving services. Accordingly, Singapore ranks first in such ratings, while Russia only ranks 57th.

The future of society in the digital dimension has already been defined. The Metaverse project has been announced by Mark Zuckerberg. It is a very deep and large-scale project, concerning both the changes in society itself and the people themselves. The essence of the project is to enable people to go beyond themselves. It is the privatization of human development because the human being, by their essence during life, goes beyond certain limits. Project Objective gives the only way out in a virtual world of illusions. At the same time, the real world becomes as limited as possible due to the continuous introduction of various restrictions. With such restrictions, a world of immense possibilities opens before a person, where everything is possible – from work to leisure time. According to this project, the goal is to create consciousness, and collective consciousness, which will be formed solely by real sensations, recorded by the virtual world of each person. Such data will be processed by artificial intelligence and thereby model consciousness to solve complex problems of consciousness.

The global approach of digitalization points to the creation of a single digital camp, where people are translated into a state of complete slavery, and the creation of the Metaverse becomes a refuge or a drug from reality. In doing so, human's relation to reality will change because humans will become constantly acting sensors, working in two directions on giving and receiving.

In addition, two principles, the carrot, and the stick are operative for the realization of any project. The stick manifests itself as various restrictions, compulsory actions, and penalties, and the Metaverse will act as a carrot. That's why Eric Schmidt, who ran Google from 2001 to 2011, pointed out that Metaverse technology would soon be everywhere but would not necessarily serve the human community.

What is clear, however, is that the world has changed and there is a struggle between the old system and the new one. For example, in the summer of 2021 in the U.S., the financial elite began to attack the new digital elite (Google and Microsoft). However, representatives of the digital elite made a corresponding march already in October-November by declaring the creation of the Universe Aim. Zuckerberg himself declared that he would act in a space not regulated by any law. It is not a new move, but a tool of England when it moved away from continental business relations to the maritime scheme of political play, which was not regulated by any law and formed the commercial maritime law.

It is quite clear from a political economy that the Universe Aim provides purely economic benefits when Microsoft and Facebook combine, namely, the number of users grows to 1 billion people, profits grow from \$2 to \$30 trillion and an additional \$5–6 trillion from restarting the Internet 3D and launching a fully controlled virtual worlds market. Representatives of the digitalis's point out that they are creating a goal-economy divorced from taxes and the state apparatus. For the social order, it is the creation of a socially atomized world, conforming to a new normality, where people should sit at home with reduced consumption and a social division of society into different groups. At the same time, the Aim also solves the problem of the spectacle, a phenomenon that was described back in the 60s by Stanislav Lem in his book "Summa Technologiae".

This trend is also understood in China, which is why Xi Jinping is pursuing a policy of state digitalization (it is a system of sociodigital credit for every inhabitant, the ITTN (International Technology Transfer Network Training) training program), which in China is held for entrepreneurs who want to engage in technological entrepreneurship in the territory. BRICS countries.

Based on the assessment of the noted trends and their characteristics, it is necessary to point out the model of social-cyclical change under the digitalization processes (Figure 1).



Figure 1. The global cycle of public relations digitalization Source: author's elaboration.

The public feature of the model is presented in Table 1.

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Table 1.	General	characteristics	of ulgitalization	DIOCESSES D	v murviuuai	perious or numar	i development

Stages and duration	General characteristics				
Elimination stage	1957 – L. Kupriyanovich – the prototype of the cell phone LK-1.				
1960 - 1991	1961 - LK-3 Cell phone with a nickel-cadmium power supply 70g. In 1958, the development of the mobile				
	communication system "Altai" began.				
	1959 – A. Kitov, for the first time, suggested the creation of a national computer network.				
	1970 – V. Glushkov has developed a detailed plan for the realization of this idea.				
	1978 – The first superscalar machine, Elbrus-1, was 15 years earlier than the first Western superscalar processors.				
	1995 - Intel releases the improved Pentium Pro processor, which is now very close to the Russian microprocessor.				
	1990 - Vladimir Pentkovsky participated in the development of Elbrus-1 (1978) and Elbrus-2 (1984) supercomputers. In				
	1986 he led the design of the 32-bit El-90 processor. By 1987 the logical design of the future microprocessor was				
	completed, and in 1990 the prototypes were made. These further developments were embodied in the legendary Pentium				
	implemented in microprocessors.				
	In general, the development of basic cybernetics and computer and cellular communication systems was very active in				
	the USSR and was significantly ahead of the Western capitalist countries (especially in architectural design), but the				
	technology was classified, and its application was not brought to mass consumption. The transition to personal				
	computers in the USSR did not form the basis of either technical or ideological foundations of social digitalization.				

Launch stage 1992–2013	100,000 scientists, most of whom were connected with electronics, were leaving the collapsed USSR, so their ideas began to be implemented in foreign firms. Computers became personal computers, and the whole computer industry developed vigorously. Within 12 years, began the intensive development of investment in the electronic computer industry, which shaped information and communication technologies, especially mobile communications. Development of machine learning technologies. 2009 – Creation of the search engine WorframAlpha, which can recognize language queries. Since 2010, the use of elements of artificial intelligence in consumer applications and devices began. Huge databases were a breakthrough in artificial intelligence training. In addition, new productive algorithms were created for training neutron networks. The implementation of 3D printing for consumers.
Uncertainty stage 2014–2023	The overall cost of ICT is rising. The spreading technologies of deep learning the power of computers allows working through the so-called vast data (Big Data) with deep learning methods (Deep Learning), based on the use of artificial neural networks. 2016 – Yandex launched the "Zen" service, which analyzes user preferences. Abbyy implemented Compreno, a system that allows you to understand written text. The Findo system is capable of recognizing human language and searches for information in various documents and files using complex queries. Gamalon introduced a system with a self-learning capability. Implemented the ViaVoice system that recognizes human languages. The start of mass digitalization through lockdown input and the launch of the global Metaworld project Worldwide use of 5-G mobile communications allowing automated self-programming of things and technical devices.
Implementation stage 2023 to the middle of the 21st century	Stock assessment of the functioning and automated correction of the action of the Meta universe. The problem of artificial intelligence getting out of control will be exacerbated: there will be the introduction of system imitations of aspects of human brain activity, namely the process of self-regulation of artificial intelligence behavior; development of its behavior in the direction of limitations by a self-organized community of similar artificial intelligent agents.
Production stage from the middle of the 21st	The possibility of developing different society models from pure digital fascism to complete subjugation to artificial intelligence in the interests of free humans.

Source: author's elaboration.

Thus, digitalization is not a technical process but a specific social renewal process of the state as an institution and the ruling elite globally and an invasion into people's personal lives.

5 Discussion

Since the 2000s, digital economics research has dominated Western scholars. Their main topics were related to the understanding of the essence of the studied phenomenon and their novelty: E. Brinolfsson and B. Cahin (2000), B. Carlsson (2004), P. Larsen (2003), H. Zimmerman (2000). Most studies have addressed the possible impact of digitalization on the transformation of processes in the economy, economic policy, and market behavior strategies in the new environment: J. Christensen and P. Maskell (2003). In general, scientists in Western countries quite correctly identify the basic problem of digitalization, namely the so-called digital divide. However, this vision is superficial and does not concern the essence of the phenomenon itself as a philosophical and economic aspect. At the same time, its impact on economic growth is positive. The development of the digital economy has realized a two-way flow of information between enterprises and markets, as well as between companies and enterprises, and it leads to various side effects.

In purely theoretical economic terms, it is noted that the digital economy is the main economic "form" that follows the agricultural and industrial economy and generally stimulates change in the production of methods, ways of life, and management. It has a natural integration with the real economy. It's hard not to worry about it. However, the basis of any human economy is left out of consideration.

The role of man in the future digital economy is little studied. That becomes a dogma, because the man in the system of capitalist relations and the system of market accounting is studied in terms of costs and production, and at the macro level as a consumption element. Therefore, the concept of consumer choice dominates. And human characteristics remain out of the attention of economists. At the same time, digital reality has changed radically with the implementation of global projects.

6. Conclusions

The conducted research indicated that:

- 1. The natural development of society and science brings to life various opportunities for social human potential realization. At present, this possibility is focused on the digitalization process from production to public administration. The main factor in the development is the constant flow of information in the large data sets form (Big Data) and the creation of artificial identity in an artificial intelligence form.
- 2. Digitalization is a manifestation of the social productive forces' development on a global scale. However, its implementation bears a national imprint and determines the development trends of national economies. Some countries have managed to achieve significant economic reforms at this stage, as they have begun to implement such digital technologies and have become world leaders in the digitalization process (Singapore, Switzerland) and determine the "fashion" of these changes.
- 3. For the countries of the former USSR, such digitalization is implemented as a system of coercive pressure on citizens to fully control social/financial flows and impose appropriate tax pressure on them. At the same time, these processes are of a nature that defines general digitalization as an absolute evil for any person on the planet.
- 4. The stage of global digitalization takes place in the constant struggle of the formed financial and banking capital and the nascent new digitalization capital, which seeks new areas in which it cannot be controlled, and it sets new rules of the game. Such a space was the virtualization of the information space, which allowed the implementation of the global project Metaverse.
- 5. The power of the Chinese economy and the system of centralized communist party management of the country allowed the realization of civilization under the full control of national state structures. And this allowed for this period to conduct a nationwide project of Chinese social and digital credit.
- 6. It becomes obvious that the world's national leader will be a country that will quickly form a system of such relations, where artificial intelligence will be fully subordinated to the demographically determined interests of a free creative person.

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