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TECHNOLOGICAL DYNAMISM AND DIGITAL TRANSFORMATION OF MODERN ECONOMICS

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Abstract

The digital transformation of the modern economic system determines the general contours of the development of all sectors of the economy. The new digital technologies, platforms and infrastructures of economic life has significantly transformed into innovation and modern entrepreneurship. In addition to simply discovering new tools and opportunities for innovators and entrepreneurship, digital technologies have wider implications for creating a market. The production of new information becomes a priority in the coordinates of new economic growth. At the same time, the information model of economic growth creates GDP (Gross Domestic Product) primarily through new information, grows from the bowels of the fifth and emerging sixth technological structures. This model preserves some traditional ones, corrects and revises other imperatives and principles of the functioning of a market economy. Therefore, it becomes a logical reflection of the new information structures of a market economy and its dominant qualitative characteristics. The article actualizes the application and implementation of digital technologies, which increasingly determine the path of development of a market economy. The article determines the essence of digital transformation while there problems revealed from the point of view of the technological structure development at each stage of its development. In order to accelerate economic development and reach the formation and establishment of institutions of modern society in the context of the digitalization there should be a direct participation of the state in the process of technological digitalization. The digitalization process in economy and the construction of regional structures requires supporting information activities.

Keywords: Digital technologies, economic transformation, digital economy, digital platforms.

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1. Introduction

Nowadays digital and intelligent technologies increasingly determine the priority trajectory of the development of a modern economy market. There is a maximized amount of new information and minimized amount of traditional factors in production, distribution, exchange and consumption of goods and services produced in an economy market. The fact about information penetrating into all spheres of the reproduction process and creating a multiplier effect in economics seems to be fundamental. Though, advances in digital technology are releasing innovations that transform the practice of information platforms (Michelman, 2019).

According to the practical analysis the gross domestic product (GPD) of developed countries is created mainly due to new information while reducing the share of other economic resources. These countries' GPD is characterized not so much by its material substrate, but by its functional and informational structure.

The study mainly focuses on the relationship between innovation and entrepreneurship (Galindo-Martín et al., 2019). In this case, new innovations are accompanied by digital transformations that contribute to value creation. However, it is also important to consider the impact of digital dividends on society as a whole, as well as on entrepreneurial activity in the context of the digital transformation of modern economy. Research does not usually consider this latter possibility.

So, according to Schweitzer and other researchers, digital transformation (DT) in the process of creating and developing a new product is considered as the role of IT systems for labor productivity (Schweitzer et al., 2019). However, the questions of the implementation of state policy remained relevant precisely in the context of the transformation of the digital economy of modern society. De Pablos and Gayo (2019) studied the key issues of understanding the new challenges of disorganization and digital transformation in companies and the economy. However, the identified problems have not been fully resolved and require more detailed scientific understanding and practical solutions. Junge (2019), Liu et al. (2019) and other researchers studied digital transformation technologies ensuring the sustainability of logistics processes in a modern market. Russian scientists made an important contribution to the development of the problem of digital changes in the market economy studying the main directions of the development of CALS technologies (Davydov et al., 2002).

There is an issue of scientific understanding of DT in the conditions of digitalization in modern society, as well as a direction of research that determines the need for direct state regulation of information activities in economic entities.

The research is aimed at understanding the digital transformation of the economy should include a multidimensional analysis, cover ideas and concepts from various fields, and clearly recognize the role of digital technologies in transforming organizations and socio-economic relations. At the same time, digital transformation has already been implemented in a number of industries to increase accessibility, flexibility, quality and efficiency.

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2. Problem Statement

Modern digital transformation requires the identifying of the scientific problem in the upcoming prospects and state regulation of the modern Russian digital economy. It seems appropriate to initially understand the essence of the digital transformation of the economy, understanding the problems of the upcoming directions of state participation in supporting information activities in the market economy.

3. Research Questions

The subject of the article is the digital transformation of the modern economy, being a process of changing the value of a business, adjusting technological and managerial processes, actively introducing digital technologies and a changing approach to human resource management.

4. Purpose of the Study

The purpose of the research is the scientific study in the technological dynamism of digital transformation in modern Russian society. The question outlined by us seems to be very relevant and requires its solution, both at the theoretical and practical level.

5. Research Methods

The theoretical and methodological basis of the study is the conceptual provisions of fundamental and applied scientific sources of leading domestic and foreign scientists on digital economies in modern Russia. This problem is the subject of research at the intersection of sciences (legal, economic, social) (Blumensaat et al., 2019; Zaki, 2019). Most of the researches of Russian scientists are focused on these issues (Davydov et al., 2002; Gasanov et al., 2017; Oleynik, 2000).

Analysis and synthesis of the scientific concepts and approaches regarding technological changes in the digital Russian economy in modern conditions are not completely resolved and require further study both at the state and global economy level.

6. Findings

The digital technologies developed significant adjustments and new principles in the mechanism of economic activity. At the same time, a new set of factors of production is being formed. This explains is the needs which are satisfied at the expense of the benefits generated through the use of information resources. The production of new information becomes a priority in the sense of new realities. The digital economy model creates GPDs primarily through new information. The technological principle of the digital economy is manifested in the fact that it is based on the fifth and emerging sixth technological order. This model enriches some traditional ones, corrects and revises other imperatives and principles of functioning of the modern economy. The dominant principle of the digital model of economic growth is characterized by a result of a differentiated increase in the share of new information and traditional economic resources decreases, while the total amount of resource costs consisting in GDP decreases, while the volume increases.

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In modern times, a new principle of the interaction of information production factors. It is based on a positive feedback system based on digital technologies that reduce the values of space and time. The development of critical industries, science and education, improving the quality of the productivity is determined by the effectiveness of information used as a strategic factor in production. According to Arrow (1995) knowledge is not just a useful and necessary good, but also an object of sale. So, in economics knowledge is the source of value. In an industrial economy, the achievements of science are only used in production, now production itself is based on scientific concepts and modern technologies. Information is gradually becoming a new factor in production (Blumensaat et al., 2019). Information products and services produced in a market economy are in many cases system-forming and unique. Consequently, the reproductive situation of abruptly replacing saturated old needs with new ones is most favourable for producers of information products and services.

The technological basis of a market economy is the totality of the technological modes that make up its basis. Nowadays there is an existence of five technological structures. The technological basis of the modern market economy lists the fifth informational and sixth technological order. They are characterized by integrated production platforms that operate on the basis of flexible production systems aggregated into a technologically integrated complex of interconnected industries. They are mostly based on the achievements of microelectronics, informatics and biotechnology, new materials, as well as the latest renewable energy resources. Under the influence of the information technology revolution, the cycles of changing technological modes are decreasing. Fundamental science, which mainly determines the change of technological modes from the late 1990s, has become a planetary productive force. Modern life conditions present 2 or even 3 technological modes. For example, Richard Foster cites many episodes of a fairly rapid update of technological patterns in various industries and in many countries (Foster, 1987). Following Menshchikov's idea of the S-shaped life cycles of technological structures, it is possible to create a clear picture of innovative shifts (as cited in Men'shchikov & Klimenko, 2014).

Nowadays, the sixth technological structure is being formed. It is based on the accelerated updating of the entire life cycle of goods and services, within its changes in the situation and market conditions. Obviously, this structure is still in an embryonic state. They consist of membrane and quantum technologies, biomedicine, molecular biology, nuclear medicine, genetic engineering, laser technology. The development and implementation of scientific and technical projects, which are based on new information, requires the integration of both the theoretical and the practical level of all the necessary knowledge – mathematics, physics, biology, chemistry, computer science and etc. (Han, 2019). This led to a chain of landmark discoveries in coherent linear optics. Nowadays development receives a direction called green – innovation. Within the framework of the fifth technological structure, fundamental science, R&D, production and consumption of the product functioned separately. The sixth technological structure based on CALS-technologies provides a combination of these stages.

The essence of CALS-technologies is the application of the principles and technologies of information support at all stages of the product life cycle, based on the use of an integrated information environment, which provides uniform methods for managing processes and interaction of all participants in this cycle. These principles and technologies are implemented within the international standard requirements for management and interaction mainly through electronic exchange of information

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resources (Davydov et al., 2002). Consequently, the sixth technological structure is closely connected with the digitalization program and closer integration of related information processes.

The basis of the fifth and sixth technological structures are considered a unique IT clusters. These are local spatial concentrations of the latest coupled industries, related industries and institutions specializing in the creation and dissemination of digital technologies. There are inter-industry interconnections of production, distribution, exchange and consumption of goods and services becoming more relevant under the influence of digitalization. From this point of view, the role of IT clusters as a generator of macroeconomic efficiency is confirmed by the GPD of developed countries. Thus, the productivity is growing very unevenly - it rises to a new level, each time as a result of technological innovation changes. According to Porter (2000), the only reasonable concept of competitiveness at the national level is productivity. Moreover, "the competitiveness of a particular science depends on the ability of its industry to innovate and modernize." He notes that "in relation to competition, the roots of productivity lie in national and regional environments" (Porter, 2000, p. 26).

Regional structures as an important and necessary element of the system are to be built for supporting the information activities of the state. Their fundamental function is to provide legal services, draw up intellectual property rights, draw up business plans for activities in the field of the digital economy, open digital enterprises, provide public services through digital technologies, etc. (De Falco, 2019).

On the other hand, the new digital policy and directions of Russia's reforms should be coordinated with all layers of the digital entrepreneurial community and created with the active participation of all regions of Russia.

It is important to say that global digital practice shows that in Russia it is necessary to develop digital partnerships, where subjects of the federation and federal authorities will be able to implement cooperation in eliminating the main barriers to the development of digital activities in the regions of the Russian Federation. Moreover, such cooperation should stimulate state programs and projects of digital development and increase digital technological competitiveness of the regions.

Digital transformation is the process which helps actors to adapt to the modern technology. The more digital technology spreads (automation, cameras, sensors, touch screens, artificial intelligence, etc.), the more pressure will increase on companies to use it for additional profit (Young & Rogers, 2019). The digital transformation of the economic system is not only the introduction of new digital technologies in all sectors of the economy. It is also an opportunity to expand the activities of market institutions and the possibilities of digitalization of production in all sectors of the modern economy as a whole (Brock & von Wangenheimz, 2019; McKinnon, 2019).

7. Conclusion

An economic development and the formation and establishment of the digitalization in the economic system requires direct operational participation and government intervention in the process of forming dominant basic institutions. First of all, the main structural elements that ensure interaction the main actors in the political and economic spheres of modern society, digitalization of the economy, planning, etc. programming state's economic activity (Herrmann et al., 2019).

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Digital transformation should be considered a spreading idea with the practical implementation in every national company. This way the entire Russian economy will move quite dynamically to a productive and efficient way of sustainable socio-economic development and restore technological leadership in the global world economic space.

At the same time, state participation should serve as the fundamental and most powerful incentive for the technological transformation of the modern economy. State innovation policy should provide a supportive effect on the development of fundamentally new high-tech sectors and infrastructures of the Russian economy. At the same time, the quality management of the digital transformation of business structures and sectors of the economic system should be considered as a justified need in the context of large-scale and deep technical integration of modern society. The most important thing here is the creation of effective institutions of the digital economy that will ensure the continuity and effectiveness of its development (Gasanov et al., 2017). Institutions contribute to the digital development of ongoing processes in the economic sphere and serve as the foundation for the effective development of modern Russian society; therefore, the solution of the tasks outlined by us assumes the utmost importance for the formation of the future institutional layer in the context of digitalization of the economic activity of the state as a whole.

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