

# The role of digitalization in the development of socio-economic systems

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**Abstract.** The digitalization of the economy and the transformation of socio-economic processes corresponding to these changes presupposes an increase in innovative activity in the regions. The problem of introducing digital technologies into the processes of socio-economic systems is the use of ineffective incentive tools. To solve this problem, it is necessary to study the functioning of socio-economic systems, in particular, the interaction of participants in the innovation infrastructure within the framework of digitalization. The digital economy sets the vector along which socio-economic systems of micro, meso, macro levels will develop in the long term, which necessitates research and a comprehensive analysis of digital transformation processes.

## 1 Introduction

The digital economy is an integral part of the economy dominated by the knowledge of subjects and intangible production - the main indicator characterizing the information society. The concepts of "digital economy", "knowledge economy", "information society" and their analogues presented in modern scientific literature form a new socio-economic system that replaces the previous industrial paradigm [1].

In this regard, the developed countries of the world pay close attention to the harmonious development of the backbone elements of the digital economy, information society and knowledge economy. The understanding of the need for the transition to the information economy has developed in Russia, which, in particular, was reflected in the formation of a special state program "Digital Economy of the Russian Federation" (approved by the Government of the Russian Federation on July 28, 2017 by order No. 1632-r).

For Russia, in the current difficult period, it is extremely important to transform the traditional economy into a modern one as soon as possible - informational, intellectual, digital [2]. This is an uncontested path of development. Otherwise, further social and economic crises and, as a consequence, political imbalance are inevitable, which, in turn, can act as a positive feedback and immerse the country even deeper into the technological and then socioeconomic lag behind the advanced countries of the world. In modern market conditions, it is obvious that there is a need for systemic transformations and actions aimed at developing

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the digital economy in domestic socio-economic systems at all levels. The idea of digital transformation has embraced the whole world, it is now one of the most popular topics of discussion, but in reality it is far from a new concept, discussion about it has been going on for several decades. We are in solidarity with the point of view that the digitalization of the economy is a modern form of manifestation of a more fundamental pattern of its informatization [3]. Despite the comparatively good elaboration of the category under consideration, a stable understanding of the essence and content of the term "digital transformation" has not yet been formed in the scientific sphere and the business community. At the same time, it is important to note that the content of the term "digital transformation" has evolved along with the change and development of technology [2]. For a long time, digital transformation has meant digitalizing or storing traditional forms of data in digital format. This is also one of the directions of digital transformation, its interpretation in the "narrow sense". However, in the modern world, this concept is much broader than the translation of data into digital format. When businesses and organizations realized the full potential of using digitized data, they began to develop processes for this purpose. From that moment on, digital technologies began to develop rapidly, and the ability to quickly implement them directly determines the competitiveness of an organization in the market.

Digitalization, in turn, is a process aimed at digitizing all information (and even material) resources (creating digital copies) and forming network interaction platforms in order to obtain a predictable and guaranteed result for any control action using automation tools [4]. In their report "Russia 2025: From Human Resources to Talents," The Boston Consulting Group noted that "digitalization is the use of online and innovative digital technologies by all participants in the economic system - from individuals to large companies and states". In the new economic conditions, all subjects of the socio-economic system striving for sustainable functioning are forced to go through the process of digital transformation. Digital transformation is the introduction of modern digital technologies into business processes of socio-economic systems of all levels [4]. This approach implies not only the installation of modern equipment or software, but also fundamental changes in approaches to management, corporate culture, and external communications. As a result, the productivity of each employee and the level of customer satisfaction are increased, and the company gains a reputation for being a progressive and modern organization. In practice, this means creating a system of end-to-end business processes, which can be called a digital business ecosystem.

## **2 Digital transformation as a process of integrating digital technologies**

Within the framework of our study, it seems significant to define digital transformation as the process of integrating digital technologies into all aspects of the business activity of the socio-economic system, requiring fundamental changes in technology, culture, operations and principles of creating new products and services [2]. For the most effective use of new technologies and their prompt implementation in all spheres of the socio-economic system, it is necessary to abandon the previous foundations and completely transform the processes and models of work.

Digital transformation requires a shift towards the edge and increased flexibility in data centers that must support the edge. This process also means phasing out outdated technologies, which can be costly to maintain for the socio-economic system, as well as changing the culture, which must now support the acceleration of processes provided by digital transformation [3]. Also, for further research on the selected topic, the definition of digital transformation presented by V. Mesropyan is of interest: "These are revolutionary changes in business models based on the use of digital platforms, which lead to a radical increase in market volumes and the competitiveness of companies". Digital transformation

ensures the fullest possible disclosure of the potential of digital technologies through their use in all aspects of business - processes, products and services, approaches to decision-making. It is important to emphasize that technology alone will never be enough for digital transformation. In order for the digital transformation process to be complete, clearly formulated business objectives and data are needed. Thus, digital transformation can be considered only at the intersection of all three dimensions (formulated business problem, data availability and technology itself) [3].

Thus, "digital transformation involves a fundamental rethinking of how an organization works and how it interacts with the environment." The main driver of change is the modern consumer - business is changing under the influence of new factors. That is why digital transformation is not only a service of consulting companies, but a fundamental process that the world community is going through, adapting to the new conditions and preferences of the digital economy society. Those. digital transformation is not so much a technology as a change in thinking in the new conditions of a new digital economy. Let's designate the main advantages that digital transformation brings to all business entities [5]:

1. Optimization of processes. New technologies are enabling businesses to automate simpler processes and eliminate intermediate steps in more complex processes. This increases the flexibility of enterprises, which can now use their resources much more efficiently.

2. Search for new streams of income. With the advent of new technologies, new ways of making a profit are opening up that might not have been available before.

3. Creation of a personalized and attractive service infrastructure. Today's customers expect businesses to listen to their input and cater to their specific needs. Modern technologies are so developed that they can solve all these problems.

An analysis of the above advantages shows that they are most significantly manifested in the provision of services, which is determined by the well-known properties of services, such as their personalized nature, focus on the interaction of the contractor (manufacturer) and customer (consumer), intangible and - often - informational nature, etc. [ 6]. That is why digital transformation processes are most active in the service sector (retail, tourism, consulting, entertainment services, etc.), as well as in those segments of the economy that receive added value from the development of service activities (for example, in the banking sector).

### **3 Methodology for assessing the country's readiness for the digital economy**

The methodology for assessing the readiness of countries for the digital economy (Digital Economy Country Assessment, or DECA) is designed to assess the current level of development and determine the level of maturity of the digital economy in the country. The assessment helps to identify key gaps, challenges and opportunities for future growth, as well as areas requiring more careful analysis [7].

The digital economy - an economy based on the development and use of digital technologies - is built on a foundation that ensures economic and social transformation. It consists of:

- non-digital factors, including policy and strategic planning, leadership and institutions, legislation, human capital, innovation, business environment, trust and security, and ensuring the creation of an enabling environment in which digital transformation can take place;

- digital factors, including digital infrastructure, shared digital platforms and emerging digital technologies;

- the digital sector of the economy, which includes the information and communication technology (ICT) sector, as well as the content and media (media) sector [8].

The digital economy has an impact on the public and private sectors, as well as on society as a whole. In this regard, the methodology provides for the assessment of:

- digital transformation of the public sector, which includes digital and non-digital factors, as well as the use of traditional and emerging digital technologies in the public sector;
- digital transformation of the private sector, including digital and non-digital factors, the use of traditional and emerging digital technologies in the private sector;
- digital citizens and consumers, meaning citizens' access to digital technologies and the use of digital technologies in socio-economic activities, including for work, purchase of goods and services, education, communication in social networks, participation in political life, etc. [8].

Digital transformation has a significant impact on economic and social processes, primarily on economic growth, labor market and quality of service. Each subject area of assessment is characterized by a set of two types of indicators - quantitative (including those used by international organizations) and qualitative, characterizing important aspects of development that do not have metrics. In order to determine the strengths and weaknesses and priority areas for the development of the digital economy in the country, all indicators are assessed on a five-point scale, taking into account a comparative analysis of world experience and best practices.

## 4 Results and discussion

For Russia to become a digital leader and maintain the competitiveness of its existing industrial base, all stakeholders, including government, the private sector, academia and research institutions, must work in close coordination with each other. Lessons from international experience increasingly indicate that developing a coherent and comprehensive strategy for the digital industry is an important starting point, but strategy alone will not be enough [9]. Digital transformation will lead to rapid changes, many of which are difficult or impossible to predict, and competitiveness will increasingly depend on the ability of governments, firms and research institutions to respond quickly and adapt to a changing environment.

In Russia, the competitiveness of industry is constrained by a high degree of market consolidation and the dominance of state-owned enterprises, therefore, in order to accelerate the transformation process and catch up with world leaders, a directive approach to digital transformation, carried out "from the top down" with the active participation of the government, following the example of the Chinese model, may be needed [7]. In the absence of a tough management approach, market forces constrained by continued capital outflows and declining local competition are unlikely to compel traditional industries to make the significant investments needed in digital technology and business transformation. A top-down approach must be supported by a dynamic horizontal strategy based on the creation of platforms for coordination among key stakeholders.

Industry plays a key role in the Russian economy, providing over 38% of GDP and employment of a third of the workforce [8]. In the structure of industry in Russia, the manufacturing industry (65%), the mining industry (27%) and the production / distribution of electricity, gas and water (8%) are distinguished. The last five years have been characterized by high dispersion in production rates by sub-sectors with steady growth in the production of chemicals, foodstuffs and petroleum products, while in other sub-sectors the level of production decreased compared to 2019 [8]. The largest decline in production is observed in sectors such as mechanical engineering, metalworking and electrical equipment. The Russian economy is still concentrated in several sectors. Despite efforts to provide support to various industries to improve the international competitiveness of Russian industry, its high-tech and processing industries continue to lag behind globally. This is

compounded by the relative dependence of the Russian economy on oil and gas price volatility. The digital transformation of the Russian industry is one of the priority national tasks, as stated in the May 2018 decree of the President of the Russian Federation [10]. The decree pays special attention to the digital transformation of processing industries as a way to increase exports. But when it comes to digitalizing key Russian industries such as mining and processing, with rare exceptions (like Gazprom), Russia lags behind other countries. It is also important to perform the following tasks:

Developing a comprehensive digital industry development strategy that takes into account both industry-wide and industry-specific factors and takes into account global best practices. Such a strategy should be aimed at protecting the strategic positioning of Russian industry, as well as creating conditions for the development of sectors of advanced growth.

The strategy would benefit from a high profile national initiative such as Made in China 2025 and Industry 4.0, which would be based on a thorough comparative analysis of Russia's characteristics and competitive advantages; bring together public, private and research players; include specific goals and target sectors; would not be limited to large enterprises, but would contribute to the creation of favorable conditions for the growth of SMEs [7]; would be based on a coherent policy coordinated between regions and would have sufficient resources. Such a strategy should include specific indicators against which progress can be measured continuously. Key industry factors that should be the focus of the strategy include stimulating R&D and innovation, aligning industry standards, and developing digital skills.

Strengthening links in the digital industry ecosystem to ensure collaboration between the private sector (including large companies and SOEs, SMEs and start-ups), government organizations, academic institutions and research centers in order to accelerate the pace of transformation of the digital industry [6]. Build partnerships or consortia to jointly develop standards and solutions, develop legislation to regulate the use of emerging technologies, share infrastructure, execute large projects, implement training programs and invest in technology startups.

Encourage the establishment of strong links between the traditional industrial sector and the dynamically developing Russian ICT sector by stimulating demand for locally provided ICT solutions and thus stimulating both the digital transformation of traditional industries and the growth of the ICT sector [8].

Leveraging innovation and encouraging the "spill-over" of technologies from advanced dual-use industries such as defense, aircraft and shipbuilding, space and nuclear industries into lagging industries [7]. The experience and know-how accumulated in these industries can accelerate the transformation of the industry and lead to the development of new products and services.

Support educational initiatives to develop skills in the digital industry [6]:

- creation of mechanisms to counteract the "brain drain" and attract leading Russian and foreign specialists to Russia;
- increasing the competence of specialists in the field of digital technologies within the framework of existing domestic and international educational programs;
- working with local universities and educational institutions to help them understand the specific requirements of the industry.

Promoting a culture of open innovation and risk-taking; Providing broad resonance coverage of industry digital transformation successes.

Creation of demand for innovation. Stimulating innovation and startups in the digital industry, including through the creation of corporate venture funds, business incubators and digital factories, as well as the launch of technology competitions.

At the industry level:

Assessing the potential impact of the digital industry on economic growth, jobs and service delivery.

For vulnerable industries, such as mining and processing, there is a need to identify opportunities for a quantum leap forward through digitalization..

With regard to opportunities for the introduction of emerging technologies, industry priorities should be identified, short-, medium- and long-term strategies developed, and consortia formed to efficiently develop and manufacture innovative products.

## 5 Conclusions

The format of digital transformation, its speed and effects vary significantly depending on the initial conditions, the achieved level of digitalization and many influencing factors, however, a single methodology and a certain set of universal recommendations for transforming socio-economic systems through digital transformation form the scientific basis for success and effectiveness. transition of socio-economic systems of all levels to the digital economy. This determines the relevance and high importance of the methodology developed by the author for the digital transformation of socio-economic systems, which is a scientifically grounded system of approaches, models and tools, a priority focus on creating conditions for the systemic transformation of the concept and format of functioning of socio-economic systems and the acquisition of a significant competitive advantage, capable to ensure a transformable system of any level stable and effective functioning in the digital economy based on the maximum use of the potential for the comprehensive implementation of digital technologies and entry into a single digital space, through the use of digital platforms as a complex of integrated services that implements network interaction management services and the main transforming tool in the conditions digitalization of the economy [10].

The definition of digital platforms as one of the main transforming tools of the digital economy is due to their wide potential for continuous development, improvement and expansion of the boundaries of activities aimed at servicing various business functions: information processing, telecommunications, financial aspects of ensuring the main activities of the organization, due to the high ability to generate new knowledge based on accumulated experience and breakthrough technologies. The author's approach to the study of the digital economy as a global management system for all business entities and their resources through digital platforms is based on clarifying the definition of a digital platform as a set of integrated tools based on modern digital technologies, the use of which simplifies the management of the functioning and interaction both internally and externally. surrounded by the socio-economic system, which reveals the composition and allows you to form the structure of the digital platform, and determine the main subjects of the digital economy and their key functions: ideologist, developer, digital platform. Thus, it is true that the digital economy is a new reality, the achievement of which through digital transformation based on digital platforms is a unique instrument of the digital revolution, the timely and correct use of which will allow the Russian Federation to acquire competitive advantages already in the new digital economy [10].

In the process of transition to the digital economy, the relationship between the main operators of the IT market is fundamentally transformed in the role model "vendor - distributor - integrator - customer". Chains of interactions collapse, the business is built on a network model of direct interactions. In this connection, the majority of IT companies, losing their functions and semantic role, on the other hand, get a unique chance to reach a new level, as a service integrator providing digital transformation services based on digital platforms [9]. In the dissertation work, the author's concept of creating a service integrator for the digital transformation of socio-economic systems on the basis of a universal digital platform is proposed and substantiated, which is a service-oriented outsourcing company that has a set of digital management competencies in the field of platformization and service integration,

allowing it to realize a full life cycle of a universal digital platform in order to accelerate the digital transformation of users - socio-economic systems of various types and levels, while achieving a number of competitive advantages enhanced by the synergy effect, expressed in a number of effects, including the development of the domestic market for digital products, software and services based on disruptive digital technologies.

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