DIGITAL ECONOMY WITHIN THE EURASIAN ECONOMIC UNION: CURRENT STATE AND DEVELOPMENT PROSPECTS

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Abstract

Theoretical ideas about the influence of growing information flows on the current socio-economic system can be found in the concepts of the post-industrial and information society. Changes in production processes, the reorientation of production with the development of material goods for the provision of services, the globalisation of the economy are noted by theorists of the digital community as more fundamental properties of the newest type of society, caused by informatisation. The digital era is defined by continuous streams of data containing information, knowledge, ideas, and innovation. Global digital transformation (digitalisation) has changed not only the economic, but also the social vision of the world. The rapid growth of high-tech production is a key development trend in the modern world industry. However, the situation in developing countries as well as in "countries with economies in transition" differs from that in developed countries. Accordingly, the purpose of the study is to analyse digital transformation in the socio-economic aspect of the countries of the Eurasian Economic Union. The readiness of the countries of the Eurasian Economic Union (EAEU) as a whole for the digital transformation of the economy and society. Within the framework of the study, the main theoretical approaches to understanding digitalisation and its main processes are identified, the opinion of various authors regarding the understanding of the category of digitalisation and digital transformation of the economy is presented. The trends of digital transformation of both the Eurasian Economic Union and in the context of the participating countries, the main prerequisites and main difficulties in this process are considered, the main problems are identified, and the main prospects are also considered. Prospects for further research are conditioned by the subsequent study of the trends in digital transformation of the EAEU countries, considering the differentiation of the EAEU countries by the level of industrial development, as well as by the degree of lagging behind the global transition trends. The study is of practical value within the framework of summarising data on the main directions of digital transformation development, as well as on the existing difficulties in the EAEU countries regarding this process.

Keywords: Industry 4.0, digitalisation, business structures, digital transformation, national economic systems.

JEL classification: F55, F63, R50

1. Introduction

The current stage of development not only of the economy of the whole world, but also of national economic systems, is described by significant transformation processes, which are accompanied by a complex of changes in various directions, with their full interconnection. There are many approaches that can explain and capture these transformational processes. These include: N. Kondratyev's approach (the theory of long waves) to the concept of F Machlup (the knowledge economy); J. Galbraith's approach (new industrial society) with the transition to D. Bell's approach (post-industrial society). The last transition is mediated by changes in the factors of competitiveness of enterprises, as well as structural shifts in the economies (in this situation, this refers to the global scale and national economies). Furthermore, in the last transition, there is a change in the ratio of the importance of factors of production and an increase in knowledge of the capacity of goods and services. Within the framework of the study, it is possible to designate both network and innovative approaches, which reflect the development of technologies in the field of working with information, its processing and transfer (Belyakova et al., 2017). Considering the situation at large, one can refer to transformation processes in relation to the conditions of economic activity. This is conditioned by the competition of a global nature, which is reflected in the reaction of economic entities to changes in the external environment, both technological and structural, and the possibility of rapid adaptation to these changes. In terms of reaching a new level of competitiveness and economic efficiency, in this situation it is received by those who adjust their development in relation to the key trends in the development of a new global economy (Rodionova and Kokuytseva, 2020).

In this situation, international competition for the prosperity of the people is critical. Since the competitiveness of the economy allows economic entities to trade in products, both in the country and abroad. This, in turn, leads to an increase in the income of the population, as well as its employment (Petersen, 2019; Koudoumakis et al., 2019). The current stage of development is described by the fact that the competitiveness of the economies of countries and economic unions is becoming most dependent on the scale of the use of digital technologies in production. In this context, this refers to digital transformation, which is directly dependent on the availability of the resources in the country, which are necessary for this transformation. In this regard, the relevance and practical significance of the study of digital transformation trends in the socio-economic context increases both for a separate territory and for integration systems (economic unions). The purpose of the study was to analyse trends in digital transformation in the socio-economic context of the countries of the Eurasian Economic Union (EAEU) with the identification of positive and negative aspects. There are many studies investigating the processes of digital transformation of economic systems, here one can note the articles of foreign researchers: V. Alcácer and V. Cruz-Machado (2019), S. Carbó-Valverde (2017), C. Heavin and D. J. Power (2018), and others.

The article of the authors such as Yu.I. Gribanov and A.A. Shatrov (2019) can be noted, which explores the essence, content, and role of digital transformation in the development of economic systems. It is worth noting the article of Doctor of Economics, Professor A.V. Babkin (2017), which investigates the trends in the digital transformation of the economy and industry, their problems and prospects. O. Gurov's article covers the study of digital transformation processes in relation to economic unions (Gurov, 2019).

All of the above indicates the need for further study in order to investigate the trends of digital transformation in the socio-economic context of the countries of the Eurasian Economic Union. The theoretical significance of the study lies in expanding and supplementing theoretical knowledge regarding the processes of digital transformation at the level of countries' economies. The practical significance lies in the fact that the problem of digital transformation at the country level, as well as integration associations, is one of the rather urgent at the present stage, its elaboration can help identify the main reasons that hinder the development of this process both at the level of one territory (country) and within the framework of economic integration.

2. Literature Review

At the present stage, the development of a new philosophy of management is required, and in all directions and in all systems, regardless of scale, this is primarily conditioned by a high degree of uncertainty caused by the high speed of ongoing changes, also the emergence of completely new growth formats, the rapid pace of technological change, the emergence of new megatrends, new drivers of economic development (Nekhorosheva, 2016; Nekhorosheva, 2017). Table 1 presents some of the results of the main megatrends identified by researchers and research organisations.

Table 1. Major megatrends of global significance

Name	Megatrends
John Naisbitt (USA)	Transition to an information society Achieving a kind of dualism, which lies in the balance of technical progress and a spiritual approach Switching to the long term from considerations of the moment Transition to decentralisation The main self-reliance is a deviation from faith in the help of institutions and organisations Transition to the use of informal networks from hierarchical structures
PricewaterhouseCoopers – Global Consulting & Auditing Network, Strategy & Leadership Group (USA)	Technological breakthrough The global economy and the reallocation of power Demographic changes Acceleration of urbanisation processes Resource scarcity Climate change
European Commission	Globalisation New markets and their development Climate change Formation of the knowledge economy Resource shortage, depletion

Notably, the main directions of development of megatrends are similar, which are distinguished by the sources presented in the table. Arguably, a number of highlighted megatrends create conditions for the development of Industry 4.0, these include: the development of a knowledge economy, the redistribution of forces in the global economy, the transition from an industrial society to an information society (Carbonara and Giannoccaro, 2016; Margarian, 2013). At present, Industry 4.0 can be called one of the most important modern megatrends, which is gaining rapid development rates. The current trends have a significant impact not only on the economy, but also on society as a whole and on the individual, as well as on the ongoing social processes. The impact of such a global megatrend as Industry 4.0 carries with it the processes of digital transformation, which is taking place in all areas, both in the economies of countries and in society. It is necessary to understand the concepts of what digital transformation is, it is necessary to introduce some certainty in the terminology.

In the broadest meaning, digitalisation is usually understood as a socio-economic transformation initiated by the numerous introduction and development of digital technologies, that is, technologies for the design, processing, exchange, and transmission of data. The digital economy is an economy described by the active implementation and actual use of digital technologies for collecting, storing, processing, transforming, and transmitting data in absolutely all spheres of human activity. It is a concept of socio-economic and organisational-technical relations based on the use of digital information and telecommunication technologies. Furthermore, it is a complex organisational and technical concept in the form of a set of various elements (production, infrastructure, organisational, software, regulatory, legislative, etc.) with distributed interaction and mutual use of economic representatives in order to exchange knowledge in conditions of constant development. The

key to defining a digital concept is the exchange of knowledge, the technologies that enable it, and the society that can take part in this exchange and manage it.

At the present stage of development, society is entering the era of the digital economy, which significantly changes the usual zones:

– the main resource is information;

– the absence of restrictions regarding the trading platform on the Internet;

– the company does not need to have significant scale to compete successfully;

– one and the same material resource can be used an unlimited number of times to render different services;

– the scale of operational work is limited only by the scale of the Internet.

The Internet, with its colossal potential, is considered the main component of the digital economy, increasing efficiency and productivity.

In modern scientific literature, digitalisation is defined as an integral component of the modern global economy, which contributes to more rational resource management (Antikainen et al., 2018), optimisation of business management models (Rachinger et al., 2018) and structural change (Heavin and Power, 2018). It also complicates workflows, speeds up innovation cycles (Lato, 2018; Larionova et al., 2018), and improves supply chain management (Srai and Lorentz, 2019). Digitalization is leading to the internationalisation of industries and startups (Neubert, 2018) and the creation of manufacturing ecosystems (Alcácer and Cruz-Machado, 2019).

Digitalisation is responsible for making modern production individual. This means that product development is tailored for each client (Paritala et al., 2017). Manufacturing includes visualisation, production simulation, ergonomic and human factors analysis, a comprehensive approach to product and process design, and product design that is sensitive to process constraints and capabilities. Modern production (for example, chemical processing) is impossible without data analysis, network systems, artificial intelligence, the Internet of Things (IoT), digitalisation of business processes, as well as all the characteristics of Industry 4.0 (Kockmann et al., 2018).

The process of global digitalisation, its penetration into all spheres, is a digital transformation. This refers to the informatisation of business processes, both horizontal and vertical, this state of affairs indicates the development of a competitive environment at a newer level, where the time factor will play one of the most important roles (Babkin, 2017).

Technological development and ongoing changes in technologies have led to the evolution of the content of the term "digital transformation". At the initial stage, digital transformation was understood as storing traditional forms of data in digital format or transferring data to digital format. At the present stage, this has become one of the areas of digital transformation. The concept itself has become much broader, due to the business structures understanding the possibilities of the use of such data in relation to business processes, which led to the emergence of digital technologies, which were actively developed and quickly introduced and directly determined the competitiveness of such business structures. Part of entrepreneurs and managers in general believe that a digital transformation process is necessary, which allows enterprises to “keep pace” with changing consumer expectations and technologies. Expanding the scope of understanding digital transformation leads to a plurality of understandings of this definition. However, some researchers and practitioners against the specification of this concept can also include IT specialists, which is due to the constant development of digital technologies, respectively, this term is also subject to constant changes and expansion, that is, it also evolves in relation to the development of technologies (Gribanov and Shatrov, 2019). However, certain main aspects can be identified from the multitude of interpretations of this definition.

Notably, there are many terms within the concept of digital transformation:

– digitisation, which was discussed within the framework of the evolution of the concept of digital transformation (initial stage). That is, this refers to the transfer of information to digital media from physical media (Koptelov, 2016). This process does not imply any change in information (neither its content, nor its quality), it just changes the form, which allows to add another information to this information, also in digital format, and improve existing business processes. If this process is considered in relation to the industrial revolution, then it can be attributed to the third industrial revolution, which lasted until 2010;

– digitalisation – this refers to creating a new digital product. The main difference here is an innovative product that has new consumer properties and new functionality. Furthermore, digitalisation allows to get new competitive advantages and a new leap in business, in contrast to digitisation, which only allowed to improve existing processes and existing business models. As for digitalisation, it can be considered as an element of Industry 4.0 or the fourth industrial revolution.

The global process of digitalisation of production (the spread and penetration of digital technologies in the entire sphere of the vital activity of society) suggests the emergence of such a concept as a digital economy, which the World Bank experts represent as a system of relations, both socio-cultural and economic based on the use of information and communication and digital technologies.

Notably, some companies, both within the framework of large and medium and small businesses, perceive digitalisation as automation, namely, its new round. However, this is not entirely correct, since automation implies the liberation of a person, or a decrease in their participation in the work process (receipt, transformation, transfer and use of materials, energy, etc.) (Gribanov and Shatrov, 2019). What is digitalisation was discussed above and suggests the difference of concepts. In the report "Russia 2025: From Human Resources to Talents", the Boston Consulting Group understands digitalisation as the use of digital technologies and online opportunities from large companies and states to individuals, that is, by all participants in the economic system (Russia 2025: From Human Resources..., 2017). As for the understanding of digital transformation, to a greater extent it is the possibility of making more money in relation to the conditions of constant changes taking place in the technological order, the possibility of maintaining a competitive business. As for business structures, the desire for sustainable functioning in the new economic conditions forces to take part in digital transformation and go through it. The term "digitalisation" is used to describe the transformation, which is not limited to the replacement of a resource from analogue to digital or from physical to information, but goes much further, which is why the term "digital transformation" is synonymous with the term "digitalisation". Digital transformation is a change in thinking about a new digital economy and new conditions, not just technological change. Like any process, digital transformation has its positive and negative effects. The former finds its manifestation from an individual consumer to the country at large, that is, at all levels of the economic system. At the very least, digital transformation carries with it the possibility of using digital technologies (full potential). If viewed from the maximum: development of innovative business models (Napolskikh and Yalyalieva, 2019; Larionova et al., 2018); numerous opportunities for growth, cost reduction; increase in the efficiency of doing business; improvement of the shopping experience – namely, rethinking the very format of the economic system, its functioning.

The main positive directions of digital transformation in the socio-economic context can be identified as follows:

– service infrastructure (the ability to personalise and create attractiveness) striving to meet specific needs, which, in turn, is expected by modern customers;

– receiving additional income (new streams) as new ways of generating income with the use of new technologies are opening up;

– processes at the enterprise become more optimised, which is conditioned by the exclusion of intermediate processes in relation to more complex processes and the automation of simpler processes through the use of new technologies. There is an opportunity for more efficient use of resources and, accordingly, increasing the flexibility of enterprises.

The widespread digitalisation of industries and other areas makes not only enterprises competitive, but also increases the country's competitiveness. Therewith, the country can increase its gross domestic product by increasing the production of goods and services. This refers to global redistribution since the growth of human well-being is also associated with a successful digital transformation. Ignoring the digital transformation processes by countries leads to a drop in GDP per capita, since the products, goods, and services of such a country become practically uncompetitive. Accordingly, digital transformation in the socio-economic context for the country becomes a necessary condition for ensuring its well-being, increasing this well-being. The digital transformation can be considered in a socio-economic context relative to the experience of different countries. In general, the digital technology

implementation model was developed for high-tech industries (for example, the pharmaceutical industry). However, digitalisation of a separate industry is impossible, since digitalisation is a complex process that combines government procurement of medicines, production control, supplies to pharmacies and hospitals, and medicine inventory (Chircu et al., 2017). Therefore, a digital transformation of the entire industry is required.

Considering the experience of developed countries, for example, Finland has proved that digitalisation of healthcare directly affects the commercialisation of high technologies in this area. A survey of pharmaceutical, medical, and electronic health companies in Finland indicated that digitalisation has positively influenced commercialisation, especially in information search and management, various assessments and official actions, creation of big data and performance standards. However, at the same time, it threatened national security due to the possibility of external health management, deliberate hacker attacks and data fraud (Gbadegeshin, 2019; Dynnikov, 2017). Digitalisation has penetrated the socio-cultural sphere. There are two scenarios for the music industry in the digital age (Bourreau et al., 2008): profit from the sale of content that requires direct or indirect protection of music files, or through the (almost) free distribution of content and the sale of additional goods or services. Digitalisation can be said to negatively affect the music, publishing and film industries due to piracy and disregard for copyright in books, music, radio, television, and film (Waldfogel, 2017). On the other hand, digital technologies have helped this area to reach new target groups. This has expanded the consumer base and reduced the cost of bringing new products to the music, film, book, and television markets. Furthermore, given the unpredictable nature of product quality in this industry, the growth in the number of new products has led to a significant improvement in the quality of these products.

Digitalisation has significantly transformed education. In developed countries, the typical classroom includes all forms of e-learning and teaching (Mashhadi & Kargozari, 2011). At present, skills and knowledge are transferred through computers and networks. This means that the forms of presentation of educational material and the development of skills have completely changed. The digitalisation of education leads to an increase in demand for education regardless of age. Teachers and students use a limited number of digital technologies mainly for learning tasks, and the educational management system is considered the most useful tool (Bond et al., 2018). Thus, it can be concluded that digitalisation affects all spheres of the country's economic and social life. However, in this context, the issue of integration associations of countries into economic unions becomes quite interesting.

Notably, the basis of the global trend of globalisation is also manifested in the growing interconnection, interdependence, and mutually beneficial economic cooperation of countries in the context of a global unstable process, which can be observed in the countries of Europe and Asia. This circumstance is a condition of priority in the development of management – in the benefit of the integration processes of national economic systems. In this context, integration processes are one of the crucial factors for economic growth and sustainable development, as well as increasing the competitiveness of countries. Currently, integration unions, which include several member countries, are quite effective in their activities. One of these unions is the Eurasian Economic Union (EAEU). Compared to other integration unions such as the EU (European Union), the European Free Trade Association (EFTA) and some others, the EAEU is quite young. This association of countries can be called one of the dynamically developing ones. In line with current trends in the global process of digital transformation of the economies of countries, the importance and significance for future development in terms of the digital transformation of the economies of the EAEU member states are reflected in the main directions of the EAEU Digital Agenda until 2025, in which digital transformation is positioned as the main factor of development. In this document, the EAEU states agreed on the ways and means of the region's development to increase its competitiveness in the international arena and improve the quality of life of its citizens through the development of a single digital space (Physentzides, 2012).

According to the Eurasian Economic Commission (EEC), digitalisation plays a key role not only in the legislative sphere and economic processes, but also in the humanitarian aspects of integration, opening up new opportunities for all-round and comprehensive cooperation based on a single network infrastructure that establishes a common digital space (Gurov, 2019). This space allows to combine various domestic and private digital platforms

(information systems and digital solutions) for the prompt receipt of goods and services by users, concluding transactions, processing tax and customs documents, exchanging information with controlling government agencies and other participants in international trade and cooperation. Experts predict that the creation of common digital platforms and the introduction of new digital solutions will eliminate barriers to the movement of goods, services, capital, and data, create new jobs and develop previously non-existent areas of business activity and even entire sectors of the digital economy (to which all countries of the world are striving), which should ultimately lead to an overall economic growth of the EAEU member states and an increase in the welfare of their citizens (Latos et al., 2018).

Summarising the results of the analysis of literary sources, digital transformation can be represented as the introduction of modern digital technologies into the business processes of an enterprise, which allows not only to change the quality, but also to create a new one. This refers to fundamental changes in management, external communications, and corporate culture, and not just to the installation of modern equipment. This process enables the company to gain a reputation for being a modern and progressive organisation, increase customer satisfaction, and improve employee productivity. In this situation, a digital transformation can be traced both in the economic context and in the social one since most of social spheres have also undergone digitalisation.

3. Materials and Methods

To measure the development of digital transformation in a socio-economic context, the Organisation for Economic Cooperation and Development (OECD) has developed a system of indicators (Falk, 2006), which determines the following trends: the development of a high-tech sector of the economy; investments in research, software development, education costs and ancillary retraining; creation and production of information and communication equipment; the establishment of working areas in the field of science and high technologies; data of collaboration between corporations, institutions and research organisations; international cooperation in the field of science and innovation; the dynamics of the spread of the Internet in the international market.

In general terms, four criteria for analysing the digital economy can be distinguished: they have been studied to varying degrees by different researchers:

1. Criterion related to the sphere of employment;
2. Spatial criterion;
3. Technological criterion;
4. Economic criterion.

The criterion related to the sphere of employment is directly related to the composition of the population's employment and the pattern of observed changes. The transformation of socio-economic relations is conditioned by the fact that most of the people work in digital fields. A decrease in the share of those employed in the production sector and an increase in the service sector are seen as replacing physical labour with informational labour. Since the main resource in this case is data, a significant increase in the share of labour in their processing can be considered as a transition to digital transformation and digital economy.

Some concepts of digital transformation of the economy are based on a geographic principle (Grimes, 2003). The main attention is paid to information transmission networks that unite different zones, and, as a result, the ability to influence the development of the world economic space.

According to the specialists of the Centre of Competence of the federal project "Digital Technologies" of the State Corporation "Rosatom", the main factors characterising the development of digital transformation of countries include: human capital, R&D and innovation, digital infrastructure, digital sector, business environment, national policy and regulation, information safety.

In this context, it is possible to draw up a certain system of indicators that reflects the digital transformation in the socio-economic context of countries, based on the above:

– dynamics of the GDP per capita indicator of the EAEU member countries;

– dynamics of growth of the main macroeconomic indicators of the EAEU member countries;

– dynamics of the share of the population with access to the Internet in the EAEU member states;

– dynamics of the number of researchers per million inhabitants in the EAEU member countries;

– dynamics of R&D expenditures by EAEU member countries;

– some key indicators of the competitiveness of the economies of the EAEU member countries in the field of digitalisation;

– dynamics of the global innovation index by EAEU member countries;

– distribution of the member states of the union in the rating of the global innovation index;

– dynamics of the network readiness index of the EAEU member states according to the World Economic Forum;

– distribution of member states of the union in the ranking of the network readiness index.

The research period is associated with the availability of data in the analytical reports of the EAEU in recent years.

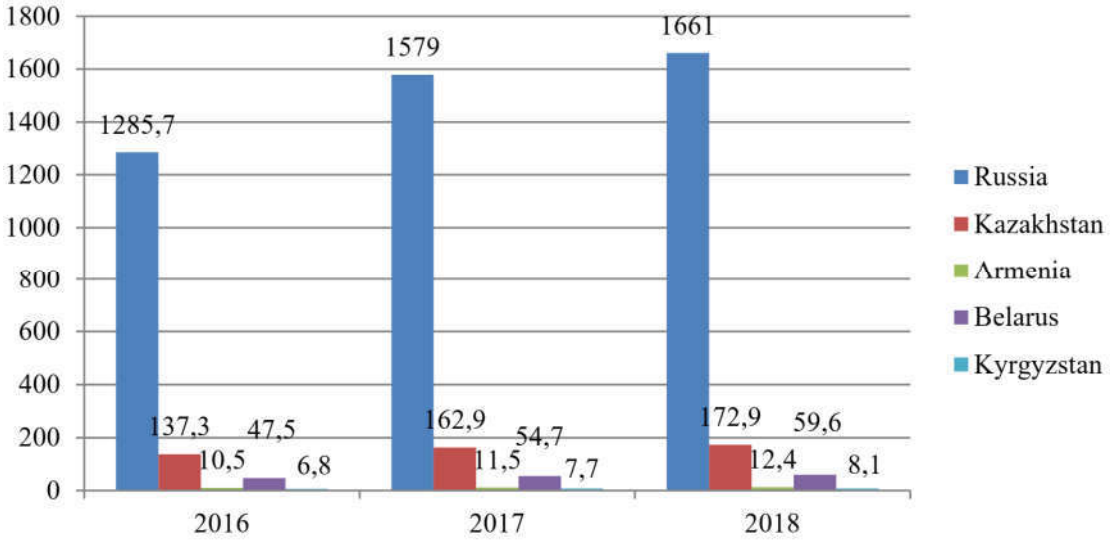
As part of the analysis of statistical indicators, dynamic analysis of data volumes is used.

The main material of the study was the data of statistical and analytical reports and studies of the Eurasian Economic Commission and other data.

4. Results

The purpose of the study was to obtain information on the general trend in the development of digital transformation in the socio-economic context of the EAEU countries. As noted earlier, one of the main macroeconomic indicators describing the development of a country, and its competitiveness is GDP per capita, and countries' ignorance of digital transformation processes leads to a drop in GDP per capita (Amri, 2018). Below, the study considers the dynamics of the EAEU member countries (Fig. 1). Due to the lack of official data for 2019, an analysis of the dynamics of indicators for 2018 is provided. In general, it is necessary to note the positive dynamics of all EAEU member countries, which indicates the growth of the economies of the countries and the growth of their competitiveness. Next, the study considers the dynamics of the main macroeconomic indicators of the EAEU countries (Figs. 2, 3), since the shift in production indicators to the service sector indicates an increase in the informatisation of society.

Figure 1. Dynamics of the GDP per capita indicator of the EAEU member states, billions of dollars



Source: Eurasian Economic Commission, 2019a

Figure 2. Dynamics of growth of the main macroeconomic indicators of the EAEU member countries in 2018, %

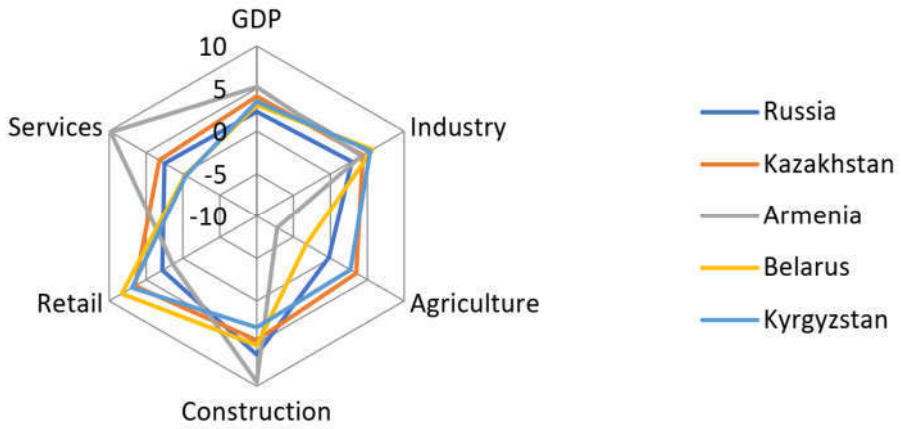
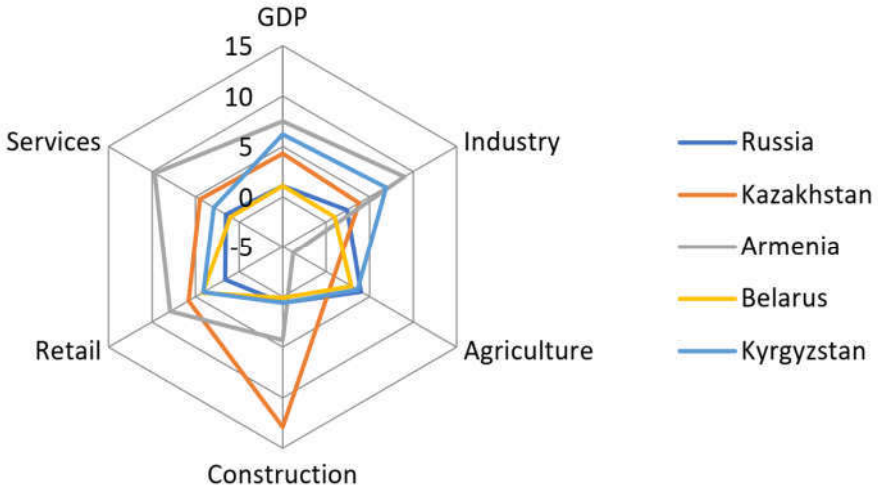


Figure 3. Dynamics of growth of the main macroeconomic indicators of the EAEU member countries in 2019, %



Source: Eurasian Economic Commission, 2020

In general, a relatively high increase in services remains in countries such as Kazakhstan, Armenia, and Russia. Therewith, it is necessary to note the growth in 2019 for such countries as Belarus and Kyrgyzstan. Considering the process of digital transformation of the countries that make up the EAEU, it is necessary to note the increase in the share of the population with access to the Internet (Table 2).

Table 2. Dynamics of the share of the population with Internet access in the EAEU member states, %

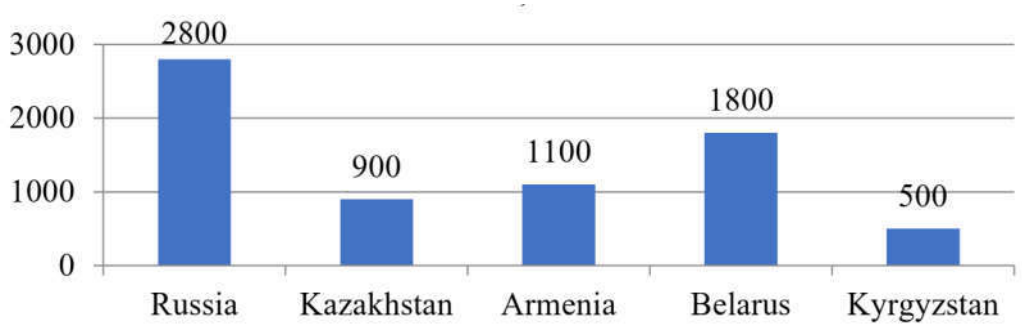
Countries	2015	2016	2017	Growth rate, %	
				2016	2017
Armenia	57	61	68	7.02	11.48
Belarus	63	79	84	25.40	6.33
Kyrgyzstan	30	32	38	6.67	18.75
Kazakhstan	69	73	75	5.80	2.74
Russia	70	72	75	2.86	4.17

Source: Centre for Integration Studies, 2019.

There are no official data on the EAEU countries for 2018, 2019. In general, it is necessary to note an increase in the share of coverage of the population with Internet networks. The

main problem in this direction is associated with hard-to-reach territories, such as villages and settlements. The negative point is that, based on the data provided by the Eurasian Economic Commission for 2016 and 2017, reflected in the work of S. Yu. Glazyev (Member of the Board for Integration and Economics) – "On the Strategy of Eurasian Economic Integration in the Context of Changing Technological and World Economic Structures" – the number of employees engaged in research and development is decreasing. In 2017, the number was 765.6 thousand people throughout the EAEU, which is 1.9% less than in 2016. This trend is quite negative in relation to the taken course of digital transformation, with the main number of employees in countries such as Russia, Belarus, Armenia (Fig. 4).

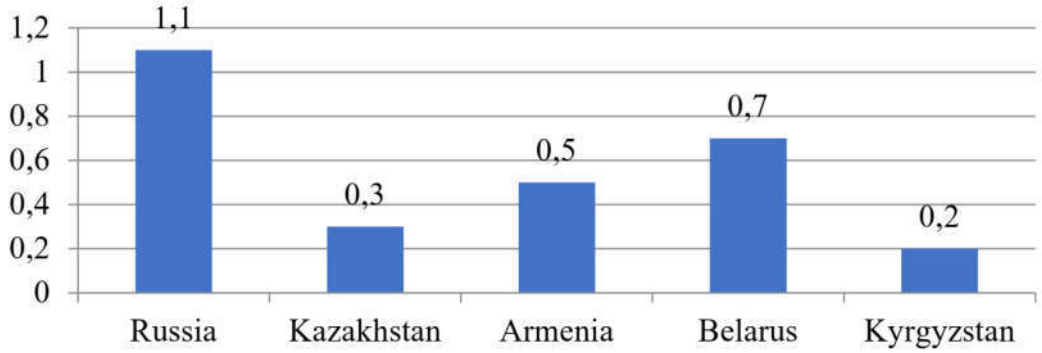
Figure 4. Dynamics of the number of researchers per million inhabitants by EAEU member countries, 2018



Source: Eurasian Economic Commission, 2019b.

It is also necessary to note the expenditures of states on R&D (as one of the factors characterising the process of digital transformation of the country) (Fig. 5).

Figure 5. Dynamics of R&D expenditures by EAEU member countries, 2018, % of GDP



Source: Eurasian Economic Commission, 2019b.

Notably, the costs of the countries are quite small. Considering the EAEU in aggregate, the share of expenditures is about 1% of GDP, while the EU expenditures are 2.0% of GDP, and OECD expenditures – 2.4%. The process of digital transformation in the socio-economic context of the EAEU member states can be described by some key indicators of the competitiveness of these countries (Table 3). Considering the indicators presented in Table 3, it is possible to designate a fairly high level relative to the indicator of electronic government for countries such as Russia and Kazakhstan, which show almost maximum development in this area.

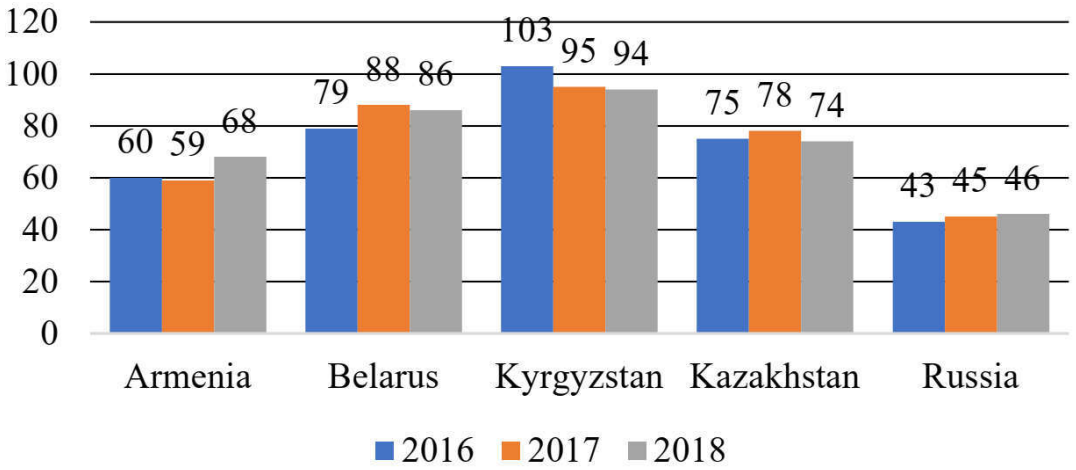
Table 3. Some key indicators of the competitiveness of the economies of the EAEU member countries in the field of digitalisation in 2018

Indicators	Russia	Kazakhstan	Armenia	Kyrgyzstan
E-government index (0 – 1, 1 – maximum development level)	0.92	0.84	0.57	0.69
Government orientation towards the future (1 – 7, 7 – max.)	3.87	4.13	3.84	3.16
Flexibility of the country's legal framework for digital business models (1 – 7, 7 – max.)	3.89	4.03	4.01	3.03
Mobile cellular subscribers (per 100 people)	157.89	145.42	119.04	121.92
Mobile broadband Internet subscription (per 100 people)	80.78	75.06	66.8	73.68
Fixed broadband Internet subscription (per 100 people)	21.44	14.14	10.76	4.27
Internet subscription "fibre to home/building" (per 100 people)	13.5	6.65	4.7	2.02
Internet users (% of the population)	73.09	74.59	64.35	34.5
Knowledge of digital technologies and computer literacy among the capable population (1 – 7, 7 – max.)	4.82	4.65	4.42	3.89
Growth rate of innovative companies (1 – 7, 7 – max.)	3.75	3.58	3.89	2.91

Source: Centre for Integration Studies, 2019.

The level of government orientation towards the future is average, which is due to economic instability. Notably, the legal framework is underdeveloped in terms of the digital transformation process. Rates of Internet use are rather high, however, Internet users among the population are not so high, especially in countries such as Armenia and Kyrgyzstan, which is also associated with the problem of territorial accessibility and the need to educate the population and adapt it to use new technologies. This indicator is also confirmed by the dynamics of the following indicator, which describes knowledge of digital technologies and computer literacy among the capable population (the indicator is the average value of the maximum). The dynamics regarding the growth rate of innovative companies is negative, being below the required level, which is due to the low expenditures of states on R&D. The dynamics of the digital transformation process in the socio-economic context of the EAEU member countries can also be traced in relation to the ratings. The dynamics of the global innovation index is shown in Figure 6. In 2018, Belarus, Kyrgyzstan, and Kazakhstan improved their positions. Considering it in aggregate for the EAEU, the union ranks 50th among 126 economies of countries, but there are different dynamics across countries, with the highest position in Russia. The EAEU holds the highest positions in the sub-indices “human capital and research” (28th place), “business development” (38th place), “results in the field of knowledge and technology” (51st place) and “market development” (57th place).

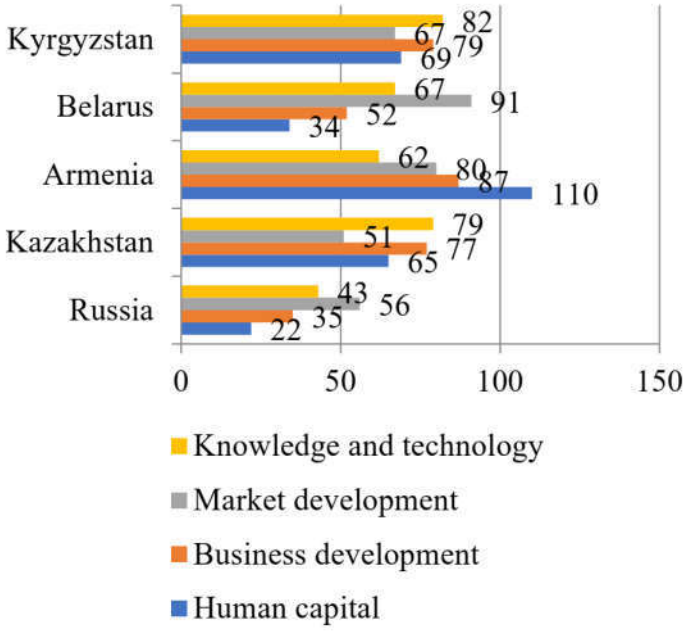
Figure 6. Dynamics of the global innovation index by EAEU member countries, place



Source: Eurasian Economic Commission, 2018

Considering the rating of the global innovation index itself, the member states of the union are distributed as follows (Fig. 7).

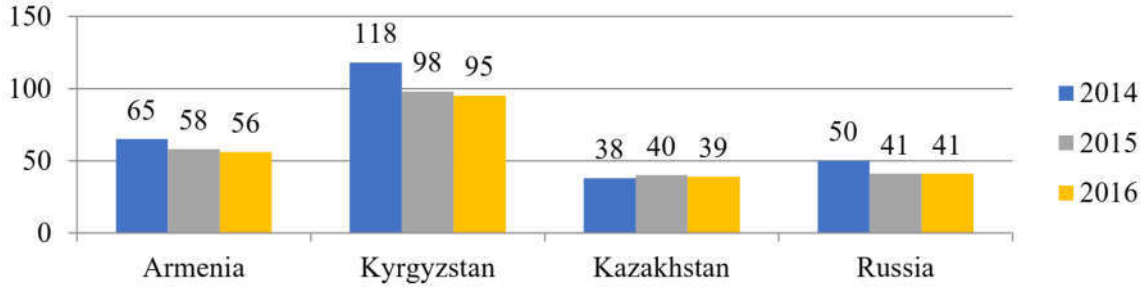
Figure 7. Distribution of member states of the union in the ranking of the global innovation index, place



Source: Eurasian Economic Commission, 2018

In Armenia, there is a decrease in almost all sub-indices of the rating. On the contrary, Belarus has managed to increase its advantages in terms of business development. Kazakhstan also managed to increase its position relative to the previous period in such indicators as business development, as well as results in the field of knowledge and technology, but reduced its results in terms of human capital. The network readiness index of the EAEU member countries can also be considered (Fig. 8).

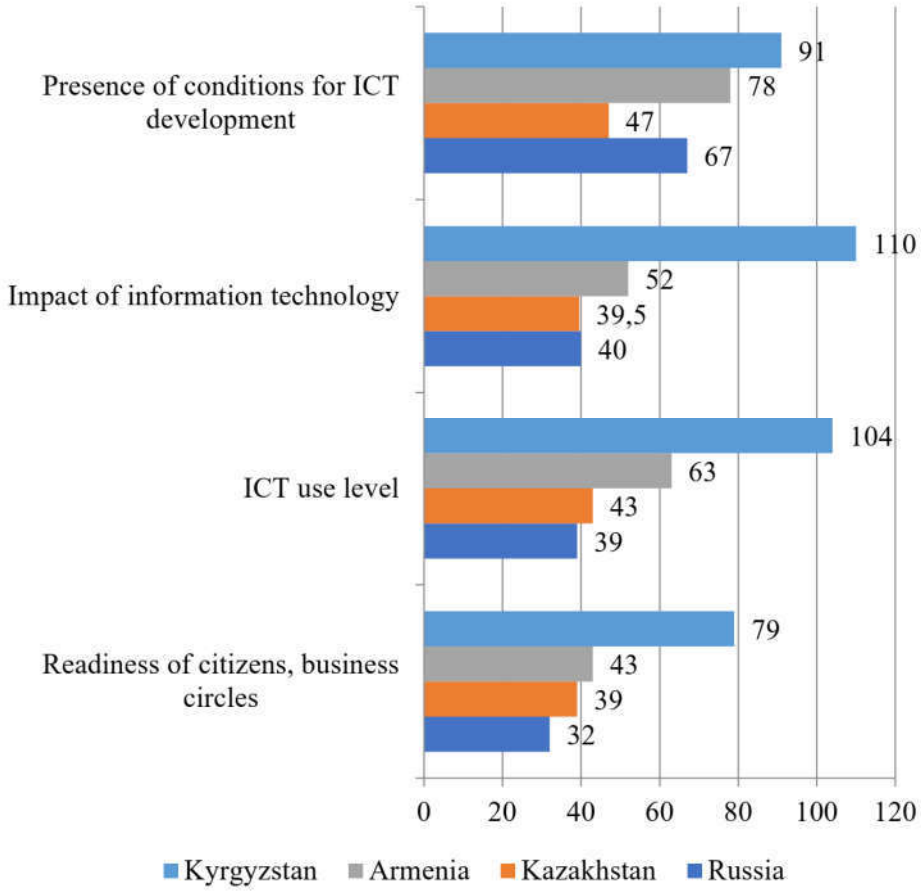
Figure 8. Dynamics of the network readiness index of the EAEU member states according to the World Economic Forum, place



Source: Eurasian Economic Commission, 2018

The Republic of Belarus is absent from all ratings of the World Economic Forum. The dynamics of the index is indicated only for 2016, which makes the study on this indicator conditional. Nevertheless, the trends are evident, each of the countries displays positive dynamics, and considering it within the framework of the sub-indices included in this indicator, the situation will be as follows (Fig. 9).

Figure 9. Distribution of member states of the union in the ranking of the network readiness index, place



Source: Eurasian Economic Commission, 2018

Considering the EAEU integration association in aggregate, it ranks 41st among 139 economies of countries. Compared to 2015, the EAEU retained its previous position, including by maintaining the position of the Russian Federation at the same level (41st place) and minor changes in the positions of the other EAEU member states. Positive trends can be observed in all states. Armenia has improved its position regarding the readiness of citizens

and business circles, as well as the level of ICT use. As for Kazakhstan, the level of availability of conditions for ICT development, as well as the level of ICT use and the impact of information technologies, have changed positively (Islam et al., 2012; Sklias, 2012). The complete set of positions has been improved in the Republic of Kyrgyzstan. The regulatory and legal framework for the implementation of digital transformation measures within the Eurasian Economic Union was the adoption of a set of regulations:

a) digital transformation of sectors of the EAEU economy, in particular in industry;

b) the general "digital" agenda of the EAEU, aimed at creating a common digital space of the EAEU.

Apart from joint activities within the EAEU aimed at introducing a digital agenda and its synchronization within an international organisation, the EAEU member states are also implementing their digitalisation programmes. Thus, the Russian government has developed a national programme “Digital Economy of the Russian Federation”. Furthermore, regional programmes are being actively implemented, considering the specific features and promising areas of local development (Yalyalieva and Napolskikh, 2017). In Kazakhstan, the state programme "Digital Kazakhstan" is being implemented, the purpose of which is to actively develop the digital ecosystem to achieve sustainable growth and increase the competitiveness of the economy, as well as improve the quality of life of the population (Almeida et al., 2017). Summarising the results of the analysis, it can be noted that the digital economy in the EAEU member states is small, lags behind in development from the post-industrial countries, but has good potential for development. In all EAEU countries, there is an extremely positive dynamics in the development of basic infrastructure regarding the process of digital transformation of the economy and society. Growth in the proportion of the population with Internet access is observed. However, according to this indicator, in the EAEU countries, even within the region, there is a digital divide between states. Moreover, due to the heterogeneous infrastructural and economic development of the countries themselves, the gap is also present between different regions within countries, and first of all, there is a significant difference in the level of the ongoing digital transformation of the urban and rural environment. As for business, there is a positive trend in all EAEU countries. The development of a favourable environment on the part of the state is extremely important for the wider diffusion of digital technologies. Therewith, this refers not only to financing the development of digital infrastructure, but also to providing the necessary legal framework for digitalisation of business and the flexibility of government agencies to adopt new technologies. In the EAEU member countries, state measures and priorities for the development of the digital economy are set out in national strategies and several project documents in core areas. As for the participation of the governments of these countries in digitalisation, it is in Kazakhstan and Russia that the highest e-government development index is observed.

5. Discussion

Digital transformation trends are an inevitable process that occurs everywhere. Failure to follow it threatens the state with the decline and destruction of all economic and social ties, both domestically and internationally, rendering such country simply not competitive. The analysis suggests the positive dynamics of the digital transformation process not only in the economic context, but also in the social context for all EAEU member countries. From year to year there is an increase in indicators related to the availability of conditions for the development of ICT, the readiness of citizens, business circles. Notably, the union assumes, as an integration association, the joint work of the participating countries in the direction of both economic development and social development and other processes. However, it should be noted that due to the heterogeneous infrastructural and economic development of the countries themselves, there is a gap between different regions within countries, and, first of all, there is a significant difference in the level of digitalization of the urban and rural environment. Both within the framework of digital transformation and based on the trends that are occurring in each EAEU member country, the union needs joint digital projects. This opinion is also confirmed by the specialists of the Eurasian Economic Commission (Eurasian experts on the EAEU..., 2019). According to experts, uniform standards and rules for joint digital projects are required. Also, experts of the Eurasian Commission note the shortcomings

regarding the consolidation of the EAEU member states. As for this statement, there is a need for countries to focus on science and technology (which concerns all countries of the union, without exception) and it is necessary to unite forces in this aspect. However, integration projects and their implementation will require certain investments (source of own income) (Kokkinou et al., 2018). In this situation, it is possible to direct the work of the Eurasian Economic Commission to expand the format of cooperation, to more intensive interaction with business structures, to create projects and for business, both medium and small.

One of the problems in the development of the digital transformation of the union is legislation, namely, differences in the national context. The solution to this problem is seen in the possibility of applying the practice of implementing supranational regulation at the national level, converging regulation. This will give more competences to the EEC (Eurasian Economic Commission), and make it more effective, which is also conditioned by the possible transfer of the function of control over the implementation of national decisions, provisions and rules, which in turn can increase discipline within the Union. There should be the implementation of solutions and the promotion of initiatives that countries can offer to the global community, and special attention should be paid to the digital transformation. The above statements are supported by other experts of the Eurasian Economic Union, as well as experts from the World Bank (Gurov, 2019), who developed key recommendations for the implementation of the Digital Agenda until 2025, which is based on the conducted studies of risks, threats and prospects for the digital transformation processes of the member countries of the Union.

To create an effective process of digital transformation in the socio-economic context of the EAEU countries, it is necessary to synchronise the legal framework and institutional in the general set of ongoing complex measures. It is imperative to ensure the proficiency in digital literacy of the population, taking into account the technological development, as well as the territorial component. Accordingly, there is a need to develop programmes aimed at increasing the digital skills of the population. Due to the territorial peculiarities of the member countries of the union, it is necessary to support the development and implementation of digital platforms, which is possible in the implementation of joint projects. All this will also require the development of a certain funding mechanism, as already noted earlier, with the possibility of attracting the business environment.

6. Conclusions

The conducted research allows to draw generalising conclusions. Digital transformation is understood as the introduction of modern digital technologies into the business processes of companies and other business entities, allowing not only to change the quality, but also to create a new one. This entails not only the installation of modern equipment, but also the need for fundamental changes in management, external communications, and corporate culture. This process enables the company to gain a reputation for being a modern and progressive organisation, increase customer satisfaction, and improve employee productivity. In the aggregate of all enterprises in the country, this leads to a digital transformation of the industry and the entire economy of the country, the national level is affected, accordingly, the requirements for certain knowledge of technologies and software lead to an increase in the digital transformation of society. In this situation, a digital transformation can be traced, both in the economic and the social contexts since most of all social spheres have also undergone digitalisation.

An analysis of the digital transformation in the socio-economic context of the EAEU countries showed positive trends with regard to business structures (economy), positive trends are also observed on the part of the population. However, due to the territorial complexity of the EAEU countries, there is a certain gap in information and communication literacy of the population and the development of technologies (urban and rural population). The author's position on ways to solve problems is that currently the process of digital transformation of the economy opens unique opportunities for manufacturers in different countries. However, it is necessary to develop human potential and education to get closer to the leaders of the world economy. It is necessary to introduce information and communication technologies (ICT) in all spheres of the economy and human life. This situation requires not only refinement and

integration in relation to the legal framework, but also institutional changes. The joint work of the member states of the Union is necessary to implement joint projects in this direction. Furthermore, for implementation, it is necessary to develop a financial mechanism with the involvement of the business community.

In this situation, a "patchwork" approach to the development, implementation and use of digital technologies will not help to obtain significant benefits for the economies and society of the EAEU countries. It is necessary to develop and study these areas, considering specific national features that require systematisation, generalisation, and development of scientific opinions on the digital transformation of the national economy.

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