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DIGITAL TRANSFORMATION OF THE ENTREPRENEURSHIP: CHALLENGES AND PROSPECTS

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ABSTRACT

Currently, the business and investment climate for conducting high-tech business in Russian regions remains extremely difficult. This paper outlines the main barriers on the way of digitalization of economy and entrepreneurship in particular. As an example, dynamics of manufacturing industries in the Russian Federation for 2016-2018 was analyzed. Special attention is paid to the prospects of digital transformation of regional economic systems. The causes of interregional divergence are revealed. The main factors contributing to the convergent development of regions in the conditions of economic instability and new challenges of the external entrepreneurship environment are investigated. The use of the concept of convergent development of the regions aimed at overcoming territorial disintegration and regional inequality is substantiated. Long-term investments are regarded as a stimulating factor for application of innovative technologies in competitive economic market. The authors propose effective institutional and regulatory measures aimed at the shaping the conditions for entrepreneurship learning, future transition to a digital economy and moving the entrepreneurship onto the path of steady growth.

Keywords: Digital Economy, Convergent Development of Regions, Entrepreneurship Education, High-Tech Business, Manufacturing Industries, Investment Incentives, Educational Restructuring.

INTRODUCTION

Digital transformation is changing the traditional entrepreneurship models (Swaramarinda, 2018). It brings the society new challenges related to reducing production and management costs using digital economy platforms, with a radical increase in the efficiency of companies, industries, educational institutions in order to withstand global technological, economic and social challenges (Kenney & Zysman, 2015).

Currently, Russia is actively discussing the transition to a digital economy. It involves the introduction and development of digital technologies in all spheres of life, from households and entrepreneurship training courses to leading sectors of the economy and regions (Sugandini et al., 2018; Kshetri, 2014). This will require the creation of favorable conditions and incentives for Russian high-tech business, which is a key source of economic growth and a driver of digital transformation.

In its broad sense, the process of "*digitalization*" by UNCTAD experts is understood as a socio-economic transformation initiated by the massive introduction and assimilation of digital technologies, i.e., technologies of creation, processing, exchange and transfer of information (The Transformative Economic Impact of Digital Technology, 2015). At present, the term "*Third Industrial Revolution*" (TIR), which was suggested by American researchers Rifkin (2011) and Kurzweil (1990), is very popular with foreign researchers. At the same time, there is an alternative concept of the "*fourth industrial revolution*" or "*Industry 4.0*". The adherents of the fourth industrial revolution consider many of the elements and solutions of the TIR, which are described by Rifkin (2011) and Kurzweil (1990) to be its most important elements.

The idea about the directions of the digital transformation of the economy began to form in the mid-90s of the 20th century. In understanding the role of information and communication technologies in the development of society and the conditions for the digitalization of the entrepreneurship, Castells (1996), Katz (1988), Masuda (1981), Naisbitt (1988) and others made a significant contribution.

For example, Detlef La Grand, an independent business consultant who helps companies develop and implement Internet business concepts, substantiated and refined a set of digital transformation technologies, dividing them into three sectors: people, processes, products.

Analysts at Accenture Strategy came up with an integrated criterion for assessing the impact of digital transformation on business by introducing the Digital Density Index. The index reflects the degree of implementation of digital technologies and skills to work with them. The index includes more than 50 indicators, grouped into four areas. Together with Oxford Economics, a division of Oxford University, they conducted a study that confirmed the link between the application of digital technology and GDP growth.

Another study "*Digital Transformation: How to Become a Leader*" was conducted by the analytical agency, specializing in consulting in the field of business strategies for the implementation of IT. It is devoted to assessing the impact of digital transformation on the activities of companies. The report presents the results of the study of digital maturity of about a hundred European companies from seven industries that were ranked by the Digital Transformation Index (DTI)

In 2015, the World Economic Forum (WEF) (2017) announced the launch of the long-term program Digital Transformation Initiative (DTI), which should be a starting point to identify new opportunities and directions for digitalization of business and society. At the same time, DTI is positioned as an important part of the broader program of the Fourth Industrial Revolution. The latest WEF expert report (January 2017) states that "*The Fourth Industrial Revolution is already under way*".

To date, dozens of different countries have developed and implemented state programs and strategies for the development of digital technologies or the digitization of national economies. So, only in the EU countries, according to the official data of the European Commission for March 2017, there are more than 30 national and regional initiatives on industrial digitalization (2018).

Over the last decade, the leading industrial countries of the world have been making certain efforts to find joint solutions and mechanisms for regulating digitalization processes at the interstate level. The leader in this direction is the European Union, whose participants defined the formation of the single digital market as a general task. For the first time, the need to develop such an overall digitalization strategy was officially announced by European Commission President Jean-Claude Juncker in October 2015.

In Russia, there is no serious fundamental research on the problems of digital economy transformation. There are several works by Russian authors, which deal only with certain aspects of the transition to the digital economy (Babkina, 2017; Keshelava et al., 2017). And there are no scientific studies devoted to the formation of regional models of the digital economy. Meanwhile, most of Russian regions are not ready for the transition to a digital economy, i.e. to the massive use of cognitive technologies, cloud technologies, the Internet, large data and so on.

The urgency of the problem of overcoming unfavorable trends in the innovative development of Russian regions, industries, individual companies and the transition to digitalization of the economy consists in the growing need to conditions create necessary for economic growth, to stimulate the development of domestic industries in the context of unfavorable external and internal factors, and ongoing stagnation phenomena.

Thus, the aim of the research is to substantiate the directions of overcoming institutional and resource constraints on the way to digitalization of the economy, to identify the necessary conditions for the transition of Russian regions to the digital economy on the basis of convergent development of regional socio-economic systems. This requires effective institutional and regulatory measures aimed at creating conditions for the digital transformation of the economy and moving it onto the path of steady growth.

METHODS

To date, there is no accepted theoretical and methodological basis for investigating the problems of transition to a digital economy. Fundamental economic theory has seriously lagged behind the practice. The peculiarity of the new global problems and challenges associated with the digitalization of the entrepreneurship is that they cannot be studied only by the methods of classical and non-classical science. A fundamentally new class of problems requires the use of interdisciplinary approach, ideas of non-linearity, non-equilibrium and self-organization.

The analysis of scientific research on the problems of digital economy has revealed the immaturity of methodological issues of the formation of prerequisites, conditions and models for the transition of Russian regions to the digital economy. The objective factors hampering the development of these issues are the intensive development of digital technologies, the dynamic changes in the IT sphere, the absence of promising strategic concepts and the positive experience of the transition of regional economic systems to the use of digital technologies.

To achieve the goals of the research, we used the main provisions of the entrepreneurship development theory, the theory of self-organization, institutional evolutionary theory, the theory of state economy regulation, which together allow us to explore and solve an important scientific and applied problem of creating conditions for the transition of the economy to a digital model of development. The realization of goals and objectives of the research is achieved by using an interdisciplinary approach, in which we rely on the works of researchers in the field of synergies, the theory of non-linear dynamics, bifurcation and systems theory.

The modern world is complex, diverse and non-linear. In a philosophical sense, non-linearity is interpreted as divergent evolution, the existence of a choice from alternative ways of development. Such a conclusion is extremely important for science. This creates the ground and the basis for combining different types of knowledge and the formation of interdisciplinary scientific approaches to the study of the most complex problems of human civilization, such as the digital transformation of the economy and society.

Within the framework of the abovementioned theoretical approaches, the following research methods are used in the research:

- Methods of economic and statistical analysis, intended for identifying of unused reserves for organization boosting.
- Forecasting, which allows targeting retrospective data (trends and patterns of changes in the internal and external characteristics of the forecast object) towards the conclusion on the future dependent growth.
- System approach, enabling the development of solutions to complex problems and the theory of investigation over the complex systems.
- Expert assessments, which imply the generalization of domestic and foreign data on the issue.

Dynamics of manufacturing industries in the Russian Federation for the period of 2016-2018 was analyzed. Another countries share of manufacturing industries in GDP was studied for comparison. Investment incentives in the economic policy of the Russian government in recent years were defined.

RESULTS AND DISCUSSIONS

At present, the economy of the Russian regions is characterized by unstable dynamics, the absence of positive structural shifts. Moreover, the overall economic situation in Russia remains unfavorable and uncompetitive in comparison with the industrialized countries. The issues of the effectiveness of public administration and monetary policy are the most acute and relevant for the Russian regions and Russian business. The growth rate of the entrepreneurship does not correspond to the growth rates of taxes, and the *"health improvement"* policy of the banking sector pursued by the Central Bank resulted in monopolization of the market, rise in the cost of banking services, and a decrease in lending to industrial enterprises.

The central bank's *"cleaning up"* policy led to the fact that about half of the credit institutions lost their licenses. There is a negative tendency of reduction in the number of bank branches in the regions. Currently in Russia there are only 33 thousand bank offices for 150 thousand settlements. In 14 territorial entities of the Russian Federation there is no regional bank, and in 17 regions of the Russian Federation there is one bank for each. The key and deposit rate of the Central Bank is 2 times higher than inflation; interbank lending practically does not exist (On the competitiveness of Russian enterprises, 2018).

Real incomes of the population have decreased. The level of wages per unit of output in Russia is three times lower than in the west. At the same time, the level of wages in most regions and in the whole country is lower than in China (Glazev, 2018). According to the Federal State Statistics Service, in 2015 wages decreased by 9% compared to the previous year, and in subsequent years it increased at a minimal rate: in 2016, the increase was 0.8%, in 2017–2.9%. The nominal growth in these years was 5.1%, 7.9% and 6.7%, respectively (Federal Service for State Statistics, 2018).

In 2017 tax revenues for the treasury increased by 32%, but the debt of enterprises also increased. Over the past five years, the number of bankrupt enterprises has risen to 30%. The growth of domestic production is also hindered by the increase in the cost of energy and freight, excessive bureaucratization, a staff shortage in high-tech industries. The economic recovery is still going on due to the growth of world oil prices.

It should be noted that in recent years a number of programs have been launched to subsidize the promotion of products to domestic and foreign markets, as well as some programs to support Research and Advanced Development. At the same time, such measures have very limited effect against the steady tax increase. For example, subsidizing industry at the level of

1% of its turnover, with a total tax burden of about 52% of turnover (On the competitiveness of Russian enterprises, 2018).

According to the Federal State Statistics Service, the industrial production index in the first half of 2018 compared to the first half of 2017 was 103.0%. The growth rates of manufacturing industries hardly exceed zero value (Figure 1).

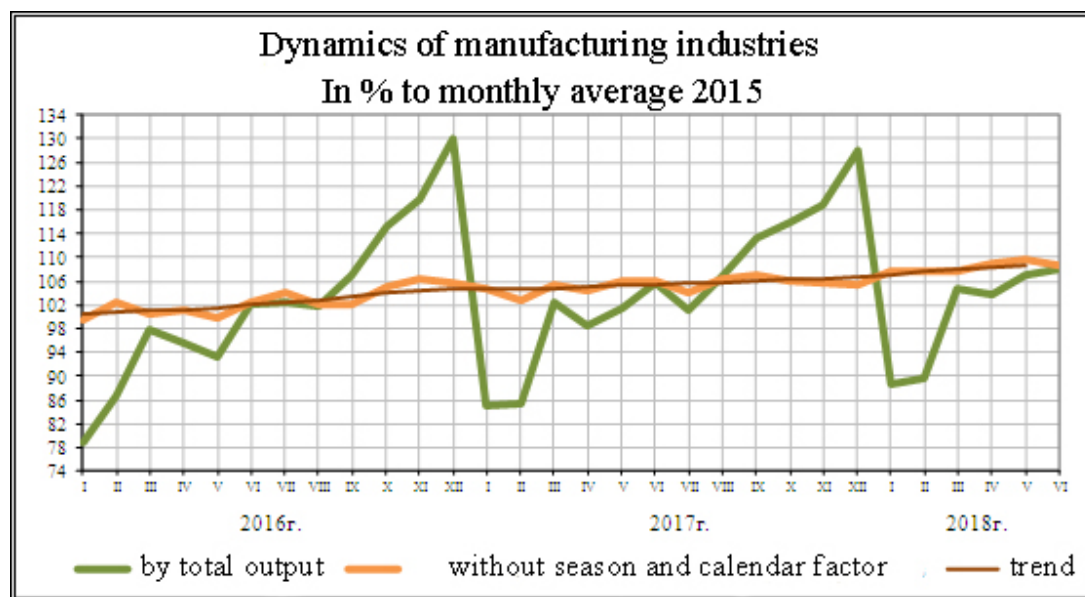


FIGURE 1
DYNAMICS OF MANUFACTURING INDUSTRIES IN THE RUSSIAN FEDERATION
FOR THE PERIOD OF 2016-2018 (ON THE COMPETITIVENESS OF RUSSIAN
ENTERPRISES, 2018)

In the 2000s, the growth rate of industrial production reached 7-8%, and manufacturing industries—more than 10%, but since 2012, they haven't exceeded 5% (Federal Service for State Statistics, 2018). The contribution of manufacturing industries to GDP in the country was 13.7 in 2016, extraction of minerals-9.4%, while the EU's share of manufacturing industries in GDP in 2016 was 15.9% (average for all 28 member countries), including 22.8% in Germany and 27% in the Czech Republic (Eurostat, 2018). Thus, the analysis showed that the growth rates of industrial production in the Russian economy lag behind the economically developed countries and they have significantly decreased in recent years.

The rocket and space industry, once producing products that had no analogues in the world, is also declining. For example, in terms of the number of functioning space crafts, Russia is in third place, behind the United States and China. Russia currently occupies an insignificant place in the world space market (about 1% in satellite communications and remote sensing of the Earth and 11% in rocket and space technology production as of 2015 ("Roskosmos" estimated the share of Russia in the global space market, 2016).

According to experts, the rocket and space industry is stagnating, which is clearly seen from the results of Roskosmos state corporation activity for the period of 2015-2016 (Table 1) ("Roskosmos" estimated the share of Russia in the global space market, 2016).

Times	2015 (%)	2016 (%)	Change
Growth of industrial production	96.6	98.0	1.4
Rate of productivity growth	110.3	100.2	-10.1

One of the main obstacles to the real economy digitalization is a significant interregional divergence. The term "*divergence*" is used in economics to denote movement along divergent trajectories: widening the gap between the development levels of individual countries and regions, increasing differences between different economy models, their structures and mechanisms. In addition, this term is also used to denote the deviation of individual countries or regions from the average macroeconomic indicators for a group of countries or regions.

In Russia, there is a whole group of backward regions, which for various reasons are not ready to adapt to the conditions of innovative development and the prospects of digital transformation. As a result, the gap between them and the leading regions is growing, their backwardness is fixed, the so-called "*digital inequality*", i.e. there is a divergence. According to statistics, the divergence between per capita income in the donor regions and in the depressed Russian regions, which are characterized by extremely low indicators of resource and infrastructural security, is deteriorating the most.

Regional divergence appears most clearly in strengthening of the dominant position of several large donor regions, as well as in increasing the dependence of problem Russian regions on external sources of financing. Regional divergence is particularly noticeable in the strengthening of the role of metropolitan metropolises and regional capitals. In 2008 regional centers concentrated a third of the population and investments, more than 60% of trade, catering and services. By early 2017 regional polarization had become even more intense, and the problem of human capital distribution and the digital inequality of regions had become even more acute.

The policy of equalizing the levels of entrepreneurship development of different regions through the financial resources redistribution between them does not solve the above mentioned problem, since significant amounts of financial resources allocated to problem regions by the federal center do not give the expected results; on the contrary, new expenditures are needed to solve the social and economic problems of backward regions. In addition, the emergence of "*special economic zones*" and "*territories of advanced development*" in the Russian Federation, assigned to the leading regions and providing them with additional financial support from the federal center, doom the less prosperous regions to the role of recipients of social support to maintain a more or less stable standard of living in these territories. It means that it also leads to the strengthening of interregional differences, deepening the problems of development of the backward territories, which does not contribute to solving the strategic tasks of restructuring regional economies and implementing the program of economy digitalization.

There is a point of view according to which the policy aimed at reducing differences in the levels of regional economic development inevitably leads to the reduction in the growth rates of the national economy, and vice versa, GDP growth can be ensured only through greater interregional inequality. In the framework of the emerging theory of feedback, it is proved that positive feedbacks always lead to an increase in interregional differentiation, despite the regulatory actions of the Federal Center. The resources spent on supporting backward regions

can only reduce the rate of interregional differences growth, but this will happen due to a reduction in the growth rates of the economy.

In our research, we presume that positive feedbacks existing in the economy, working to deepen interregional differences, can be compensated for by effective actions of state authorities. To substantiate this point of view, the concept of convergent development of Russian regions at the stage of digital transformation of the economy is proposed.

Convergence means merging, stable equilibrium. In a literal sense, convergence is independent development of the same attributes in different systems as a result of adaptation to similar conditions or circumstances. The convergence hypothesis is the statement that no matter how different the economic systems are, in the course of evolution they discard inefficient institutional forms, selecting and retaining more effective ones. The convergence hypothesis assumes that new technologies, modern means of communication and transport are everywhere, creating a unified technical and technological basis for the development of various territories, regions, countries. That is, there is a kind of universal technical basis, which creates a basis for eliminating regional and country differences.

Multi-year research of regional inequalities and the analysis carried out have made it possible to determine a set of management measures that promote the convergent development of regions: stimulating innovation activity, encouraging the mobility of production factors, restructuring the economy, developing interregional and international cooperation, institutional reforms, etc. These measures should become an integral part of the strategy for managing the socio-economic and innovative development of the regions at the implementation stage of the digital economy program.

The analysis of convergence factors, carried out by a number of Russian authors, showed that the main prerequisites, drivers of regional convergence in modern conditions are technological innovations, transport and construction. They contribute to the mobility of the main production factors. The influence of agriculture and industry on the convergence processes is divergent. Therefore, when developing a digitalization strategy for the regions in order to reduce interregional inequality, in the innovation sphere as well, it is advisable to concentrate efforts and resources on the development of infrastructure, agriculture and industry in the regions.

In our research, we propose a concept of convergent region development, which is based on mechanisms for the development of socio-economic systems. Its prerequisites are structural, functional and institutional changes within these systems, which in turn are associated with a change in the correlation and role of the most important public institutions—institutions of self-organization and public administration.

The concept of convergent region development is based on the idea of harmonizing personal, corporate and public interests in functioning of business, government and public structures, and on meeting the basic needs of the majority of the population. In countries with developed market relations, the institutions of self-organization have a leading role, while the institutions of state regulation, in essence, are complementary. The opposite picture is observed in the countries with transitional economies, where institutions remain leading due to the need for state control and regulation public administration, and self-organization institutions are called upon to act as complementary elements.

The inherent feature of the convergent system is the equivalence of the dominant basic institutional order. The process of convergence within such a socio-economic system assumes maximum synergy of these orders. Thus, a characteristic feature of the convergence of regional

socio-economic systems is balancing the institutions of self-organization and state regulation with respect to each other. Therefore, the main advantage of the convergent model for the development of the regional socio-economic system lies in the possibility of simultaneous use of the potentials of different institutional orders based on self-organization and public administration (Afonasova, 2015). This advantage should be used to realize the idea of the transition of Russian regions to a digital economy.

Therefore, an indispensable condition for the transition to a digital economy is institutional transformation and a radical change in public administration system, primarily the economic policy of the government. At the same time, the main emphasis should be placed on stimulating innovative activity in the IT sphere and creating the conditions for making it profitable for Russia to produce non-resource goods. This requires three basic conditions. First, it requires a more effective monetary policy. And this means a low CB rate, cheap affordable credits. Secondly, tax policy stimulation, which means cheaper commodities (for example, gasoline), as well as lower taxes, the return of investment incentives. That is, money invested in the development of enterprises should not be taxed, which will make investments in production attractive, including high-tech production. The third condition is protectionism, protection of the domestic market and the conquest of new foreign market segments. These three conditions can give a serious impetus to the development of non-resource economy in many regions, i.e. will act as tools to encourage production, will positively affect the business climate and general business conditions in the Russian regions. And this, in turn, will establish the basis for the future digital economy.

Digitalization of the economy will require a large number of resources. But as foreign experience shows, all costs are repeatedly repaid in the long term. The use of new technologies, the improvement of business processes and the creation of institutional conditions for investing in industry and new technologies should bring Russian industrial enterprises and regions to a new functioning and development level, and increase their competitive potential.

The model of digital economy development presented in the government program in the Russian Federation is based on three key elements. The first element is the markets and branches of the economy, primarily subject to digitalization. It includes such areas as public administration, digital health and education, "*smart city*". The second element is platforms and technologies. It is designed to provide a kind of digital foundation, on the basis of which the further process of digital transformation will take place. The third element is an environment within which innovative processes and investments in innovations will be encouraged, i.e., a technological revolution. This task includes the creation of a legislative environment, infrastructure, information security, etc.

Analysts at the same time believe that the government's program for the development of the digital economy lacks clear priorities. And if the program remains in its current form, the money allocated for its implementation will be wasted. As it was mentioned above, the availability of long-term investments and the creation of demand for innovations and digital technologies are the key elements that the state should provide to stimulate the processes of creating innovative technologies that are competitive in the world market and to form the basis for digital transformation are.

It is the lack of long-term investment in the regions that hampers the development of technologies that can be the ground for the digital economy. At present, there are practically no tools in Russia for mass investment in innovative projects. According to expert data, the venture market in Russia in 2015 compared with 2014 fell by 55.3%. In 2016 it fell by another 29%. In

2016, the total cost of exits from venture capital investments in Russia decreased by 13 times (\$120 million in comparison with 2015) (Russia's venture market decreased by 13 times last year, 2017). In 2017, the decline of the Russian venture investment market fell by another 32% (The results of the venture market in 2017). Analysts think that the reduction of the venture investment market is caused by the instability of the overall economic situation in the country, the uncertainty of the forecasts of key macroeconomic indicators, the lack of a sustained interest in innovation from Russian business.

Now the volume of the Russian venture capital market is estimated at \$894 million (EY and RB Partners, 2017), which is approximately 0.7% of the world market. The leaders of the world venture investments market are the USA (54% of the world market) and China (24% of the world market) (Venture investment today: Risks and guidelines, 2017).

If we talk about the financial support for the digital economy program as a whole, it is planned to create a separate fund to finance the program, which will amount to approximately 100 billion rubles. The idea of creating such a fund was proposed a year ago, in early 2017. But such a fund has not been formed so far and, consequently, the program has not actually been launched.

Moreover, before launching the Digital Economy program in the regions, it is necessary to develop theoretical and methodological foundations and scientifically sound approaches to the formation of a strategy for digitalization of the regional economy, as well as to identify and analyze the mechanisms of economic rehabilitation of industries lost in the last 20 years. It is also necessary to restore the industrial and technological basis of the economy and increase its competitiveness. Such an approach should contain a new interpretation of the essence and content of the digitalization process of the economy, the mechanisms of regional industrial acceleration. It will allow us to substantiate the hypothesis about the possibility of regional economy digitalization and implementation of the convergent development concept of regional systems on the basis of economic rehabilitation of high-tech industries, especially in the machine tool and machine building sector.

The posed task is new for modern Russian economic science. The problem of creating a reliable theoretical and methodological base that determines the scientific methodology for the formation and implementation of the strategy of regional economy digitalization, the convergent development of Russian regions, the formation and implementation of industrial acceleration mechanisms, is not currently resolved. There are only separate studies regarding the issues of economic re-industrialization and the elimination of structural deformations.

The most important components of the digitalization strategy should be programs to restore the industrial and technological basis of the regional economy through macroeconomic, institutional, legal, structural and investment measures that affect not only industry but also the supporting infrastructure, the financial system, and the social sectors.

It should be noted that the digital economy program also involves the implementation of measures to create supply and demand for digital innovations in specific sectoral-product and regional markets. In the opinion of specialists, IT business can become a locomotive for the development of new technological markets.

If we talk about demand stimulating, then the program of import substitution of IT solutions remains the most realistic tool. But it also works quite formally, because in order to create a high-quality software product that is competitive on the international market, developers need serious, fundamental investments for at least three to four years. And with such investments, as it was mentioned earlier, there are big problems in the country. Another

complexity of the domestic IT market is that one of the main generators of demand for IT technologies and IT services are state corporations, which usually found specialized IT subsidiaries to meet the demand and cover a significant part of their needs themselves. It is clear that even if such a "*daughter*" creates a breakthrough technology, it will be used by only one customer and it will not contribute to the development of technologies on the market as a whole (Lyapunov, 2018).

It should be pointed out that state corporations in the Russian Federation are a specific institutional form with a special status and privileged conditions of functioning with a low level of control over the expenditure of huge amounts of budgetary resources. High expectation was placed on state corporations during their establishment, as they had to make a breakthrough in high-tech industries and become competitive structures on the world market. However, this did not happen, and a number of state corporations were assessed as ineffective and unpromising, subject to either privatization or liquidation. At the present time, it has become obvious that the state corporations are unlikely to become locomotives for the digitization of the economy. The analysis showed that the existing studies in the field of digital transformation of the economy do not suggest the solution of such fundamental problems as the development of effective mechanisms for public management of the transition to the digital economy, tools to stimulate demand for digital technologies and innovations, the formation of conditions and mechanisms for accelerating the economy of problem regions through economic, institutional, structural and investment measures.

The scientific novelty of the research consists in theoretical substantiation and development of a methodological approach to solving the problem of creating conditions for the transition of regions to the digital model of the economy, overcoming the tendency of deepening territorial differentiation, gaps in the resource base, institutional and infrastructural conditions of the regions. At present, the growth of digital inequality, differences in investment volume and GRP per capita blocks the solution of the problem of increasing innovation activity and transition to a digital economy in most regions and municipalities.

The significance of the research is in the fact that the problem of ensuring the transition of regions to the digital economy in the planned time and with the achievement of the expected results is a very complicated scientific and practical task that cannot be solved at an accelerated pace, using the existing traditional methods and tools without taking into account the features of modern social and economic situation in the regions, trends, trends and challenges of modern civilization.

The practical value of the research is the possibility of applying its results to take measures to create organizational, infrastructure, institutional and resource conditions for the development of the digital economy in the regions, to form regional programs for the transition to a digital economy, a system for monitoring the conditions and timeframes for transferring the regional economy to a digital model.

An analysis of foreign experience in solving similar problems showed that under Russian conditions it would be advisable to use the European practice of searching for joint solutions and mechanisms for regulating digitalization processes at the interregional level. As the main task, it is possible to determine the formation of a single interregional digital market. In the future, this could serve as a factor in smoothing the existing economic and investment interregional differences, the digital inequality in the various Russian regions, i.e. it could ensure a correct step towards convergent development of regional economic systems.

On the basis of the above mentioned information, it can be concluded that the transition of Russian regions to the digital economy is constrained by many factors, primarily by imperfection of state administration and existing institutional conditions. It is known that it is the effectiveness of the institutional system, its flexibility, transparency that contributes to the development of the IT sector and the innovative economy as a whole. Therefore, the digitalization of the economy involves an institutional transformation that should be aimed at adjusting the existing institutional parameters, overcoming the high degree of uncertainty of the economic environment and existing institutional traps.

Institutional traps are the most important barrier to the digitalization of the economy. They impede the adoption of effective long-term solutions in the innovation and investment spheres, boost the discrepancy between formal and informal institutions. The existence of institutional traps is due to low efficiency and the lack of the necessary coherence of economic regulators. This adversely affects the development of the industrial and innovative economy sectors.

The processes that took place in the Russian economy and in the system of state administration in the last two decades contributed to the growth of negative selection in both innovation and institutional spheres. Negative selection is generated by internal contradictions of the system, when its individual elements begin to acquire autonomy and develop independent goals. If there are certain possibilities, these autonomous parts can begin to act contrary to common goals, contrary to the whole system. The consequence is the inability to develop dynamically and reduction in the system's functional efficiency.

Akerlof (1997) introduced the term "*adverse selection*", which is due to the existence of "*information asymmetry*", expressed in the uneven distribution of information between subjects of economic relations.

Adverse selection in the evolution process of the institutional system is manifested in the fact that institutions vital for digitalization and innovative development of the economy are losing to outdated but stable institutions whose functioning is beneficial to powerful market players and representatives of authority structures that introduce dissonance into the institutional system and drive innovation process into the institutional trap. An institutional trap or blocking effect is an ineffective, stable norm that has a self-sustaining nature (Polterovich, 1999).

The emergence of institutional traps in the evolution of the institutional system can most often be explained by one of the three reasons: inconsistency of interests of various groups of economic agents; inconsistency of short-term and long-term interests of social and economic system development; inconsistency in the dynamics of development of formal and informal rules of social behavior.

The emergence of institutional traps is also facilitated by the institutional mimicry that provokes negative selection in the institutional and innovation spheres.

Another factor hampering the effective development of institutions is the fact that economic changes are on-going, and the improvement of the institutional system is done discretely as the share of economic changes increases and the discrepancy between the rules of the game and the existing reality grows.

Due to their low effectiveness formal norms and rules enshrined by the state are replaced by informal, sanctioned by society. Here an institutional trap arises: informal institutions that are created and transformed in the process of self-organization of social systems are much more inertial than formal and, they are capable of hampering the institutional changes necessary for the digital economy development. It can be stated that the planned transformation of formal

institutions should be carried out only taking into account the inertia of the informal. Otherwise the managerial efforts to activate innovation and the digitization of the economy will lead to ambiguous consequences.

The most negative impact institutional traps have on the development of the innovative sector as the most vulnerable segment. The result is the degradation of Russian industry, the growth of technological lag from economically developed countries, the vague prospects of "*universal digitalization*". The dynamics of the economic complexity index, which reflects the export of technologically complex, unique products, shows that Russia's technological backwardness has grown by 69% over the past 12 years. On average, the country degraded by 5.75% per year (Sycheva, 2017).

Thus, it should be recognized that the prospects for the digitalization of the economy based on the formation of a clear, scientifically sound strategy for building a digital economy in Russia are very vague, primarily due to technological backwardness and the absence of economic entities ready for this process. And also because in the regions there are simply no necessary conditions for its construction (digital infrastructure, long-term investments, low-interest credits, the corresponding institutional environment).

Under the digital economy, most researchers and practitioners understand new forms of communication with consumers and payments between individual entities. It turns out that most countries (including Russia) do not build a digital economy. They are engaged in the digitization of existing economic relations. Despite the practical importance of this process, it cannot be called a deliberate process of building a digital economy.

Another problem to be discussed is the underestimation of potential risks and threats to total digitalization, which includes: threats to digital sovereignty, reducing the level of data security, increasing the complexity of business models and interaction schemes, dramatic changes in the behavior patterns of manufacturers and consumers, reducing the number of jobs in economics. Thus, for example, in 2016 the electronics manufacturer Foxconn recruited 40 thousand robots and reduced 60 thousand people. By 2025 robots will leave 7% of Americans unemployed; by 2026—40% of Canadians, and by 2035 they will take half of the jobs in Japan (Digital economy, Challenges of global transformation, Forum "*Open Innovations 2017*").

CONCLUSIONS

Total digitalization, automation, mass use of digital technologies are natural processes. With that, the holistic picture of the "*digital*" future of entrepreneurship is not still developed. Therefore, the result of the forthcoming changes is not predetermined. It is clear only that the information revolution and its product—the digital economy is radically changing the form of economic relations, institutions and organizations. The main institutional problems standing in the way of the digital economy transformation of the Russian regions are defined in this research. For example, the political priorities of the development of the raw material industries are preserved under the influence of the institution of lobbying and short-term economic interests. There are gaps in law, entrepreneurship education, investment hunger, corruption phenomena. Low innovative culture of public administration representatives and business structures hampers the growth of mass demand for innovation and digital technology. Thus, the digital transformation of the Russian regions in accordance with the declared strategic priorities of the country's development can be carried out only provided that:

1. There is a full resource support (primarily investment).

2. The concept of convergent development of regions is implemented and the adequate institutional foundations are created in the form of institutional mechanisms that enhance the innovation activity of economic entities and promote growth of demand for innovative products and technologies from domestic and foreign markets.

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