

Agnessa O. Inshakova
Elena I. Inshakova *Editors*

Competitive Russia: Foresight Model of Economic and Legal Development in the Digital Age

Proceedings of the International
Scientific Conference in Memory of Oleg
Inshakov (1952–2018)

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Preface

On 19 and 20 September 2019, the 18th International Scientific Conference “Competitive Russia: Foresight Model of Economic and Legal Development in the Digital Age” was held at Volgograd State University, Volgograd, Russia.

The conference was dedicated to bright memory of Oleg Vasilievich Inshakov (1952–2018), Merited Scholar of the Russian Federation, Merited Worker of Higher Education of the Russian Federation, Doctor of Economics, Professor.

At Volgograd State University, Professor Inshakov held positions of Rector (1995–2014), President (2014–2016), Director of Research Institute of Social and Economic Development of the Volgograd Region (2016–2017).

Professor Oleg Inshakov was awarded honorary doctorate from Jilin University, China (2009); the Southern Federal University, Rostov-on-Don, Russia (2014); and held titles of Honored Professor of Volgograd State University (2017), Honorary Professor of the Economic Research Institute of Far Eastern Branch of the Russian Academy of Sciences, Khabarovsk, Russia (2017).

Oleg Vasilievich Inshakov is Russian economist, internationally renowned for his pioneering works in the theory of economic genetics and the evolutionary theory of transformation and transaction factors of production. Professor Inshakov proposed a model of “development nucleus” for economic systems, revealed the dynamics of global socio-economic modes based on meta-production function. He laid foundation for theoretical studies in the field of nanoeconomics. Oleg Inshakov offered a multi-criteria classification of institutional economic mechanisms, shaped a general model of the economic mechanism cyclic functioning, and developed a global economic system theory based on the evolution of its nine-level hierarchical structure, thus extending the concepts of the object and subject of the economic theory, which are widely represented in publications in Russia, Great Britain, Hungary, Germany, Armenia, Bulgaria, Georgia, the USA, Kazakhstan, Ukraine, France, and Switzerland.

The event was an eighteenth in a cycle of scientific and practical conferences that was initiated by Professor Inshakov in 1998, and where he traditionally was the keynote speaker. The conference was inspired by the idea to provide a forum where

the issue of “Century-long search for a model of economic development of Russia” could be discussed.

This year, the conference purpose was to demonstrate that Professor Inshakov’s theoretical assumptions serve as a fruitful methodological and theoretical basis for interdisciplinary research that draws on economics, law, history, political science, sociology, and philosophy within the framework of the main fields proposed for discussion. Based on an interdisciplinary systematic approach, the talks presented at the conference outline projects to ensure competitiveness of the Russian Federation in the context of the sixth technological paradigm related to the implementation of a digital development scenario.

The main topics of the conference were connected with economic and legal sciences. The goal of economic studies was to reveal the potential of evolutionary and institutional economic theory, a significant contribution to the development of which was made by Professor Inshakov, for providing scientific substantiation of a proposed economic strategy that will in prospect ensure competitiveness of modern Russia. Legal studies discussed issues related to systemic and institutional reform of the national law system that is considered as a crucial factor for enhancement of the Russian economy competitiveness in the context of the digital economy expansion.

The main issues discussed by conference participants were as follows: the neo-industrial paradigm of the competitive development of Russia; the role of the new industrial revolution and convergent technologies in the promotion of economic growth; nanoeconomics issues; evolving digital economy; the concept of social and economic ecosystems corresponding to the rapid spread of digital technologies; development of a legal model to prevent circumvention of law as a key factor to enhance competition between business entities in the digital environment, and other topics associated with the need to use digital technologies in economic and legal regulation in order to ensure the competitiveness of Russia in the digital age.

The conference significance was ensured by the large-scale preparatory work of the program and organizing committees that comprised leaders of higher education institutions and renowned scholars in economic and legal sciences from Russia and abroad with some of them being the keynote speakers who drove the conference main themes at the plenary session and round table discussions: G. B. Kleiner, the Corresponding Fellow of the Russian Academy of Sciences (RAS), Doctor of Economics, Deputy Scientific Director of the Central Economics and Mathematics Institute of RAS (Moscow, Russia), Editor-in-Chief of the scientific journal “Economics of Contemporary Russia”; A. Kh. Abashidze, Doctor of Law, Professor, Head of the International Law Chair, RUDN University (Moscow, Russia), Merited Lawyer of the Russian Federation, Professor, International Law Chair, MGIMO University (Moscow, Russia), UN Committee on Economic, Social and Cultural Rights member; H.-C. Brauweiler, Doctor of Economics, Professor, Western Saxon University of Applied Sciences (Zwickau, Germany); R. S. Bekov, Doctor of Economics, Deputy Governor of the Volgograd Region, Chairman of the Committee for Industry and Trade of the Volgograd Region; V. V. Dolinskaya,

Doctor of Law, Professor, Kutafin Moscow State Law University (Moscow, Russia); I. V. Ershova, Doctor of Law, Professor, Head of Entrepreneurial and Corporate Law Chair, Kutafin Moscow State Law University, Merited Lawyer of the Russian Federation; A. Z. Nowak, Doctor of Economics, Dean of the Faculty of Management, the University of Warsaw (Warsaw, Poland); J. Kaposta, Doctor of Economics, Dean of the Faculty of Economics and Social Sciences, the University of St. Stephen (Gödell, Hungary); E. E. Frolova, Doctor of Law, Professor, Head of Civil and International Private Law and Civil Procedure Chair, RUDN University (Moscow, Russia), Merited Lawyer of the Russian Federation; S. S. Gubanov, Doctor of Economics, Professor, Editor-in-Chief of the journal “Economist”; E. G. Popkova, Doctor of Economics, Professor, President of the Institute of Scientific Communications (Volgograd, Russia); Yu. M. Osipov, Doctor of Economics, Professor, Chairman of the Scientific Council “Moscow State University Center for Social Sciences”, Lomonosov Moscow State University (Moscow, Russia), Merited Scholar of the Russian Federation; D. Teurtrie, Doctor of Geography, Centre de Recherche Europes-Eurasie, Inalco University, University Sorbonne Paris Cité (Paris, France); V. P. Kamyshansky, Doctor of Law, Professor, Head of the Civil Law Chair, Kuban State Agricultural University (Krasnodar, Russia), Editor-in-Chief of the journal “The Reign of Law” et al.

On behalf of Volgograd State University, the host of the conference, the members of the program and organizing committees were Rector of Volgograd State University V. V. Tarakanov (the Chairman of the Program Committee); the First Vice-Rector, Doctor of Economics, Professor A. E. Kalinina (the Chairman of the Organizing Committee); Doctor of Law, Professor A. O. Inshakova, Head of the Civil and International Private Law Chair (Deputy Chairman of the Program Committee); E. I. Inshakova, Doctor of Economics, Professor of the Economic Theory, World and Regional Economy Chair, Merited Worker of Higher Education of the Russian Federation (Deputy Chairman of the Organizing Committee); E. G. Russkova, Doctor of Economics, Professor, Director of the Institute of Economics and Finance, Merited Worker of Higher Education of the Russian Federation; V. M. Shinkaruk, Candidate of Legal Science, Associate Professor, Director of the Institute of Law; A. Ya. Ryzhenkov, Doctor of Law, Professor, Civil and International Private Law Chair, Merited Scholar of the Republic of Kalmykia; S. Yu. Kazachenok, Doctor of Law, Professor of the Civil and International Private Law Chair, Member of the Public Chamber of the Russian Federation, Merited Lawyer of the Russian Federation, et al.

The plenary session held on 19 September highlighted the main issues of the conference. The speakers traced back the history and evolution of the conference targets over the years, set high-level goals, and outlined prospective results, namely, to present a concept of a competitive digital economy in Russia and develop legal framework that underpins this model. These topics threaded through the presentations of the keynote speakers at the plenary session and were further elaborated at the two panel discussions held on 20th September: “The neo-industrial paradigm in enhancing Russia’s competitiveness in the context of transition to the sixth technological mode and embracing the digital reality” and “New financial, managerial,

and social technologies in the mechanism of ensuring Russia's competitiveness in the digital age: institutional aspects".

Highly attractive for the conference participants were two round table discussions devoted to interesting topics of the evolving digital economy, which involved lively debate in an informal setting.

The round table devoted to legal issues "The paradigm of the legal development of a competitive state: strategy and tactics" was moderated by Associate Professor Shinkaruk, Director of the Institute of Law, VolSU; Professor Inshakova, Doctor of Law, Head of the Civil and International Private Law Chair, VolSU, Editor-in-Chief of the journal "Legal Concept", Head of the Research Education Centre "Modernization of the Legal System in Modern Russia"; and Professor Goncharov, Doctor of Law, Doctor of Economics, Civil and International Private Law Chair, VolSU.

The round table "The concept of socio-economic ecosystems: actual problems of perception by young researchers" was conducted by Professor Kleiner, Corresponding Fellow of the Russian Academy of Science, Deputy Scientific Director of CEMI RAS, Head of the research field "Mesoeconomics, Microeconomics, Corporate Economics", Editor-in-Chief of the journal "Economics of Contemporary Russia". The discussion was moderated by Professor R. M. Kachalov, Deputy Editor-in-Chief and Executive Secretary of the Editorial Board of the journal "Economics of Contemporary Russia".

Parallel to the round tables, master classes were held for young researchers, graduate students and undergraduates of Volgograd State University: "Competitive development of Russia: a neo-industrial context" and "Interaction of economics and law in the context of digitalization". They were conducted by experts in the field of economics and legal science, namely Doctor of Economics, Professor Gubanov, Editor-in-Chief of the journal "Economist" and Doctor of Law, and Professor Dolynskaya, Kutafin Moscow State Law University, member of the Advisory Board of the Supreme Court of the Russian Federation. The lecturers shared relevant theoretical knowledge on the branches of the sciences they represented and their latest scientific developments within the framework of the topics under discussion. The master class attendees had a unique opportunity to exchange views on topical issues with widely known Russian scientists.

Based on the results of the conference, the organizers provided the speakers and participants with alternative opportunities for publication with Russian and foreign publishers. So, the best papers were accepted for publication in the VolSU Science Journals that are peer-reviewed journals approved by the Higher Attestation Commission (HAC) under the Ministry of Science and Higher Education of the Russian Federation: "Journal of Volgograd State University. Economics" (website <https://ges.jvolsu.com/index.php/ru/>), "Regional economy. The South of Russia" (website <http://re.volsu.ru>), and "Legal Concept" (HAC, ERIH PLUS; website <https://j.jvolsu.com/index.php/ru/>).

The publication of this book «Competitive Russia: Foresight Model of Economic and Legal Development in the Digital Age – Proceedings of the International Scientific Conference in Memory of Oleg Inshakov (1952–2018)»,

book series “Lecture Notes in Networks and Systems” published by Springer Nature Switzerland AG is the main outcome of the conference.

In addition, due to great attention attached to the event, the Institute of Scientific Communications (Volgograd, Russia), the co-organizer of the conference and partner of Volgograd State University, selected a number of talks that are not part of the present edition, to be included into two other books published by Springer, namely “Artificial Intelligence: Anthropogenic Nature Vs. Social Origin”, book series “Advances in Intelligent Systems and Computing”; and “The 21st Century from the Positions of Modern Science: Intellectual, Digital and Innovational Aspects”, book series “Lecture Notes in Networks and Systems”.

The conference materials that comprise this book are divided into two main parts that present findings of researchers from the fields of economic and legal studies that mainly focus on forecasting mechanisms for strengthening the nation’s competitiveness in a new technological, industrial, and digital environment, the potential of integrating the paradigms of economics and law for modernization processes in the evolving digital economy, regulatory, and legal provision under transition to the sixth technological mode and digital economy, the development of digital technologies in foreign trade in the context of international economic integration and the appropriate law enforcement activities.

The conclusions, suggestions, and recommendations offered in the book might serve as theoretical basis for critical reflection, creative development, and scientific substantiation of economic and legal measures for neo-industrialization and digitalization of the economy. Furthermore, the authors hope that the research findings will have promising application at every stage of the digital transformation of the economy of business entities, regions, countries, and international integration unions to achieve sustainable economic growth and enhance competitiveness on a national and global scale.

Agnessa O. Inshakova
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**Enhancement of the Russian Economy
Competitiveness in the New
Technological Age: Basic and Applied
Research Contribution**



Transition of Firms from the Traditional to Ecosystem Form of Business: The Factor of Transaction Costs

George B. Kleiner^{1,2,3}  and Venera A. Karpinskaya⁴

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Abstract. Purpose: Determining the reasons and factors for the displacement of firms of a traditional form of business from the top lines of the ratings of the most expensive companies in the world by firms that implement ecosystem strategies.

Methodology: Based on the theory of transaction costs as a factor in the formation and recombination of value chains and the theory of network production organization, the influence of information and technological development factors on the forms of organization of production and firm strategies in the modern economy is shown.

Results: It was found that an increase in the speed of information processing, a decrease in the cost of computing, communication, information storage, data transfer and processing by economic agents in the Internet Era led to a sharp decrease in the transaction costs of economic agents, and, as a result, the breakdown of some value chains and links of these chains. Further, the creation of economic value not only by producers but also by consumers and the transfer of the created value from these consumers to other consumers caused a subsequent decrease in transaction costs, which, in turn, led to the union of producers and consumers into ecosystems. It has been shown that platform-type ecosystems operate on the basis of the concept of an “inverted firm”, i.e. a company in which, due to network effects, production is located outside the company and external labor is used. These factors lead to a low level of production costs and zero level of marginal costs.

Conclusion: Thus, the leadership of platform-type ecosystems in costs is a key factor in crowding out from the market the firms of a traditional form of business.

Keywords: Ecosystem · Platform · Strategy · Ecosystem strategy · Transaction costs · Value chains · The concept of “inverted firm” · Marginal costs · Network effect

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1 Introduction

The recent growth trend in the number of works devoted to the study of such a way of organizing economic activity as the ecosystem (Jacobides et al. 2015) is developing, in particular, against the background of the increasing market capitalization of ecosystems. As noted in Fuller and Jacobides (2019), at the present stage, 7 companies from the 10 largest companies in the world in the S&P 500 Index (Alphabet, Amazon, Apple, Facebook, Microsoft, Alibaba and Tencent) develop their activities within ecosystems, using technologies causing a change not only in the market segments in which they historically functioned, but also in the areas of the economy that are outside these sectors. As noted in Alstynne et al. (2017), the private investment market already in 2016 preferred the Uber firm, created in 2009, representing the so-called demand economy, to the firm General Electric, founded in 1908 and representing the so-called economy offers. As noted by Alstynne, Parker, and Choudary, Uber investors used not only traditional financial indicators and criteria to calculate the value and potential of the company. The authors conclude that the rules for calculating the value of companies have changed.

An ecosystem is a network of collaborating or competing firms offering users related products and services (see Jacobides et al. 2015; Adner 2006; Iansiti and Levien 2004; Moore 1993). We consider the ecosystem as “a spatially localized complex of uncontrolled hierarchically organizations, business processes, innovative projects and infrastructure systems that interact with each other during the creation and circulation of material and symbolic goods and values, capable of long-term independent functioning due to the circuit of these benefits and systems (Kleiner 2018). Ecosystems are developing in different countries. Firms implementing ecosystem strategies are diverse and heterogeneous. Not only the giants of the digital economy mentioned above but also startups can be ecosystems (Jacobides et al. 2019). Traditional business firms, for example, Bosch, Disney, General Electric, Merck, Schneider, and others, are also transforming their business models by creating ecosystems based on digital platforms and developing an ecosystem strategy (Evans 2016).

Ecosystems can successfully function both on the basis of digital platforms and without their use. As noted in Fuller and Jacobides (2019), the Danish pharmaceutical company Novo Nordisk, which entered the Chinese market in 1994, has formed a large-scale non-digital ecosystem whose goal is to solve the problems associated with diabetes. Novo Nordisk attracted as partners the Ministry of Health of the People’s Republic of China, the Chinese Medical Association, various universities, groups of doctors, as well as non-governmental organizations and others. At present, Novo Nordisk is selling nearly \$ 1 billion worth of diabetes products and services in China. Thus, the company’s share in this Chinese market is about 60% (Fuller and Jacobides 2019).

Firms belonging to various sectors (from the financial and health sectors to the media and retail sectors) transform their business models and form ecosystems (Parker et al. 2016). Socio-economic ecosystems are now becoming the central element of the country's socio-economic landscape (Kleiner 2018) and a new significant actor in the economy (see also Karpinskaya 2018a).

According to McKinsey's forecasts, by 2025 a significant proportion of value chains will be combined into several dozen ecosystems, and the boundaries between individual sectors will be blurred (see Aptekman et al. 2017).

With the creation of new alliances and the disappearance of borders between sectors, the approaches of business leaders to the formation of medium and long-term strategies are changing. Under current conditions, market participants applying strategies formed in the industrial era are at risk of failure that can be realized in the future (Fuller and Jacobides 2019). As noted by Fuller and Jacobides, firms should take into account when developing their strategies trends of development of ecosystems as a new way of organizing economic activity.

This article attempts to determine the reasons for the displacement of firms of a traditional form of business from the top lines of the ratings of the most expensive firms in the world by firms that implement ecosystem strategies. The analysis of changes in the factors affecting the formation of strategies by firms as a result of the transition from the Industrial Era development to the Internet Era is carried out.

2 Determinants of the Choice of Strategy by Firms in the Industrial Era

Researchers based on the principles of orthodox neoclassical theory analyzed the firm based on an approach in which the firm was considered as a production function. This approach made it possible to relate the size of the company to the effect of economies from the scale. In this regard, firms of the industrial era, when formulating strategies, took into account the possibility of obtaining the effect of economies from scale with a high level of fixed costs and low level of marginal costs in the production process and, thus, envisaged an increase in output and lower prices for it (Alstyn et al. 2017). At this stage, the unit of economic analysis was the firm. In the economic analysis of the firm, the researchers relied on the theory of profit maximization, according to which the firm produces and sells products with the involvement of resources in a volume that allows obtaining the maximum difference between revenue and costs (Kleiner 2008).

In orthodox neoclassical theory, the market was considered a perfect mechanism, which makes it unnecessary to take into account the service costs of deals. In the article "The Nature of the Company" (see Coase 2007) published in 1937, Coase, as is known, showed the need for such actions in the process of concluding a transaction as negotiating, supervising, establishing relationships with partners, resolving disagreements and etc. (Kapelyushnikov 1998). Initially, Coase defined transaction costs as "costs of using the price mechanism", "costs of performing exchange transactions on the open market", "market costs", and "costs of market transactions" (Coase 2007). Later, the meaning of the concept of transaction costs became wider – any types of costs necessary for the interaction of economic agents both on the market and within

organizations were considered as transaction costs since interaction within the firm is accompanied by friction and loss (see Kapelyushnikov 1998). Williamson considered transaction costs as “the economic equivalent of friction in mechanical systems” (Williamson 1996). In accordance with one of the classifications of transaction costs carried out by supporters of the transaction approach, these costs are divided into information search costs; negotiation costs; the costs of measuring the quantity and quality of goods and services introduced into the exchange; costs of protecting property rights; the costs of opportunistic behavior (Kapelyushnikov 1998). Popov and Konovalov give the following definition of transaction costs: “transaction costs are the main category of institutional economic analysis, including the costs associated with the functioning of a market economic system and necessary to ensure the sustainability of current operations” (Popov and Konovalov 2007). Transaction costs are opposed to the transformation (production) costs arising during the conversion of resources, which are reflected in the financial statements in the form of cost, i.e. including material costs, labor costs, interest on loans and others. In the course of economic development, the value of transaction costs has increased (Wallis and North 1986).

Due to the identification of a firm’s concept with the concept of a production function in the neoclassical theory, the question of the reasons for the formation and development of firms did not arise (Kapelyushnikov 1998). So Hayek, exploring the problem of rational economic organization in the middle of the 20th century, notes: “... in a system where knowledge of significant facts is dispersed among many people, prices can coordinate disparate actions of different people in the same way as subjective values help an individual coordinate parts of his plan” (Hayek 1945). Coase performed an analysis of an economic organization based on a transactional approach. He showed that not only the price mechanism is used as an instrument of coordination in the economic community. The presence of transaction costs determines the creation and operation of firms, “because in a significant number of cases manufacturer spends less money on transaction costs in organizing a process within an firm than in a market-based way of organizing production” (Kleiner 2008). The desire to minimize costs in concluding market transactions explains the creation and functioning of firms in which the distribution of resources is carried out in an administrative way. The firm crowds out the market to the extent that administrative control minimizes transaction costs (Kapelyushnikov 1998). The boundaries of the firm are defined by the boundary where the costs of market coordination are compared with the costs of administrative control (Kapelyushnikov 2007).

In the middle of the 20th century, when defining business strategies, firms relied on the following assumptions. The first assumption is the cost of added value declines by 20–30% for every doubling of the experience gained. The second one is labor productivity increases by 10–15% for every twofold increase in the total production output, or the so-called ‘experience curve effect’ expressed in the growth of a man-hour productivity, according to which the cost of labor reduces by 10–15% for every doubling of the experience gained (Henderson 1974).

Thus, in the middle of the last century, firms built their business strategies on the basis of a combination of economic measures aimed at achieving goals such as effect of economies from scale, minimizing transaction costs, reducing the cost of gaining added value as a result of increased experience, and increasing labor productivity as a result of

an increase in total production, etc. These goals were one of the most significant in the structure of goals that managers take into account when forming strategies in the middle of the last century. At this stage, the unit of economic analysis was the firm. Based on the transactional approach, a firm was considered as a set of contracts between an firm and external and internal counterparties (Kleiner 2008). At this stage, the researchers relied on theories such as profit maximization theory, entrepreneurial (schumpeterian) theory, contract theory.

In the mid-20th century, the development of the information technology sector led to disintegration processes in computer manufacturing (Baldwin and Clark 2000) and industrial production in general (Sturgeon 2002); see also (Jacobides et al. 2015; Bedakova 2016). At this stage, firms built their strategies based on the concept of value chains (see Porter 2016a). Porter showed, “how a narrow area of specialization can serve as a source of competitive advantage if the value chain is appropriately organized; <...> how a wide area of specialization can contribute to gaining competitive advantages if a company can correctly use the relationships between sections of the chain that serve various segments, industries, and even geographical areas” (Porter 2016a). Moazed and Johnson (2019), as well as Inshakov and Inshakova (2017) emphasize the importance of transaction costs as a factor in the formation of value chains. They note that the combination of various activities carried out by the company as part of the value chain in order to reduce transaction costs and increase the efficiency of the company, made it possible to solve the problem of strengthening its competitive position in the market. Noting that the combination of the elements of the value chain in a certain way was due to the goal of minimizing transaction costs in firm’s strategies, Moazed and Johnson conclude that a significant change in the volume of transaction costs leads to a break in the value chain or change in the combination of individual links value chains.

At this stage, the industry was considered as a system-forming unit of economic analysis. During this period, the methodology developed by Porter for analyzing industries and correspondingly building a business strategy dominated (Porter 2016b). The conceptual basis of this methodology is, as is known, a study of five competitive forces operating in the industry: threats of the appearance of substitute products on the market, threats of new players, threats of bargaining power of consumers, threats of bargaining power of suppliers and the level of competition in the industry. To challenge these forces, Porter defines three strategic approaches for competitive advantage. The strategy of absolute cost leadership is based on a cost-effective scale, reduction in experience-based costs, production control, and overhead expenses, and so on. The differentiation strategy of a product or service is focused on the creation of the product perceived by economic agents belonging to this industry as unique. The focusing strategy is concentrated on targeting a specific category of customers, buyers, type of product/service, or geographical sector of the market (Porter 2016b).

When constructing strategies, firms also took into account six sources of barriers noted by Porter to enter the industry, such as economies of scale, cost barriers not related to scale, capital requirements, access to wholesale and retail distribution channels, product differentiation, and government policy (Porter 2016b). Thus, at the end of the twentieth century firms built their business strategies on the basis of a combination of economic measures aimed at achieving goals such as achieving

leadership in costs, in particular, minimizing transaction costs by creating optimal value chains, and obtaining effect of economies from scale; cost reduction through the accumulation of experience, product differentiation, focusing on a specific category of customers, type of product/service or spatial sector of the market and others. At this stage, researchers relied on theories such as profit maximization theory, entrepreneurial (Schumpeterian) theory (Shumpeter 1934), contract theory (Coase 1937), revenue maximization theory (Baumol 1958), theory of maximizing firm value (Modigliani and Muller 1958), cognitive theory (Polanyi 1962), theory of maximizing the growth rate of firm (Marris 1963), behavioral theory (Cyert and March 1963), theory of X-efficiency (Leibenstein 1966), theory of maximizing of utility of manager (Williamson 1964), performer behavior management theory (“principal – agent”) (Jensen and Meckling 1976), the theory of positioning (in the industry, on the territory, in the administrative space) (Porter 1980) (the role of industry positioning), the theory of property rights (Grossman and Hart 1986).

3 Determinants of the Choice of Strategy by Firms in the Internet Era

In the 1990s, local and industry computer networks have been integrated into the worldwide network Internet. By that time, according to Moore’s law (see Kaku 2011), the power of computers had increased many times, the size of computer chips, and the cost of their production had decreased significantly.

As noted by Moazed and Johnson (2019), the development of the Internet has determined the influence on the formation of strategies of such significant factors as commoditization of computers (as a result, individuals’ access to computing power and technologies previously available only to large organizations, as well as the possibility of individuals creating added value at a new level); reduction in the cost of communication (this factor along with the factor of increasing the speed of information transfer led to the joint solution of complex problems by individuals at no additional cost); ubiquitous network access; increased profit as a result of economies of scale in the field of data analysis, the emergence of the possibility of understanding and using significant amounts of data in real time.

As noted by Benkler (2006), the reduction in the cost of computing, communication, and storage of information led to the following changes. The material means of producing information and culture began to belong to individuals, whose number is significant, namely, about a billion people around the world. In an industrial economy, the physical requirements for capital needed for output limited the ability to create products. In the network information economy, the physical capital used for production is widely distributed throughout society.

As noted by Moazed and Johnson, a significant increase in the speed of information processing, a decrease in the cost of transmitting and processing data by economic agents led to a sharp decrease in their transaction costs, which led at the end of the 20th century to the breakdown of some value chains. Due to the reduction in transaction costs, the need to create vertically integrated organizations has disappeared. Small-sized intermediary service providers have begun to “grab” individual links in the value

chain of traditional companies (Moazed and Johnson 2019). At the next stage, these small firms began to refuse to provide intermediary services and offer similar services on the market, the cost of which was lower than the cost of services provided by traditional firms. Thus, the value of the effect of economies from the scale in production has declined. At the next stage of technological development, a shift occurred in the sphere of creating added value – along with business, and consumers began to create economic value. Consumers began to transfer value created to other consumers. Decentralized networks of individuals today carry out some of the activities that vertically integrated companies previously engaged in. Thus, individuals who were previously consumers of products of firms of a traditional form of business turn into competitors of these firms (Moazed and Johnson 2019). This change led to a new significant decrease in transaction costs and further changes in value chains. If at the previous stage, as a result of a reduction in transaction costs, value chains fell apart, then at this stage, the links in value chains began to collapse (Moazed and Johnson 2019).

These changes led to the transformation of the business model of firms. At this stage, ecosystems began to carry out the function of creating economic value as a result of establishing and developing relations between external producers and consumers (in contrast to the firms of the traditional form of business, which created value in the process of production/provision of services within the framework of value chains).

At this stage, the ecosystem has become the unit of economic analysis. During this period, researchers relied on theories such as information theory (Aoki 1986), network society theory (Castels 1996–1998), resource-competence theory (Kleiner 2011), system economic theory (Kleiner 2013), and new sprouts of ecosystem theory (Jacobides et al. 2018; Kleiner 2018).

When analyzing an ecosystem, researchers focus on the symbiosis and co-evolution of the capabilities and abilities of ecosystem participants in the process of creating value. The analysis of ways to establish cooperation with firms that previously acted as competitors of the ecosystem is carried out. The central ecosystem firm establishes relationships with consumers of ecosystem products and supplements (firms providing additional goods and services), coordinates activities to meet the demands of ecosystem customers. Value is created as a result of ecosystem design and in the process of managing it (in particular, in the process of implementing the so-called alignment policy) in order to minimize the risks of implementing problems associated with ecosystem participants. Firms that provide additional goods and services, as well as to provide opportunities for co-creation of products. The capture of value can be carried out as a result of gaining control over critical assets in order to generate additional value (Jacobides et al. 2015; Karpinskaya 2018b).

4 The Concept of “inverted firm”

Strategies of platform-based ecosystems are designed to maximize the usage of the network effect when some users of ecosystem products/services create value for other users. In turn, this situation leads to expanding the number of ecosystem users and, as a result, an increase in the value created by it. The implementation of such strategies has

already led to high growth rates of firms belonging to the sectors of search engines, social networks, operating systems, e-commerce, and mobile technologies (Alstyne 2019). In the medium and long term, Alstyne predicts the dominance of firms from the sectors of architecture, automobile industry, financial, health, industrial Internet, and others.

Many firms of the Internet Era in designing strategies process are based on the concept of so-called an “inverted firm,” or a firm “turned inside out” (Alstyne 2019; Parker et al. 2016). This concept allows company managers to understand which firms in which industries will transform into ecosystems in the first place and how to construct a strategy for responding to such a transformation. Network effects cause a firm to move production outside its borders because of the higher speed of increase in the scale of network effects outside the firm compared to a similar indicator inside the firm. This fact is interconnected with the company’s customers outnumber its employees.

Based on the concept of an “inverted firm”, Alstyne identifies the reason for the high speed of platform-based ecosystem scaling. The placement of production by the firm beyond its borders allows the firm to have zero marginal cost. Companies such as Uber, which does not own its cars that provide service to taxi users, or Facebook, which does not produce its content, are not incurring the cost of production. So, they can scale as fast as they can involve partners.

At this point, the question of comparing the management of Uber’s fleet of vehicles with the management of property leased by any firm rises. The difference is in the costs associated with the use of these types of property. If Uber is not incurring the costs of driving a car, then the firm using leased property should make payments that are included in the cost of production.

One of the significant characteristics of platform type ecosystems with a high level of capitalization is a small number of employees. Such ecosystems in the value creation process use external labor, which is not a traditional workforce. This factor determines transformation in managing the structure of the firm, namely, from vertical integration management to open orchestration, i.e. management of the interaction of ecosystem participants (Alstyne 2019).

The goal of increasing the scale of value determines the firm’s support for users in creating value for other users, in particular in the form of providing them remuneration, which, in turn, also determines the need to move from vertical integration management to the open orchestration (Alstyne 2019).

The network effect means that the value created by the platform-based ecosystem grows by the usage of this value. In contrast, the value of products manufactured by a traditional firm decreases as a result of its use. Alstyne concludes that the value of the product/service supply from platform-based ecosystems (an increase in such value is based on positive feedback) exceeds the value of any static or decreasing supply (Jacobides et al. 2019).

Herein it is necessary to emphasize the difference between the value of products created by an industrial enterprise and the value created by a digital ecosystem, for example, in terms of risks for the population that open up in the process of creating value. As noted in Alstyne (2019), meeting the demand for applications, videos, and buying and selling goods in e-commerce markets by ecosystem users is safe for society. At the same time, the probability of a firm’s transforming into digital ecosystems in the

production of pacemakers or the operation of nuclear power plants causes high risks for the population. Firms operating in these areas implement vertical integration in order to guarantee quality control of products (Alstyn 2019).

In general, a linear business continues to create added value that is significant for the economy and society. At the same time, platform-based ecosystems create new socio-economic activity on a large scale and manage it from the center (Moazed and Johnson 2019).

Special consideration is required for the changes that have occurred in the coordination mechanism in firms of the Internet Era. The problem of the so-called “locality of knowledge” at this stage of technological development is leveled. In the middle of the last century, knowledge of circumstances existed, as Hayek emphasized, “only in the form of scattered particles of incomplete and often contradictory knowledge that all individual individuals possess”, and “... a way to make such knowledge as widely available to everyone as possible, this is exactly a problem for which we must find a solution” (Hayek 1945). If earlier, the coordination mechanism of economic activity within a traditional company was based on information about market prices, then the coordination mechanism carried out by companies at the present stage is based on different abilities. For example, it is based on the ability to collect and track a significant amount of detailed data on a significant number of transactions using technologies such as big data, wireless sensor networks, and others (Moazed and Johnson 2019). Today, it is possible to collect and transmit a variety of information on an almost unlimited scale around the world.

Moazed and Johnson conclude that the formation of platform-based ecosystems means the creation of markets controlled from the center. The ecosystem makes it possible for a significant number of firms and individuals to interact, but these interactions are managed by a certain central firm. The set of characteristics of ecosystems based on digital platforms includes characteristics of both traditional organizations and markets. In their opinion, the platform-based ecosystem is “a synthesis of Coase’s firm and Hayek’s market” (Moazed and Johnson 2019).

5 Conclusion

The main conclusion of the article is as follows. An increase in the speed of information handling, a decrease in the cost of computing, communication, information storage, data transfer and processing by economic agents in the Internet Era led to a sharp reduction in the volume of transaction costs of economic agents, and, as a result, the breakdown of some value chains and links in these chains. In the future, the creation of economic value not only by producers but also by consumers and transfer by the last ones the creating value to other consumers has resulted in a subsequent decrease of transaction costs volume, which, in turn, has contributed to the unification of producers and consumers into ecosystems. Platform-type ecosystems operate on the basis of the concept of an “inverted firm”, i.e. a company in which, due to network effects, production is located outside the company and external labor is used. These factors result in low production costs and zero marginal cost. Thus, the leadership of platform-based ecosystems in costs is a significant factor in crowding out traditional forms of business from the market.

In conclusion, we note the main directions of further research:

- an investigation of the full range of factors of the emergence, functioning, and elimination of ecosystems;
- an investigation of substitution elasticity of effectiveness factors of socio-economic ecosystems functioning;
- an investigation of the specifics of the development of platform, cluster, network and innovation ecosystems;
- the development of the theory of coordination of socio-economic ecosystems.

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



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Problems and Prospects of the New Industrialization of the Russian Economy Under the Transition to the Sixth Technological Mode

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Abstract. Purpose: The article discusses the problems and prospects of the new industrialization of the Russian economy in the global competitive environment.

Design/Methodology/Approach: The authors present the distinction between the processes of re-industrialization and new industrialization. The authors have defined the features of new industrialization in the transition to the sixth technological mode, which reflect the emergence of new industries on the basis of new technologies, primarily nanotechnology, information technology, the artificial intelligence creation and biotechnology. At the same time, the transition to a new technological mode leads to the effect of new technologies “diffusion”, which makes it possible to modernize traditional industries on a new technological platform.

Findings: The authors disclose the impact of the new industrialization processes on improving the global competitiveness of Russian economy in modern conditions. They also consider the problem of the occurrence of double transformation and transaction costs under the transition to a new technology and determine the ways to overcome them in the investment cycle.

Originality/Value: The article reveals the possibilities and the existing systemic limitations of developing new industrialization processes in the industry structure of the Russian economy. It proves the necessity of using the systemic multi-level approach to implementing the concept of new industrialization. It substantiates the leading role in forming the new technological mode of large integrated structures that have a high innovative and investment development potential and can become full-fledged participants in the global competitive relations.

Keywords: New industrialization · Competitiveness · New technologies · Technological mode · Nanotechnology · Integration of production · Large integrated companies

JEL Code: O31 · O32 · O33

1 Introduction

The development of new industrialization processes in the modern Russian economy contributes to the growth of its competitiveness on a global scale. At the same time, the new industrialization processes are fundamentally different from the re-industrialization processes, which involve the restoration of industrial production based on the traditionally existing fourth and fifth technological modes. New industrialization proposes to focus on developing fundamentally new types of industrial production.

In present conditions, new industrialization should involve the transition to the new sixth technological mode, within which nanotechnologies and nanomaterials, digital technologies and robotization, artificial intelligence, biotechnologies and bioengineering, etc. could be applied to a wide range of industries all over the world. The development of these modern technologies in the Russian Federation is lagging behind the world leaders that prevent the country from occupying the leading position in the global competition. In particular, according to the World Economic Forum Report “The Future of Jobs Report 2018”, if per 10,000 workers in South Korea there are 631 newly introduced robots, in Japan there are 303 ones, in Germany there are 309 ones, but in Russia there are only 3 robots (The Future of Jobs Report 2018).

The way to change the situation is to implement a consistent policy of large-scale new industrialization, which, in turn, should be based on industrial integration in particular. Indeed, the provision of favorable structural conditions for the creation, distribution and diffusion of innovative technologies is connected with the development of vertically integrated industrial companies, which should act as the fulcrum in the system of global competitive relations.

Such a structure allows for the possibility of achieving integration processes of the new types of goods and services development and industrial application. This in turn would generate synergistic and scale effects due to reducing transformation and transaction costs and synchronizing investment processes, which are aimed at modernizing the existing production along the entire value-adding chain.

In addition, the vertical integration of large industrial companies allows using the system of transfer pricing and cross interest rate subsidies on foreign loans. In general, international experience shows that large integrated companies nowadays combine production, research, logistics, financial, transport and information departments in a structural way.

Of course, within the framework of the new industrialization concept, the significant part is also assigned to small innovative enterprises and venture funds, without which the implementation of a number of innovative projects would be impossible (Mochalova and Petergova 2015). At the same time, the significant innovation potential is still associated with the large companies, the integrated companies in particular, because any modern high-tech product involves successive stages in the integral production process organization. In order to optimize logistics, temporary losses, and to ensure comparable quality standards at each production stage, integration becomes an important condition for the systemic nature of the new industrialization processes of the modern Russian economy.

2 Materials and Method

The authors made use of publicly available materials for the research including scientific monographs, classical works on the innovative development economics, and scientific articles on the topic by leading domestic and foreign scientists. Statistical data were utilized to analyze the dynamics of transformational processes in industry as a part of implementing the new industrialization concept. The World Economic Forum Report “The Future of Jobs Report” and other documents reflecting the transition to a new technological mode have been used in the paper.

In the paper, the authors have applied general scientific research methods of induction and deduction, analysis and synthesis, dialectics, hypothetico-deductive method. The methods of comparative analysis of various economic systems and methods of analogies, as well as historical and evolutionary analysis have also been employed. The use of system’s analysis methods when considering transition to the new technological mode, the analysis of new technological platforms, as well as the method of systems science process was of great importance in the article.

3 Results

In fact, it is necessary to pay attention to the deficiency of the systemic nature of the new industrialization process in modern Russia. Narrow localization and limited innovations do not give the expected result, even in such advanced technologies as nanotechnology, for example. It is worth noting that not all new nanotechnology products find further application in the domestic industry (Table 1).

Table 1. Perspective areas for nanotechnology development in Russia

№	Nanotechnology products	Field of use
1.	Chemically selective nanostructured membranes for separating homogeneous catalysis products from a catalytic converter	Chemical industry, production of alcohols, aldehydes, plasticizers for polymers
2.	Polysilicone, graphene, aerographene, silicene, nanocrystals	Electronic industry, professional equipment, machinery-producing industry
3.	Nano tubes, DNA nanotechnologies, carbon nano tubes, nanotube resonator	Health care and medicine, biotechnology, engineering
4.	Molecular rotors, nano-antennas, nano-accumulators, plasmons	Robotronics, aircraft manufacturing, professional equipment
5.	Highly active nanostructured catalytic converters	Chemical industry, synthesis of nanostructured polyolefins

Source compiled by authors based on materials (Kireev 2018)

Many industries presented in Table 1 are not sufficiently developed in Russia nowadays. We mean, above all, professional equipment, the chemical industry, robotronics and others. In this case, most of nanomaterials produced today are not

used in the production of the finished goods. This is due to the low degree of technological integration and the insufficient level of systemic nanotechnology development (Inshakov 2010). Many nanomaterials, polysilicon in particular, are sent to large foreign companies as an intermediate product for its further use in high-tech industrial production. In this case, the transition to a new technological mode will be fragmented.

It must also be noted that the systematic nature of the new industrialization processes and the transition to the sixth technological mode involves not only the creation of new production works and new industries, but also a large-scale process of modernizing the existing ones. In Glazyev opinion the influence of new technological structures on developing traditional industries is possible and necessary. At present moment, the so-called sixth technological mode is actively forming and it is entering its growth stage. The basis of this mode is composed of genetic engineering, artificial intelligence and computer-based education, new biomaterials, nanotechnology, which in turn covers a whole range of independent areas (nanoelectronics, nanomaterials and nanostructured coatings, molecular and nanophotonics, nanobiotechnology, nanoscale machinery and equipment, nanotubes, etc.) In addition, despite the crisis phenomena in many industries, including traditional ones, production in these areas shows a significant growth of 30–70% per year on average. Along with the new development directions related to nanotechnology, traditional industries such as aerospace, electrical engineering, nuclear industry, instrument engineering, shipbuilding, machine-tool construction, construction, communications, which can be attributed to the industries of previous technological modes, achieve positive momentum (Glazyev 2009).

At the same time, the new technological mode has a positive impact on developing health care, education and agriculture, thanks to the use of cellular technology, bio-engineering, and on creating new biomaterials. The new mode increases the potential for renewal and full-scale modernization of such traditional industries as ferrous and non-ferrous metallurgy, the chemical industry, construction, aircraft and shipbuilding (Glazyev 2009). The development of such effects should be supported through forming the specific innovation infrastructure and institutional environment.

Thus, in terms of a large-scale transition to the sixth technological mode, one should take into account the need for accelerated modernization of existing traditional industries based on new technologies, which in turn may require quite a large amount of investment resources (Kurchenkov et al. 2017). In particular, it may become obvious that in traditional industries the obsolescence of the capital equipment will outrun its depreciation. It has been found out that the average depreciation age of machinery and equipment in the leading industries is 7–15 years, and its planned obsolescence is 5–7 years. This fact makes it necessary to use the mechanism of accelerated depreciation, which is aimed at obtaining certain tax benefits for large industrial corporations.

Most modern industrial companies in traditional industries are practically forced to turn to new technologies before the end of the normal term of depreciation deductions. In this regard, risks of the so-called “double costs” may naturally arise. These double costs are associated with the costs of creating and using new technology on the one hand, and with the costs of depreciating old equipment, the cost of which is not fully recovered, on the other hand. In this situation, it is necessary to obtain the additional source of investment funds that could cover these double costs. Own funds of enterprises and the industry, as a whole may not be enough for this purpose. Given that

today in most cases, many domestic industrial enterprises, carrying out modernization of production, can rely only on their own funds.

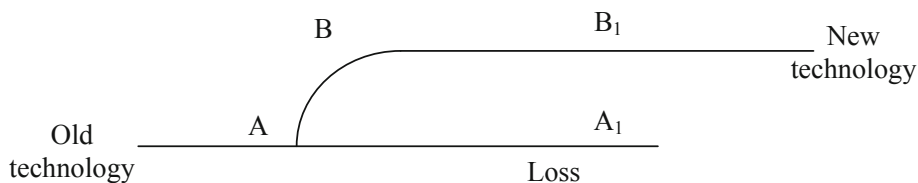


Fig. 1. The structure of investment costs in the transition to the new technological mode in traditional industries

As shown in Fig. 1, sections BB_1 and AA_1 reflect the double costs associated with the outrunning transition of an industrial enterprise to new technologies. Coverage of this amount of costs becomes possible due to the significant savings or financial reserves, which the normal profit of enterprises of traditional industries of the fourth and fifth technological modes cannot provide. Therefore, as have been noted, the possibility of an advanced process of updating production for these enterprises should consist of additional sources of financing, including external sources, venture capital funds, state investments, etc.

Here, in one sense, we can talk about the situation of the “technological gap” by Foster, according to which production costs in the conditions of using traditional technologies at a certain stage make the enterprise inefficient. There is a need to move to a new technology, or to work within the framework of a new technological mode. The enterprise that will first reach this “technological limit” and make timely efforts to turn to new technologies is able to become the leader among the enterprises of this industry. “It is extremely important for a company to recognize the technological limit in order to anticipate changes and, at least, stop investing in something that can no longer be improved ...” (Foster 1987).

According to Foster, using the strategic advantage of the naturally occurring “technological gap” is possible in the context of a constant and large-scale search for innovative technologies by the “attacking” corporation. Due to it, this corporation becomes the leader in its industry, as has been noted. The implementation of this strategic concept is an important task for enterprises of traditional industries in the context of the transition to a new technological mode. However, this is possible for sufficiently large enterprises that have large investment resources to introduce new technologies and to compensate the double costs that naturally occur during the transition to a new technological mode. Indeed, the significant part of innovative technologies and products is applied in large corporate structures (Zedtwitz et al. 2016). At the same time, taking into account the structural features of large integrated groups, it should be assumed that they have the ability to carry out a closed innovation cycle from development to implementation within the same company, which can significantly increase its competitiveness on a global scale.

In addition, we should mention the ever-increasing technological complexity of the final innovative products, which involves the use of special competencies. In turn, these competencies must be consistently integrated within the framework of a single production process, which is most easily achieved within the boundaries of one integrated company.

Such integration processes are of great importance for ensuring a systematic new industrialization policy in the Russian economy, since they enable the simultaneous use of innovations at all stages of production, from the new materials development to the finished product design. The Japanese economist Kono considered a quick adaptation to technological changes through the timely correction of specializations and scale of production to be one of the advantages of the vertical integration in industry (Kono 1987). The development of the vertical integration in industry stimulates innovation activity. The increasing requirements to quality standards in production sometimes become the main motive for the integration of large corporations, which makes it possible to take control of all stages of development, production, marketing and maintenance of main products and components.

Unsuccessful examples of the vertical integration are mainly connected with the technological incompatibility of the integrated production processes, and with the lack of synergy. As Glazyev noted, synchronization of innovations implies their technological compatibility and interdependence. Only in this case they will stimulate and complement each other. Otherwise, significant scientific discoveries and inventions in one industry will not be able to find implementation in related industries until they reach the appropriate (comparable) level of innovative and technological development (Glazyev 2009).

Thus, the integration processes contribute to the acceleration of new industrialization processes in industries, and the substantial investment resources of large companies make it possible to cover investment costs associated with the transition to the sixth technological mode. The effect of new industrialization should be expected in a large-scale transition to new convergent technologies in several industries at once. It is the integrated large companies focused on the production of finished high-tech products that should become the core of this large-scale systemic new industrialization.

4 Conclusion

Thus, in the modern context, to increase the competitiveness of the Russian economy, it is necessary to intensify the new industrialization processes, which should contribute to the development of new production works and industries in such areas as nanotechnology, artificial intelligence, biotechnology, etc.

At the same time, the transition to the sixth technological mode should contribute to the renewal and modernization of traditional industries of the fourth and fifth mode. In the near future, new industrialization should become a driver of the accelerated development of a number of sectors of the national economy, which are still considered traditional nowadays. This is primarily engineering, ferrous and non-ferrous metallurgy, chemical and petrochemical. Meanwhile, the actual high-tech industries are professional equipment, nanotechnologies and nanomaterials, etc. (Inshakov et al. 2017).

It must also be noted that large integrated companies play a significant role in enhancing the new industrialization processes. At the macro level, the development of large integrated structures helps to achieve the synergistic effect from combining the research and production sectors in the single economic space. These vertically integrated companies are becoming a serious factor or a tool for competitive opposition to the foreign multinationals in the struggle for world resources and technological superiority. The experience of developed countries shows that the industrial integration on a vertical principle, which also includes research institutes and centers, is becoming an important factor in the sustainable innovative development of the national economy.

On the one hand, large integrated companies concentrate the significant investment resources, which make it possible to cover the double costs associated with the transition to a new technological mode. On the other hand, integration interaction allows overcoming the localization and fragmentation of new industrialization processes at the level of the entire industry, which makes the process more organized, consistent and systemic. Unified organizational charts are formed, and they cover both the development and mastering the production of innovative products in a single management and information field.




The implementation of the effective new industrialization policy in the Russian economy should be based on the possibility of combining all types of resources of large integrated companies, state funds and research institutes and centers. At the same time, the most important points are: the possibility of implementing strategies for pre-competitive integration of companies; creating some kind of research and development associations based on technological platforms of a new technological mode, which can be successfully used in the production of final innovative products with high value added.

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The Impact of NBIC Technologies on Economic Growth in Russian Regions: An Empirical Analysis

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Abstract. Purpose: The main objective of this research work was to identify the effects of using NBIC technologies on the economic growth of the regions of the Russian Federation.

Design/Methodology/Approach: The assessment tools are represented by integrated empirical analysis methods. At the first stage of the study the authors performed cluster analysis of per capita GRP, income level of the population and level of ICT use applying the k-means method to define groups of Russian regions according to various dynamics of economic growth. In the second stage, a canonical correlation analysis was used to define the impact of using NBIC technologies on the economic growth of the regions of the Russian Federation.

Findings: The study proved the interconnection between ICT and economic growth in the regions of the Russian Federation. The greatest impact is exerted by indicators of such parameters as the number of mobile cell phones and broadband Internet subscribers.

Originality/Value: The method of cluster analysis allowed distinguishing three groups of Russian regions, characterized by low, medium and high dynamics of economic growth. Analytical expressions of the interconnections of economic growth indicators and a set of indicators characterizing the development and use of ICT in the regions of the Russian Federation were obtained as a result of the canonical correlation analysis.

Keywords: ICT technologies · Economical growth · NBIC technologies · Cluster analysis · Canonical analysis

JEL Code: O11 · O47 · R12

1 Introduction

One of the main fundamental problems, discussed in both Russian and foreign studies, is the substantiation of mechanisms for achieving stable economic growth rates, as well as ensuring its new quality level. The main conditions ensuring such an economic development are technological shifts caused by scientific and technological progress, the current stage of which is associated with the development of converging technologies, representing the mutual influence and interpenetration of groups of

nanotechnology, biotechnology, information technologies and cognitive science (hereinafter - NBIC) constituting the core of a new technological structure and determining structural and dynamic processes in economic systems. Therefore, the development of the information sector of the regional economy, the stimulation of scientific research in the field of NBIC technologies and the introduction of innovative research results in the real sector of the economy will allow intensifying innovative processes in the region and reaching a new level of economic growth.

Investments in digital technologies are no longer limited to an elite group of “high-tech” economies; today the investments in developed and developing economies are profitable. The governments of both countries and regions are faced with the task of understanding how to maximize the effects of using NBIC technologies in all areas of the economy and society (Inshakov 2017a, b). However, there are still no tools that adequately measure and plan the obtained effects. The Federal State Statistics Service (Rosstat) accumulates a lot of official statistics and accepted indicators, but none of them fully reflects how digital technologies affect enterprises, industries and the entire economy. In mature economies that have long been on the path of digitalization, NBIC technologies penetrate into all sectors, from agriculture to high-tech industries, are integrated into all business processes of enterprises and, as a result, contribute to increased labor productivity and, therefore, economic growth (Inshakov and Inshakova, 2017a).

According to foreign and Russian studies on the problems of the digital economy development (Digital economy 2018; Runet Economy: Digital Economy of Russia, 2018; World Bank, 2018), there are several fundamental factors that influence the growth of the economy and the use of NBIC technologies:

- Strengthening the non-digital foundations of the economy, providing a flexible and supportive regulatory environment, and encouraging institutions, organizations and people in the process of adapting to the digital world;
- strengthening the digital foundations of the economy, that is, creating a scalable, smart and secure infrastructure that can adequately respond to the expected explosive growth of the digital economy;
- strengthening the interaction, integration and harmonization of the functioning of the digital ecosystem, both horizontally - between industries and sectors of the economy, and vertically, at all levels of government - to enhance innovation and ensure the possibility of making a technological breakthrough;
- development of digital skills for the growth of a thriving digital economy and the emergence of a highly skilled workforce;
- interdependence between digital development, the introduction of a culture of open innovation, a change in traditional governance structures and related changes in society.

Traditionally, the assessment of economic growth is associated with an increase in gross domestic product (GDP) and gross regional product (GRP). Therefore, the groundwork for economic growth and improving the living standards of the population is laid by the growth of workforce productivity.

The issue of the impact of NBIC technologies on workforce productivity, its strength assessment and search for an analytical expression of the interconnection

between these technologies introduction and sustainable economic development has been widely studied in developed countries at a company, industry and country level, with most studies showing the positive and economically significant impact of information and communication technologies (ICT) on productivity (Cardona et al. 2013).

Recent studies (Draca et al. 2007; Van Reenen et al. 2010) provide relatively weak and mixed empirical evidence of the contribution of ICT to economic growth in developing and transition economies. At the regional level of the Russian Federation, such studies are virtually absent, which does not allow an unambiguous conclusion about the contribution of ICT technologies to the region's economy growth. Differentiation of the territorial entities of the Russian Federation by the level of socio-economic development also requires the development of methodological tools for assessing such influence in each group of regions, which will allow creating development programs specific for each group. Despite rather mixed studies, the World Bank has an optimistic expectation that "Information and communication technologies (ICTs) have great promise to reduce poverty, increase productivity, boost economic growth..." (World Bank 2012). The lack of empirical research on the impact of ICT in certain territories can be largely due to the lack of adequate micro- and meso-level data for the information sector.

There are following reasons why the influence of ICT on growth in the regions of the Russian Federation differs from that in the whole country, as well as from data of developed countries. On the one hand, regions that show very low per capita GRP growth rates and that are subsidized do not have enough domestic resources (lack of an appropriate level of human capital, as well as insufficient R&D expenses) for using ICT in the economy. On the other hand, ICT could allow such territories to "jump over" traditional methods of increasing workforce productivity (Steinmüller 2001).

In addition, increased workforce productivity can be caused by "secondary effects related to ICT or network effects" (Stiroh 2002), because ICT can reduce operating expenses and speed up the process of creating knowledge (Pilat 2004). These network effects may be more significant "when many companies in a region or industry use similar levels or types of ICT" (Draca et al. 2007).

The proposed study solves the problem of measuring the effects of the application of NBIC technologies, develops an approach that uses an expanded set of indicators, and allows to determine the interconnection between NBIC technologies and economic growth.

The methodological tools include, at the first stage, a typology of the regions of the Russian Federation according to per capita GRP, the income level of population and the level of ICT use, at the second stage, using the canonical correlation methods, the existence of their interconnection is proved, and analytical expressions of this interaction are obtained for each group of regions.

The empirical analysis performed by the authors for all the subjects of the Russian Federation without identifying separate groups according to the level of economic development, made it possible to draw unambiguous conclusions about the connection between NBIC technologies and economic growth. The constructed econometric models showed stable statistical significance, however, additional studies on groups of regions (in the course of cluster analysis, 3 groups were identified - with high dynamics, with medium dynamics and with low dynamics of economic growth) did not

allow us to draw unambiguous conclusions about the presence of such an influence within the group.

2 Materials and Method

To conduct an empirical analysis, the authors compiled a sample of 410 values for selected indicators for all constituent entities of the Russian Federation for 2012–2016, then normalized the data applying to the standardized value formula. The data source is the annual statistical compilation of the Federal State Statistics Service “Regions of Russia. Socio-economic indicators” for the relevant periods. The scientific basis of this article was formed on the basis of foreign studies (Cardona et al. 2013; Van Reenen et al. 2010) and Russian researches (Granberg and Zaitseva 2003; Inshakov and Inshakova 2017a; Petrova et al. 2016).

The study is based on a system-structural approach, using conceptual theoretical principles and scientific principles to formulate a common methodology for studying the interconnection of information and communication technologies and economic growth in the regions of the Russian Federation.

The research applied such research methods as the universal dialectic method, generalization method, synthesis method, analysis method, as well as general methodological principles for the study of economic phenomena (principles of integrity and consistency) and specific scientific methods for conducting economic research (cluster analysis using the k-means method, canonical correlation method).

3 Results

The empirical base of the study was a sample consisting of 410 observations for the corresponding selected indicators and subjects of the Russian Federation for 2012–2016. The data array was selected taking into account the correlation analysis using the parametric method for calculating the Brave-Pearson coefficients ($r > 0.5$). To carry out canonical analysis, the values of the indicators were normalized according to the formula of standardized values.

The following indicators were identified as indicators reflecting the economic growth of the regions of the Russian Federation: Y_1 - dependency ratio, Y_2 - rate of natural increase per 10,000 population, Y_3 - per capita population income, Y_4 - gross regional product per capita. The characteristic of economic growth is usually limited by the average per capita GRP. However, recently in publications the criticism of this indicator has been intensified (Granberg 2003; Zaitseva 2009; Petrova et al. 2016), the disadvantages of which include a delay of 2 years of its calculation, the lack of calculation at the level of municipalities and large cities, as well as extremely limited information on the sectoral structure and on the contribution of certain types of economic activity to the final value. All this makes it difficult to analyze the impact of individual factors on economic growth, especially with regard to the contribution of the information sector of the economy and it is almost impossible to make adequate assessments of the contribution of nano- and biotechnologies. Therefore, this study

proposes to expand the set of indicators characterizing economic growth. Due to the lack of official data on all converging technologies (especially nano- and biotechnologies), the authors limited themselves to a set of indicators describing the status and use of information and communication technologies.

The system of indicators representing the information sector of the economy: X_{21} - the number of fixed broadband Internet subscribers per 100 population; X_{22} - the number of mobile broadband Internet subscribers per 100 population; X_{23} - the number of mobile cell phones per 100 households, in pcs; X_{24} - investments in fixed assets on foreign economic activities (activities in the field of informatization and communications); X_{25} - percentage of households with Internet access, in %.

At the first stage of empirical analysis, cluster analysis was performed using the k-means method, an iterative algorithm of which minimizes the variance within each cluster. Initially, 4 clusters were formed, but the last group of regions was small, which did not allow further research. Therefore, clusters 3 and 4 were combined, since the characteristics of these clusters are the closest. Table 1 presents the results of cluster analysis.

Table 1. Groups of regions of the Russian Federation according to the dynamics of economic growth indicators for 2012–2016

Low dynamics of economic growth (Cluster 1)	Republic of Dagestan, Republic of Ingushetia, Kabardino-Balkar Republic, Chechen Republic, Tuva Republic, Republic of Adygea, Republic of Kalmykia, Astrakhan Oblast, Volgograd Oblast, Karachay-Cherkess Republic, Republic of North Ossetia-Alania, Stavropol Krai, Republic of Bashkortostan, Mari El Republic, Udmurt Republic, Chuvash Republic, Orenburg Oblast, Altai Republic, Republic of Buryatia, Republic of Khakassia, Zabaykalsky Krai, Krasnoyarsk Krai, Omsk Oblast, Tomsk Oblast, Amur Oblast, Jewish Autonomous Oblast
Middle dynamics of economic growth (Cluster 2)	Belgorod Oblast, Bryansk Oblast, Vladimir Oblast, Voronezh Oblast, Ivanovo Oblast, Kaluga Oblast, Kostroma Oblast, Kursk Oblast, Lipetsk Oblast, Oryol Oblast, Ryazan Oblast, Smolensk Oblast, Tambov Oblast, Tver Oblast, Tula Oblast, Yaroslavl Oblast, Republic of Karelia, Arkhangelsk Oblast, Vologda Oblast, Novgorod Oblast, Pskov Oblast, Rostov Oblast, Republic of Mordovia, Perm Krai, Kirov Oblast, Nizhny Novgorod Oblast, Penza Oblast, Saratov Oblast, Ulyanovsk Oblast, Kurgan Oblast, Sverdlovsk Oblast, Chelyabinsk Oblast, Altai Krai, Kemerovo Oblast, Novosibirsk Oblast
High dynamics of economic growth (Cluster 3)	Moscow Oblast, Moscow, Komi Republic, Kaliningrad Oblast, Leningrad Oblast, Murmansk Oblast, Saint Petersburg, Krasnodar Krai, Republic of Tatarstan, Samara Oblast, Tyumen Oblast, Irkutsk Oblast, Sakha (Yakutia) Republic, Kamchatka Krai, Primorsky Krai, Khabarovsk Krai, Magadan Oblast, Sakhalin Oblast, Chukotka Autonomous Okrug

Source: compiled by the authors

Differentiation of regions by clusters will enable the formation of adequate regional development programs that allow for sustainable growth and application of specific regional policy tools that are most effective for each group.

At the second stage, the method of canonical correlations was applied and analytical expressions of the interconnections of economic growth indicators and a set of indicators representing the spread of ICT in the regions of the Russian Federation were obtained. The results of the canonical analysis for all regions are presented in Table 2.

Table 2. The results of the canonical analysis

Canonical analysis	Left set	Right set
Number of variables	4	5
Variance extracted	98.000%	92.48%
Total redundancy	39.6921%	39.3386
Canonical R	0.808	
p	0.000000	

Source: compiled by the authors

The values of the canonical correlation coefficient R in the sample under study are large ($R = 0.808$), the level of statistical significance p is equal to 0.0000001, which indicates a high degree of reliability of the results. It can be argued that the correlation between the canonical sums of variables in the left (the economic growth of the regions of the Russian Federation) and the right (information sector of the economy) is significant enough. The value of total redundancy shows that using all the values of the canonical roots and obtaining the values of the variables in the right set can be explained by the variance of the variables in the left expression.

Let us check all the canonical roots for significance, for this we consider the values of the Chi-square statistic (see Table 3). The largest number of roots that can be extracted corresponds to the minimum number of variables in the studied subsets, in our case 4, i.e. at a significance level of $p < 0.05$, four canonical roots are statistically significant. According to the obtained value of R, the first two roots turned out to be the most significant for further interpretation; expressly they give 83% and 67% of the extracted variance for the right and left sets, respectively.

Table 3. Chi-square statistics for canonical roots

Root removed	Chi-square tests with successive roots removed					
	Canonical R	Canonical R-sqr.	Chi-sqr.	df	p	Lambda prime
0	0.808425	0.653551	117.0010	20	0.000000	0.205750
1	0.603406	0.364098	38.5594	12	0.000125	0.593883
2	0.249700	0.062350	5.0588	6	0.536304	0.933922
3	0.063055	0.003976	0.2948	2	0.862949	0.996024

Source: compiled by the authors

Analysis of the factor loadings of canonical roots allows us to determine the most significant roots for the right and left sets (Table 4).

Table 4. Proportions of variance extracted of the left and right sets

Factor	Variance extracted (Proportions), left set		Factor	Variance extracted (Proportions), right set	
	Variance extracted	Reddncy		Variance extracted	Reddncy
Root 1	0.279754	0.182834	Root 1	0.466779	0.305064
Root 2	0.560920	0.204230	Root 2	0.214715	0.078177
Root 3	0.094425	0.005887	Root 3	0.157210	0.009802
Root 4	0.064901	0.000258	Root 4	0.086266	0.000343

Source: compiled by the authors

Since the second root (left set) extracts 56% of the variance, and in the right set, the first canonical root corresponds to the largest loadings relative to variables connected to the information sector, respectively, to construct canonical variables, we leave the second (left set) and the first (right set) root in consideration.

The next step in the analysis is the construction of canonical variables that give an analytical expression of the connection of the variables under study. For this, it is necessary to consider the structure of factor loadings for the selected roots on the left and right sets, which are presented in Tables 5 and 6.

As can be seen from Table 5 for the second root, the highest values correspond to the variables Y_1 - dependency ratio, Y_3 - per capita population income, Y_4 - gross regional product per capita.

Table 5. The structure of factor loadings (left set)

Variable	Factor structure, left set			
	Root 1	Root 2	Root 3	Root 4
Y1	0.106995	0.958935	-0.246240	-0.091438
Y2	-0.829611	-0.440438	-0.269318	-0.212668
Y3	0.471584	-0.768877	-0.425632	0.072629
Y4	0.443759	-0.734144	-0.251739	-0.448039

Source: compiled by the authors

Table 6. The structure of factor loadings (right set)

Variable	Factor structure, right set			
	Root 1	Root 2	Root 3	Root 4
X21	0.758433	-0.138082	-0.227297	0.327442
X22	0.143903	-0.831610	-0.402107	-0.158022
X23	-0.900412	-0.173384	-0.095258	0.387452
X24	0.680698	-0.444563	0.560918	0.155648
X25	0.681084	-0.367741	0.498993	0.353266

Source: compiled by the authors

According to Table 6, by 1 root, the variable X_{22} is excluded from consideration.

Thus, the study conducted by the authors made it possible to prove the existence of a connection between economic growth and indicators representing the use of ICT. The obtained factor structures of the right and left sets (Tables 5 and 6) prove that the maximum canonical correlation coefficient $r_1 = 0.808$ is achieved when the initial standardized variables form the following pair of canonical variables:

$$U_1 = 0,96Y_1 - 0,77Y_3 - 0,73Y_4$$

$$V_1 = 0,76X_{21} - 0,9X_{23} + 0,68X_{24} + 0,68X_{25}$$

4 Conclusion

The study proved the significance of ICT for the economic growth of the regions of the Russian Federation, the canonical variables obtained represent the strength of the connection between the sing-factors ($X_{21} - X_{25}$) and the resulting signs ($Y_1 - Y_4$). The greatest impact on economic growth is exerted by indicator X_{23} —the number of mobile cell phones per 100 households and X_{21} —the number of fixed broadband Internet subscribers per 100 population.

It is of interest to conduct a similar analysis of the selected clusters of regions. However, a similar analysis carried out by the authors for groups of regions did not give positive results; the results obtained for cluster 1 with the lowest dynamics of economic growth turned out to be statistically significant. No definite conclusions can be made here, but, nevertheless, it can be assumed that in this group the use of ICT gives the greatest effect. To substantiate this conclusion, further research is required.

There are two other issues that are worth mentioning. Although the current data set covers most of the regions of the Russian Federation (80 constituent entities of the Russian Federation), however, for some regions there are no values in official statistics or the values of indicators had to be excluded from consideration as the most different from the rest (runouts). Consequently, there may be a shift in the selection towards territories that use ICT more efficiently that diminishes the possibility of generalizing the results. In addition, when studying the impact of ICTs, one should take into account not only economic, but also political and social aspects, such as easier access to information, openness of regional authorities, but this also requires additional research.

The authors also did not include in the study indicators representing statistical information on the ICT use in organizations by type of economic activity. This is due to the fact that the data are accumulated during sample observations for a limited number of organizations, which also affects the statistical significance of the results.

Additional analysis based on large sample sizes on the period (for example, over the last 10 years), as well as the number of observed objects and features, would allow using not only statistical methods, but also data mining methods (building neural networks that require large arrays data in addition raises the question of the homogeneity of the resulting populations). This is especially important in relation to potential endogenous problems as part of the meso-scale estimates. In addition, further research

at the level of specific enterprises can help to gain a deeper understanding of the impact of ICT on workforce productivity (and therefore on economic growth) in individual groups.




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Russian and Eurasian Technology Platforms: Progress and Challenges in Accelerating the Neo-Industrialization Processes

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Abstract. Purpose: Assessment of the current state of the Russian technology platforms (RTPs) and Eurasian technology platforms (EATPs) in the context of their effects on the development of the neo-industrialization processes in the EAEU economies.

Design/methodology/approach: The paper provides a comparative analysis of the European, Russian and Eurasian technology platforms formation dynamics. Based on the rating of RTPs performance as of May 2018, the presented research dwells on the qualitative characteristics of their development in the following groups: high-performance, above-average, average, low and zero performance platforms. The study of EATPs has been carried out in terms of their organizational and functional relationship with RTPs based on cross-platform interactions.

Findings: In the course of the study, the authors have identified the key factors inhibiting the development of RTPs and EATPs ecosystems, thus causing a reduction in transactional benefits and the synergistic effect of the major stakeholders' participation in the platforms. The study also supplements the subjects and sources of the public-private partnership mechanism for the financial support of the EATPs activities.

Originality/value: The study findings can be applied by state development institutions, organizations and businesses participating in RTPs and EATPs in the course of planned updating/elaboration of platform development strategies in accordance with the priorities and imperatives of neo-industrialization in the Russian and the EAEU economies.

Keywords: Neo-industrialization · Technology platform · Ecosystem · Transactional cost reduction · Eurasian technology platform · Cross-platform interaction

JEL Classification: O14 · O25 · O32 · L14 · F36

1 Introduction

Ensuring the competitiveness of the Russian Federation in the transition to the sixth technological mode predetermines the intensifying processes of innovative modernization and neo-industrialization of the economy, the development of convergent and end-to-end technologies capable of creating a resource and ideological basis for the scientific and technological “breakthrough” and the emergence of new markets for high-tech products.

Under the circumstances, the contribution of the Russian technology platforms (RTPs) and the Eurasian technology platforms (EATPs) to building a system for forecasting and monitoring the scientific and technological development of industries and sectors of the economy, as well as to developing a technology transfer mechanism, implementing projects aimed at the development of territorial innovation clusters, expanding scientific and technical cooperation and public-private partnership in the field of innovation of the EAEU countries will increase considerably (Russian technology platforms 2019).

Consolidating governmental, private and public organizations into the groups of mutually beneficial initiatives and interests in the technology platform framework provides a system of transactional processes and relations which facilitates information exchange, improves organization, and creates a consolidated way of reducing each participant’s total and individual transaction costs. The technology platform is, thus, a system of transactional relations of participating companies and organizations, which provides the most beneficial economic interaction based on their common goal and interests (Inshakov et al. 2017), as well as on synergistic and scale effects in speeding up product development (Alblas and Wortmann 2014). Technology platforms are evolving organizations that “federate and coordinate constitutive agents who can innovate and compete; create value by generating and harnessing economies of scope in supply or/and in demand” (Gawer 2014, p. 1240).

Identifying the reasons for both successful and ineffective activities of a number of technological platforms set up in the Russian Federation and the EAEU, outlining the causes for inhibiting their formation and justifying the areas for improving their activities is becoming a pressing scientific and practical task.

2 Materials and Methods

The conceptual foundations of the study were laid as a result of critical understanding and creative development of theoretical propositions and implications regarding the essential characteristics of the technological platforms ecosystem, their economic and engineering design, value creation mechanism, platform innovation and competition interaction, economic and technological effects and risks of their functioning, and different platform classifications, laid out in the works of foreign and Russian scholars (e.g. Gawer 2014; Furman et al. 2017; Alblas and Wortmann 2014; Kenney et al. 2019; Teece 2017; Inshakov 2013; Inshakov et al. 2017; Kachalov 2018).

Legal, regulatory, and analytical documentation of the European Commission, European Parliament, Eurasian Economic Commission, Eurasian Intergovernmental

Council, Russian and Eurasian state financial and non-financial development institutions, as well as the information available online on the official websites of selected RTPs и EATPs have provided the empirical corpus for the study.

The evolutionary approach combined with structural and functional, temporal and spatial, comparative and documentary analyses has formed the methodological basis for solving the research tasks.

3 Results

The technology platform is a complex mechanism for transforming the relationships of disparate participants in the neo-industrialization process into a consolidation relationship aimed at achieving a common result. In the course of creating a technology platform competition is moving from the level of interaction between individual firms to the level of interaction between their innovatively and industrially consolidated groups, including different countries and their unions (Inshakov et al. 2017).

Between 2010 and 2017 thirty-seven RTPs were established in the Russian Federation in 13 most promising areas of scientific and technological development (Fig. 1), involving over 3.5 thousand participants (public and private companies, academic and educational institutions, public development institutions).

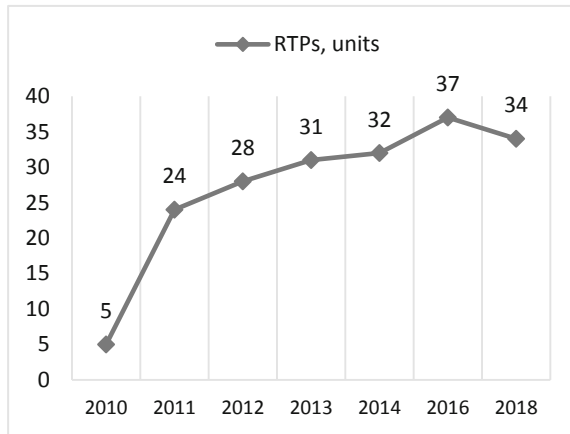


Fig. 1. RTPs' dynamics between 2010 and 2018. *Source:* compiled by the authors based on the data presented in (Russian Technology Platforms 2018; Russian Technology Platforms 2019)

A considerable difference in the setup time period, varying levels of economies readiness for building technological platforms, which have become visible in applying bottom-up, flexible and industry-led (Reillon 2017) approaches or implementing top-down government initiatives, predetermines various launching positions of RTPs and European technology platforms (ETPs) (Figs. 1 and 2). This enables us to ascertain the existence of more ready-made objective prerequisites for forming and effective functioning of ETPs and catching-up development of RTPs and EATPs.

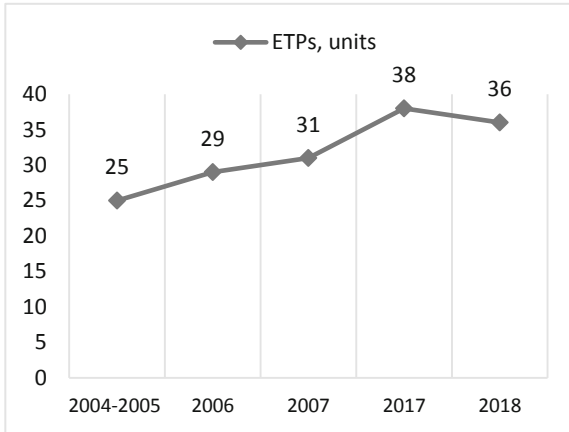


Fig. 2. ETPs establishing dynamics since the EC proposal to set up TPs at the European level. *Source:* compiled by the authors based on materials (Reillon 2017)

Currently, 34 out of 37 RTPs operate in Russia, with varying degrees of effectiveness. Based on the results of monitoring the activities of technical platforms in 2017, one can see that out of the total number of the technical platforms in question, 21 (19 – in 2016) are developing and functioning efficiently, 7 (5 – in 2016) are considered inefficient while 3 are in the marginal state approaching the state of inefficiency. There are platforms that formally meet the criteria, however, their activities are inefficient. (Technology platforms ranking 2018).

In terms of activity performance, the following differentiation of current RTPs positions is observed (Fig. 3).

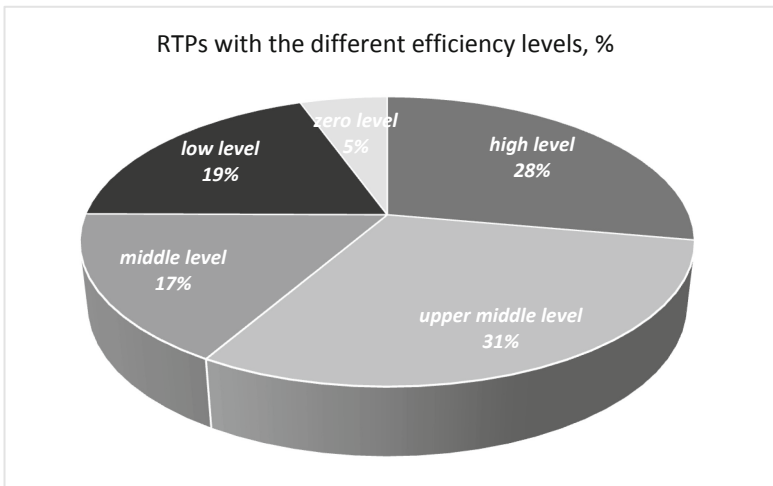


Fig. 3. Efficiency level differentiation of the RTPs’ functioning in 2017, as of May 25, 2018. *Source:* compiled by the authors based on the data presented in (Technology platforms ranking 2018)

An important positive factor in the success of the RTPs, which are the leaders of the rating, is the formation of a joint vision of developing paths for specialized technological areas through elaborating a specific strategic research agenda, SRA (strategic research program, SRP in Russian documents). This enables us to move to the next stage of the scientific and technological cooperation – the implementation of joint projects, in the course of which the distribution of risks (Kachalov 2018) and costs among RTPs participants is already under way.

“To be successful, platforms must create ecosystems that attract participants” (Kenney et al. 2019, p. 873). Among the negative factors that impede the creation of such effective ecosystems in the case of RTPs and EATPs and that are essentially their “growth pains” manifestations, are the following:

- institutional incompleteness of ecosystems and the vagueness of the technology platforms legal status;
- lack of interest in the activities of technical platforms from representatives of large businesses, as well as medium and small businesses and end users (the presence of which has become an important positive factor in the creation of technical platforms in the EU);
- lack of horizontal connections, insufficient number of participants and projects;
- insufficiently high quality of SRAs development, their inconsistency with the guidelines of the Russian Ministry of Economic Development, as well as the lack of roadmaps for their implementation;
- non-compliance with the requirements for regular updating of SRAs in the context of strategic and tactical tasks of neo-industrialization, solved by a specific technical platform;
- weakness of the technical platforms information factor functioning as a source of information asymmetry for platform participants and for interested third-party organizations;
- incompleteness of the mechanism for financing the activities of technical platforms (budget and non-budget funding of SRA projects, including due to lack of interest on the part of business entities);
- the level of the participants’ activities coordination within the technological platform that does not meet the emerging needs, particularly, in the case of cross-platform interactions for the implementation of SRA projects;
- insufficient development of the activities international vector (international academic and technical cooperation, measures to promote the newly created innovative scientific and technical products in foreign markets of investment and final goods).

The low quality of SRA development (not to mention its absence) and the delay in its updating processes are becoming, in effect, the major problems of ensuring the viability of the technical platform and its effective performance, since they reflect the real level of its participants’ self-organization and the degree of the development strategy appropriateness. In this sense, one cannot but agree with the conclusion that “the optimal platform owner’s business strategy changes over the platform lifecycle” (Teece 2017, p. 873). It is no coincidence that 4 out of 37 RTPs (Radiation Technologies, High-speed Intelligent Rail Transport, the National Software Platform, Applying Space Results for the Benefit of End Users), which do not even have a trial

RSA version, ranked last in the 2017 ranking in terms of their performance (the first two – 31st and 34th places, with low efficiency; the other two – 35th and 36th places, with zero efficiency).

The Eurasian technology platforms (EATPs), being the significant elements of the EAEU innovation infrastructure network, can be an effective mechanism for enhancing partnerships in the resource support for the neo-industrialization projects implementation in the Russian Federation and other EAEU countries.

EATPs are the international collaboration institutions at the mega-level of the global economic system, which reflect the “relationship of the international social division of labor and targeted cooperation of its subjects’ capital aimed at solving common problems in the sphere of producing knowledge products” (Inshakov 2013, p. 41). For the member-countries, the EATPs creation is also a way to consolidate and to toughen competitiveness on the global markets. This statement is of particular importance for the Russian economic entities’ position under the imposed sanctions.

The EATPs formation process has officially started relatively recently (Fig. 4) on the institutional basis of the fundamental EAEU governing bodies documents (which identified 14 key areas of the EATPs formation and general characteristics of their functioning mechanism): the Regulation “On the formation and functioning of the Eurasian technology platforms”, approved by Decision no. 2 of the Eurasian Intergovernmental Council of April 13, 2016; and Order no. 32 of the EEC Council of October 18, 2016 “On establishing priority Eurasian technology platforms” (Eurasian technology platforms 2017).

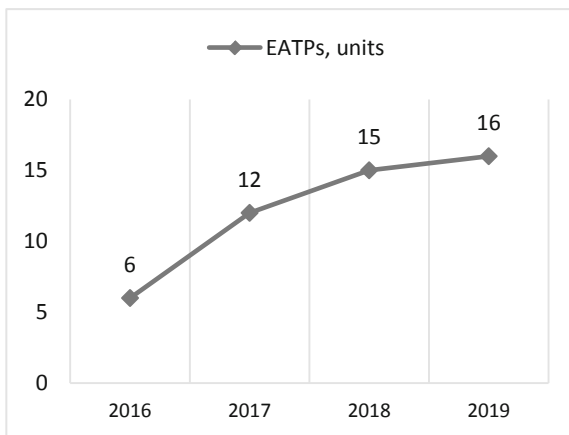


Fig. 4. EATPs’ dynamics between 2016 and 2019. *Source:* compiled by the authors based on the data presented in (Eurasian technology platforms 2017; Eurasian technology platforms 2018; EAEU has formed 2019)

In August 2019, the Eurasian Economic Commission (EEC) announced the establishment of the 16th EATP “Technologies for maintenance and repair of industrial equipment” that primarily focuses on the industrial partnership and import substitution

development, obsolete parts and assemblies reengineering based on technical re-equipment and production modernization, and breakthrough technologies adopted in the EAEU member-states (EAEU has formed 2019).

Since the EATPs would bring together participants from at least three EAEU member-states, they are creating the opportunities for multilateral international cooperation. This form of joint activity will ensure the attraction, accumulation and production as well as application of human, technical, industrial, institutional, organizational, informational and financial resources of the collaboration participants in the neo-industrial projects implementation based on their competitive advantages and economic interests' observance.

Some EATPs are created on the basis of 9 RTPs (Table 1) in the following priority areas: medicine of the future; bio-industry and bioresources; bioenergy; environmental development technologies; photonics; national supercomputer platform, etc.

Table 1. Interrelation and cross-platform interaction of the selected RTPs and EATPs

EATP	Originating/participating RTP	EATP member-nations	EATP partner countries
Eurasian Biomedical Technology Platform	RTP "Medicine of the Future"	Russia, Belarus, Kazakhstan	Germany, France, the United Kingdom
EATP "EurasiaBio"	RTP "Bioenergetics"	Russia, Belarus, Kazakhstan, Armenia	Germany
EATP "Photonics"	RTP "Innovative Laser, Optical and Optoelectronic Technologies – Photonics"	Russia, Belarus, Kazakhstan, Armenia, Kyrgyzstan	China, Germany
Eurasian Supercomputer Technology Platform	National Supercomputer Technology Platform	Russia, Belarus, Kazakhstan	The USA, Japan, China, South Africa, many European countries
EATP "Metallurgy Technologies and New Materials"	RTP "New Polymer Composite Materials and Technologies"	Russia, Belarus, Kazakhstan, Armenia	France, Germany, the USA, Cuba, China
	RTP "Materials and Technologies of Metallurgy"		
EATP "Extraction and Processing of Solid Minerals"	Technology Platform of Solid Minerals	Russia, Belarus, Kazakhstan, Kyrgyzstan	China, India, Vietnam, Poland, the United Kingdom, Germany, Australia

Source: compiled by the authors based on data presented in (Russian technology platforms, 2019; Report on the Technology platform "Materials and Technologies of Metallurgy" activities 2019)

The modern EATPs ecosystems development is hindered by a complex of negative factors – similar to those affecting RTPs and specific ones, characteristic for the EATPs format. Among the latter are the lack of involvement of a broad range of the EAEU-wide stakeholders; incompleteness of EATP members’ joint vision of the priorities for the scientific and technological development and SRAs, and consequently, of the research and financial priorities; the pressing need for financial engineering in the course of the SRA implementation; insufficient synergistic effect among the EATPs participants.

Funding SRAs projects in EATPs is one of the most challenging problems of their functioning, given the insufficiently high pace of integration into the EAEU. It is advisable to provide financial support for the EATPs activities on the basis of a public-private partnership using the following sources:

- (a) budgetary funds of EATPs participants: state development institutions and relevant governmental organizations of the EAEU countries for partial or full funding of the national sections of ongoing joint R&D and innovative nanotechnology projects within EATPs; from the budget of the Union to carry out research work related to the development of industrial cooperation and the formation of information systems and databases of new technologies and materials, created innovative products as part of the EAEU integrated information system;
- (b) extrabudgetary funds of current and potential EATPs participants: private investments, investment and venture funds, scientific, educational and other interested organizations from the EAEU countries and third countries; credit resources of national and international financial organizations for full or partial funding of projects within the EATPs framework.

Meanwhile, it is advisable to ensure that the load is shifted from the budget part of funding EATPs projects to off-budget one as the platform’s “life cycle” evolve and its institutional and organizational maturity increases (Inshakov et al. 2017).

Since EATPs are still in their infancy, the initiative to mobilize and accumulate financial resources (including private ones) to carry out their activities in current conditions should belong to public and interstate financial development institutions.

In this regard, the role of bilateral and multilateral development institutions, both having some experience in effective scientific, technical, industrial and financial interaction in the EAEU industrial field, and the newly created ones, but possessing significant participation potential in the organization of technical platforms, is growing.

Eurasian Development Bank (EDB) may become both an active multilateral EATPs-forming participant and a financial institution for the development of neo-industrialization processes in the EAEU. The main strategic objectives of EDB include: funding projects with a strong integration effect (58.8% of the total number of projects in 2018), including cross-country infrastructure projects; support for projects in the field of industrial production, including real corporate integration; development of public-private partnerships, partnerships and alliances in order to attract additional funding sources for projects in EDB member-nations (EDB Annual report 2019; EDB Bank profile 2019).

Thus, funding of neo-industrial projects within the framework of EATPs does not contradict the EDB strategy and can be carried out in the following forms: providing

long-term investment loans; involvement in the organizations charter capital; funding private equity funds; loans to commercial banks for subsequent lending to enterprises; financial and operational leasing; providing guarantees, sureties, letters of credit; insuring commercial and political projects risks. Debt and equity capital (including through project funding mechanisms and private equity funds) can serve as source of funding.

For example, the Russian-Belarusian Venture Investment Fund (RBF Ventures), established by the Belarusian Innovation Fund and the Russian Venture Company in December 2016, can become a bilateral development financial institution supporting high-tech EATPs participants. Financing for the fund can be obtained by high-tech startups of the two countries at the sowing stage (up to 25 million rubles) and the growth stage (up to 140 million rubles) (Russian-Belorussian Venture Investment Fund 2019). The fund's activities are based on public-private partnerships, where the major condition for investing in venture projects is the mandatory participation of a private investor with a share of at least 25%. In the future, RBF Ventures could become a joint venture fund for all the EAEU member states.

Neo-industrial projects implemented by venture capital funds within the framework of EATPs can become channels for the effective promotion of convergent and end-to-end technologies and innovative products of the EAEU countries enterprises in the Eurasian space.

4 Conclusion

One can hardly overestimate the Russian and Eurasian technology platforms' contribution to joint efforts of the public, business, and science in identifying the innovation breakthroughs and determining the most appropriate and promising areas in science, technology and production development to meet the challenges and opportunities of the EAEU national economies' transition to the new technological mode.

Technology platforms efficiency directly depends on their ecosystems qualitative characteristics and ability to overcome the "growth pains" manifestations that significantly reduce transactional effects of the platforms functioning as the key factor of attracting participants.

Based on the collaboration mechanism, technology platforms will bring together major technology platforms stakeholders – large (sectoral industrial enterprises, state-owned companies, etc.), medium and small businesses, scientific and educational institutions, development institutions, public institutions (industry associations and unions), and individuals – to accelerate the EAEU economies neo-industrialization processes and enhance their regional and global competitiveness.



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Foresight Model of Export-Oriented Import Substitution in Russia

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Abstract. Purpose: The purpose of the study was to justify the prospects of export-oriented import substitution based on an assessment of the current and predicted effectiveness of the import substitution policy implemented in Russia.

Design/methodology/approach: Calculations carried out for the period from 2013 to 2018 showed the inefficiency of the costs envisaged by state programs for the import substitution policy implementation right up to 2017 and the growth of efficiency value to only 23.7% in 2018 as a result of the obvious influence of government support measures with taking into account the time lag of 4–5 years.

Findings: The construction of a forecast model of export-oriented import substitution starting in 2019 showed the unattainability of target export indicators declared in state programs and the inefficiency of funding allocated for these purposes within the duration of state programs and beyond, taking into consideration the established time lag.

Originality/value: A revision of the current model of the state policy of import substitution is proposed, based on the prevention of increased state protectionism that contributes to the preservation of the country's technological backwardness and the low competitiveness of its producers, a radical audit of government exporting programs, and a review of their target indicators founded on reliable and accurate forecasts of their potential dynamics.

Keywords: Export-oriented import substitution · Government policy · Efficiency · Target indicators

JEL Classification: E66 · O21

1 Introduction

The role of import substitution as a factor in Russia's economic growth is recognized by majority of scientists. Nevertheless, the country has a dual situation. Intensive scientific research is being carried out, the state policy in the field of import substitution is being actively implemented. However, a breakthrough in the field of import substitution has not occurred. The country's import dependence, the irrationality of its foreign trade balance and orientation towards raw materials exports are preserved. From the very correct, but not specific enough and difficult to implement, based on the real economic situation in the country, arguments about the need to solve many problems of import substitution, primarily in the part of state regulation, and rather

vague forecasts of its development, developed in numerous studies, it's necessary to move on to real measures to intensify import substitution in the country.

There are two possible scenarios for the development of import substitution in Russia that are distinguished clearly:

- (1) crowding out foreign goods from the domestic market of the country against the background of a predominantly raw material export structure. The scenario of import-oriented import substitution undoubtedly gives an impetus to the development of domestic production, but excludes the full participation of the country in world economic processes and makes its economy highly dependent on external market and geopolitical factors;
- (2) import substitution, aimed not only at the growth of domestic production and filling the freed up market niches with domestic producers, but also at the production of high-tech, innovative and therefore competitive goods demanded by the world community, the rejection of a raw material export model.

The majority of scientific research in the field of import substitution, the experience gained by countries of the world unequivocally proved the feasibility, moreover, the objective necessity of externally oriented import substitution (Inshakov et al. 2014; Klimov and Sayapin 2018; Bondar and Kobzev 2017; Zolotukhina 2017; Kuznetsova et al. 2016). The course taken by Russia on export-oriented import substitution in the last five years has given the country another chance to enter the frontiers of world economic progress, which should not be missed. But it must be borne in mind that import substitution does not apply to self-regulatory economic processes, it is always implemented in the framework of state policy. The negative experience of import substitution in various countries, widely studied in the works of various authors (Novikova 2015; Thom-Otuya et al. 2010; Abhyankar and Dharmadhikari 2011), is primarily associated with errors made by the state.

There is no national program in Russia that provides a clear description of goals, objectives, implementation mechanism, target indicators and resource support of the state economic policy in the field of import substitution. The country implements a system of numerous sectoral plans for import substitution, the target indicators of which are the maximum share of imports of relevant products (raw materials, materials, etc.) in the domestic market. The implementation of these plans is coordinated by the Government Commission on Import Substitution. Export-oriented programs of the Russian Federation, aimed at accelerated import substitution are being implemented, which, first of all, include the programs "Development of Industry and Increasing Its Competitiveness" and "Economic Development and Innovative Economy", funded from 2013. Each state program of the Russian Federation provides for a complex system of various indicators (indicators) and the corresponding amounts of budget financing for their implementation.

Assessment of the current state of the state policy of import substitution and its forecasts should be based, first of all, on a quantitative assessment of the effects arising in the process of its implementation in comparison with the costs incurred by the state to achieve the adopted targets in the framework of import substitution programs.

It should be noted that insufficient attention is paid to this aspect of import substitution in scientific research. So, in the works of Chernova and Klimuk (Chernova and

Klimuk 2016; Chernova 2018) the effects of the state policy of import substitution were studied in detail, however, the state's costs for their achievement are not considered by the authors, which, in our opinion, reduces the practical significance of the study.

Vyzhitovich and Ershov (2015) approached the study of assessing the effectiveness of the state policy of import substitution from the standpoint of correlating the cumulative effect of import substitution, calculated as the difference between its positive and negative effects, and the state's costs for their implementation. At the same time, the authors rightly understand the total costs of the state for the implementation of import-substituting programs as expenses, however, it is not possible to calculate the effects of import substitution proposed by the authors in some cases (for example, complicating trade relations with foreign partners, worsening the country's image on the international arena, etc.).

Ullrich (2017) can be cited as an example of a study that quantifies the state's costs of implementing an import substitution policy. The author of the study estimated that the total value of import-substituting programs in Russia as of 2017 was estimated at 35 billion euros (about 3% of GDP), while the volume of government procurement for import substitution programs increased by about 40%.

In our opinion, research should be developed in which reliable methods for assessing and predicting the effectiveness of the state policy of import substitution are developed and implemented based on identifying its most important at the present stage and really calculated effects and costs for its implementation, which allows us to develop a system of measures to further enhance the positive the impact of import substitution on the country's economy.

2 Methodology

The basis for construction of the foresight model of export-oriented import substitution was the extrapolation forecasting method, which determined the area of expected values of export indicators taking into account target indicators and actual budget allocations provided for by state programs of the Russian Federation. Confidence intervals establishing the boundaries of the forecasting area are founded on statistically significant regression equations.

3 Results

The conditions for the cost-effectiveness of the state, aimed at implementing the policy of export-oriented import substitution, are:

- (1) growth of export indicators (Volumes $\uparrow V_{\text{exp.}}$, shares $D_{\text{exp.}}$) to the level of established target indicators;
- (2) excess of the amount of growth in export volumes $\Delta V_{\text{exp.}}$ the total cost of export promotion V_c . in time t : $\Sigma \Delta V_{\text{exp. } t} > \Sigma V_{c. } t$. The correlation of the growth of export volumes and the total amount of government spending on export promotion for the same period t allows us to calculate the effectiveness of these costs:

$E = \Sigma \Delta V_{exp.} / \sqrt{\Sigma V_{c.}}$. Government expenditures can be considered effective from the year in which the sum of growth in export volumes over a period t exceeds the total cost over the same period of time, and further growth in export volumes is sustainable. In this case, it is necessary to consider the inevitably occurring time lag between the implementation of costs and the resulting effect of growth in export volumes.

To assess the effectiveness of government spending on the implementation of the import substitution policy, a set of data has been generated expressing the actual values of the indicators of export-oriented import substitution in comparison with the amounts of costs provided for by the state programs of the Russian Federation - “Economic development and innovative economy”, “Industrial development and increasing its competitiveness” (Table 1). Another export-oriented state program “Scientific and technological development of the Russian Federation” was put into effect only in 2019 and will be implemented until 2030, therefore, the budget allocations provided for in the program did not participate in the calculations.

Table 1. Dynamics of indicators of export-oriented import substitution in comparison with the volume of expenses provided for by state programs, for 2013–2024, billion US dollars

Indicators	2013	2014	2015	2016	2017	2018	Forecast					
	2019	2020	2021	2022	2023	2024						
Volume of non-energy exports, $V_{no-en.exp.}$	142,1	138,3	117,7	109,1	133,8	149,3	149,3	148,7	151,8	159,8	159,5	157,1
$\Delta V_{no-en.exp.}$	–	–3,8	–20,6	–8,6	24,7	15,5	0,0	–0,6	3,1	8,0	–0,3	–2,4
Indicators of the volume of exports of non-energy goods (forecast of the RF State Program *)	–	–	–	–	–	–	136	142	153	168	185	205
The volume of exports of engineering products (Section 7 of the SITC), $V_{eng.exp.}$	21,6	26,9	18,5	14,6	19,7	29,1	29,0	28,8	30,2	34,2	34,0	32,8
$\Delta V_{eng.exp.}$	–	5,3	–8,4	–3,9	5,1	9,4	–0,1	–0,2	1,4	4,0	–0,2	–1,2
Indicators of the volume of exports of engineering products (forecast of the RF State Program *)	–	–	–	–	–	–	37	39	43	48	53	60
The volume of budget allocations of RF state programs, V_c .	5,6	7,3	4,3	3,9	4,2	5,1	7,3	7,2	7,8	9,9	9,8	9,1

* The State Program of the Russian Federation “Development of industry and increasing its competitiveness”. Source. Compiled by the authors according to (Trends in general and non-resource exports in Russia 2018; Russia and the countries of the world 2012–2018).

Among the export indicators presented in Table 1, the key is the volume of non-resource non-energy exports, which, in accordance with the Classification of Export Goods developed by the Russian Export Center, include both engineering products and high-tech products.

The total budget allocation for the implementation of export-oriented government programs from 2013 to 2018. amounted to 30.4 billion US dollars, which significantly exceeds the resulting effect in the amount of 7.2 billion dollars. This situation is a result of constantly decreasing (negative growth) volumes of non-primary non-energy exports against the background of a downward trend, but nonetheless, positive values of budget allocations for the period from 2013 to 2016. A positive increase in non-primary non-energy exports was observed only in 2017–2018, given that budget allocations began to be allocated in 2013, we can assume that there is a time lag between the implementation of costs and the effect of an increase in export volumes of 4–5 years. Thus, from 2013 to 2017. the cost-effectiveness of the state to support export-oriented import substitution was zero, in 2018 it rose sharply to the level of 23.7% (Table 2).

Table 2. Dynamics of state cost effectiveness for the implementation of the export-oriented import substitution policy in the period from 2013 to 2024,%

Indicators of export-oriented import substitution	2013	2014	2015	2016	2017	2018	Forecast					
							2019	2020	2021	2022	2023	2024
Non-energy exports	–	0	0	0	0	23,7	0	0	20,7	41,4	59,3	77,2
Exports of engineering products	–	41,1	0	0	0	24,7	40,8	38,8	40,6	42,2	43,4	47,1

Source. Calculated by the authors.

In accordance with the predicted values of the government programs indicators, a steady positive dynamics of cost-effectiveness in the context of the considered indicators of export-oriented import substitution is expected from 2020, but government spending on the implementation of the import substitution policy will be ineffective, despite the projected exponential growth in export volumes.

Data on the forecast of export volumes in 2019–2024, obtained on the basis of the statistically significant dependence of non-resource non-energy exports (at a confidence level of 85%) and exports of engineering products (at a confidence level of 90%) on budget allocations established ($V_{no-en.exp...} = exp(5,264 - \frac{1,887}{V_c})$, $V_{eng.exp..} = exp(3,989 - \frac{4,536}{V_c})$), show the following:

- the point forecast exceeds the values of the indicators of the state program only in terms of the volume of non-resource non-energy exports in 2019–2020. (Table 1);
- a situation in which government spending on the implementation of the import substitution policy can be considered effective is possible: (a) in 2019 - provided

that the volume of non-resource non-energy exports exceeds \$ 179.8 billion (the boundary value of the cost-effectiveness area in 2019), with a limit of \$ 185.9 billion, which is the upper limit of the interval forecast for this export for 2019 (Fig. 1); (b) in 2022 - if the volume of non-primary non-energy exports is fixed within the range of 204.7 to 206.8 billion dollars;

- the probability that in 2020–2021, 2023–2024 government spending on the implementation of import substitution policies will be effective, is close to zero;
- the forecast area within 2019–2023 contains the values of program indicators (Fig. 1). However, the planned export volumes of non-resource non-energy goods for 2024, indicated in the state program and established by the decree of the President of the Russian Federation “On national goals and strategic objectives of the development of the Russian Federation for the period until 2024”, are unattainable with the established amount of financing. The process of export-oriented import substitution follows the path of the above S-curves, which is characterized by a slowdown in export growth.

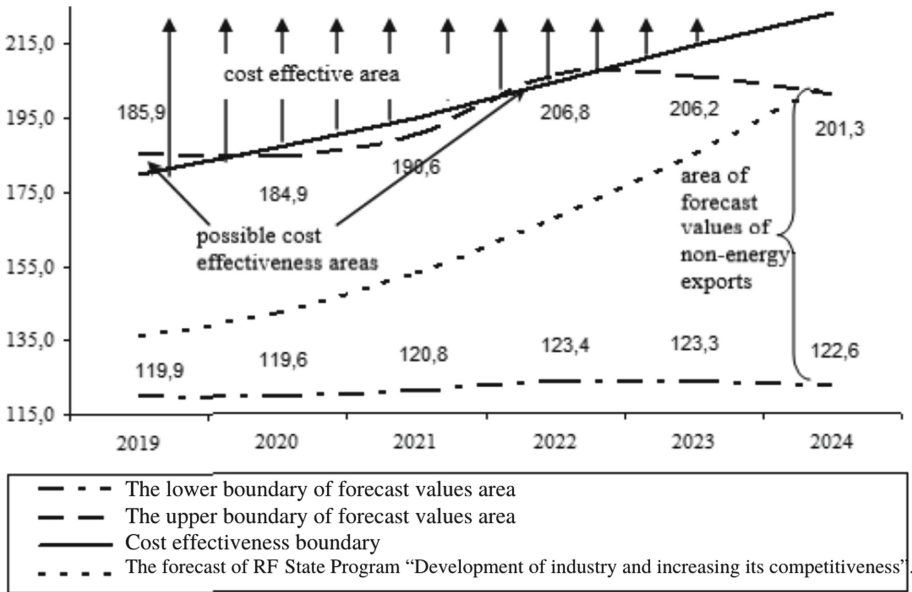


Fig. 1. Graphical interpretation of the results of forecasting non-resource non-energy exports in 2019–2024, billion dollars Source. Compiled by the authors.

4 Conclusion/Recommendations

The performed calculations show the inefficiency of government spending on the implementation of the export-oriented import substitution policy both in the estimated and in the forecast period. In the future, there are two possible scenarios while maintaining the existing model of the state policy of import substitution: (1) an increase in budget financing aimed at intensifying export-oriented import substitution in the

same coordinate system of target indicators, which discredits the idea of a gradual decrease in state participation in the Russian economy and violates the state programs dynamics of growth in volumes and share of extrabudgetary sources; (2) maintaining the previous volumes of budget financing and revising the system of indicators based on reliable and reliable forecasts of their potential dynamics.

The revision of the current model of state policy of import substitution should provide for a gradual decrease in the volume and share of state participation and be based on the understanding that the protectorate on the part of the state should not be the only driving force for import substitution in the country, otherwise the state not only does not develop import substitution processes, but also contributes to conservation of the country's technological backwardness and low competitiveness of its producers. At the same time, a radical audit of export-oriented government programs and industry-specific import substitution programs is needed; adoption of balanced and carefully thought-out decisions in support of export-oriented business, extremely easy access to import substitution programs of small businesses, development of new, extremely lightweight mechanisms for including small and medium enterprises in the chain of export-oriented distribution of goods; tightening control over budget expenditures and regular reliable quantitative assessment of its effectiveness and "tuning" it to the current needs and state of the country's economy, narrowing the planning period in state programs to six months. Priority measures include the introduction of additional tax incentives and incentives for the development of export-oriented entrepreneurship, the provision of tax holidays to enterprises exporting high-tech goods; the introduction of flexible tax scales, depending on the effectiveness of foreign economic activity of non-oil enterprises.

The results obtained in this work can be used in further scientific studies of the reasons that impede the development of export-oriented import substitution in Russia and can also be demanded by government bodies in developing directions of economic policy in the field of import substitution.

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Innovative Impact of Import Substitution Processes in the Economy of the South of Russia

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Abstract. Purpose: The disequilibrium of regional development actualizes the rethinking of import substitution processes and their role in the solution of the goals of creation and development of innovative potential of a region. The objective of this paper is to identify the development directions of ensuring in the regions of the south of Russia the manifestation of innovative impact as a result of import substitution.

Design/methodology/approach: The methodology of research is based on the theory of formation of a national innovative system that allows identifying the innovative constituent of import substitution and on the relationship of the system paradigm of the economic development, structural and dynamic process that allows analyzing the progress of social and economic development of a territory.

Findings: The study indicates that the innovative impact in the regional economy can be reached as a result of the influence on its potential's constituents, which provide the strongest connectedness of the economic agents as well as the processes, projects and environments for their realization.

The conclusion is made that in the regions of the south of Russia an integrated approach to the creation of import substitution strategy does not exist what leads to the equilibrium violation in the reproductive structure of regional economies and this does not allow having influential innovative effects.

Originality/value: The authors found that the regions of the south of Russia are characterized by a high monocentric orientation with a structural disequilibrium of innovative processes from the point of view of the influence balance of the center and periphery. For the creation of synergistic and multiplicative innovative effects, it is suggested to create the innovative agricultural clusters capable of involving the periphery resources into modernization processes. For the launch of the process of innovative impacts in all industries of a region, it is necessary to overcome the infrastructural deficits in the formalization of rules and conditions of the reasonable distribution of modernization resources in the

regional space, growth of production, transport and social infrastructure accessibility of periphery territories.

Keywords: Import substitution · Innovative potential · Regional economy · Import substitution effects · Innovative impact

JEL Code: R12 · R58

1 Introduction

Under modern imperatives of the modernization and innovative development, when the problems of regional economy are studied, the importance of the synergistic paradigm is growing. Its main idea is that the components of the regional system not only intercommunicate but also are found in a close correlation and mutual exchange with social and economic space (Evstigneeva and Evstigneev 2001). Within this paradigm, the import substitution can be analyzed from the point of view of the generation of innovative impacts that arise as a result of coincidence of the intensity and focus of managerial influence in various activity spheres and at various levels of administration.

For the moment, a discrepancy between the growing demand on import substituting innovative goods and services and the availability of resources and conditions for their production is observed in many regions. It is determined by the fact that the existing transformations very often are realized asynchronously what leads to a disequilibrium of the processes of regional development and does not contribute to the appearance of influential innovative effects. That is why the rethinking of import substitution and its role in the solution of the problems of creation and development of import substitution of a region acquires a methodological and practical importance.

The authors make a hypothesis that import replacement processes are capable of encouraging the appearance of an innovative impact in the regional system under the condition of the integrated character of the investment projects under analysis and the simultaneity and coincidence of the used mechanisms of their realization. Herewith when speaking about the innovative impact we mean the events of the intensification of social and economic development of a territory due to the spread of core-peripheral and industrial innovative changes in various industries and fields of activity. In the article, the authors set the following goal: to identify the directions of the development of regional economy of the south of Russia, which provide the emergence of innovative affects as a result of the implementation of import substitution projects.

2 Materials and Methods

The processes of import substitution and the assessment of innovative effects appearing in the economic systems have been recently studied in detail. This situation is determined by a considerable dependence of the national economy on international sources of innovative development and the strategic national interests are inseparably connected with the modernization that would encourage the appearance of new growth

points, which would generate the synergistic effects and contribute to the diffusion of innovation. The methodological framework of innovative potential research was developed by the scientists specializing in the theory of creation of the national innovative system (Lundvall 1992; Freeman 1995); theory of innovations' diffusion (Hagerstrand 1967; Rogers 1962); new growth theory (Romer 1986). The research of the impact of import substitution process on the social and economic potential of the region is carried out in the papers (Animitsa et al. 2015; Gulin et al. 2015; Sukhanova and Lyavina 2014).

A group of scientists, including the authors of the given article, when analyzing the innovative constituent of import replacement specifically emphasize that the opportunities for the achievement of target quantitative and qualitative indicators of the regional system conditions are determined by the opportunity of the identification of those influential points in the structure of social and economic potential of the region, which are capable of the generation of innovative impacts (Matveeva and Chernova 2016; Chernova and Mitrofanova 2017). In this respect a specific discourse presents the discussion about the opportunity of the restructuring of the regional economic space of Russia with the focus on the creation of a spatial frame where the reference points will be presented by the companies capable of the encouragement of the innovative import substitution and innovations transfer to the periphery (Dorgushaova 2016; Pechatkin 2010).

However, despite the acuteness of the mentioned problem the lack of research of innovative effects of import substitution is observed in the modern scientific literature. In addition, there are not enough researches devoted to the identification of the constituents of the economic potential of the region, which are capable of creating an influential effect.

For the analysis of the manifestations of an innovative impact in southern Russian regions which arises in the result of the implementation of import substitution projects, the authors used the structural and dynamic approach that allows analyzing the advance of the process of social and economic development of a theory and identifying the objective laws and factors of modernization taking place in regional development in space and time. The desirability of use of this approach was noticed many times by a number of modern national and foreign scientists (Animitsa et al. 2008; Doroshenko and Somina 2015) and is supported by the evidences that the structural shifts in the economy, which arise in the implementation of import substitution projects are capable of initiating the innovative effects that generates changes in the entire regional system.

3 Results

In southern Russian regions the main fields of import substitution are agriculture and foodstuff production; machine construction and electric locomotive building; metallurgy; pharmaceutical production; chemical production; construction.

Almost all large agricultural producers in the regions of the Southern Federal District (SFD) announced the implementation of import substitution projects. Thus, in 2016 the Ministry of Agriculture of the Russian Federation accompanied about 30 projects with the total value of total costs of 160 billion rubles. In the sphere of machine

construction the most important projects are being implemented by such enterprises as “Rostselmash”, “NEVZ”, and “Atommasheksport”. The plant for the production of towed machinery is being constructed in the Rostov region.

An important direction of import substitution development in the south of Russia became the development of seaports. The most perspective is the construction of the seaport “Taman” in the Krasnodar kray, which allows transshipping both agricultural production, chemical, metallurgical products and coal. The Volgograd region realizes an integrated investment project in cotton growing. The center for innovative pharmaceuticals is established. Nevertheless, according to the data of the Federal State Statistics Service in 2017 a considerable share still have machines, equipment vehicles and also the chemical products in the structure of imports (Fig. 1) (Regions of Russia 2018).

The rate of import dependency in the agriculture and foodstuff manufacturing reduces. The most intensive growth is typical of the segments, which were affected by sanctions (pharmaceuticals and drugs).

For the support and development of import substituting industries in the southern Russian regions, various development programs were adopted. The support is realized in the form of the offset of some costs for the establishment and modernization of import substitution plants, assistance in the creation of innovative industrial clusters (Inshakov 2017), development of the co-workings, provision of benefits to investors.

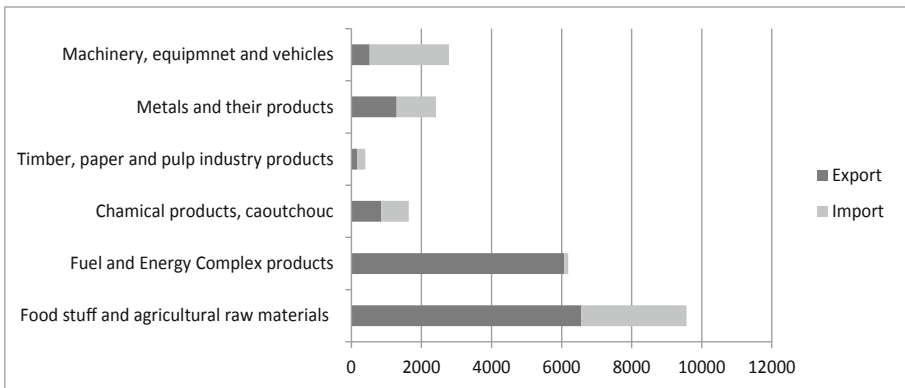


Fig. 1. Export and import commodity structure in the regions of the SFD, mln. US dollars

The level of innovative potential and level of import substitution potential in the region are mainly interdependent. This is explained by the fact that in theoretical and practical problem statement the import replacement is seen as a strategic tool of public policy focused on the modernization and innovative development of national industry. In Figs. 2, 3, 4, 5, 6, 7 and 8 (Regions of Russia 2018) the dynamics of the main indicators of the innovative activity in the SFD is shown which proves that during the latest years when the import substitution projects are being implemented, the growth of practically all indicators excluding the costs on domestic R&D is noticed. The volume

of innovative production grew almost 2 times and its share in the total volume of production in the region grew from 4.7 to 9%. Nevertheless, the level of innovative activity of enterprises of the region reduced and the rate of its decrease turned out to be higher than in average in Russia.

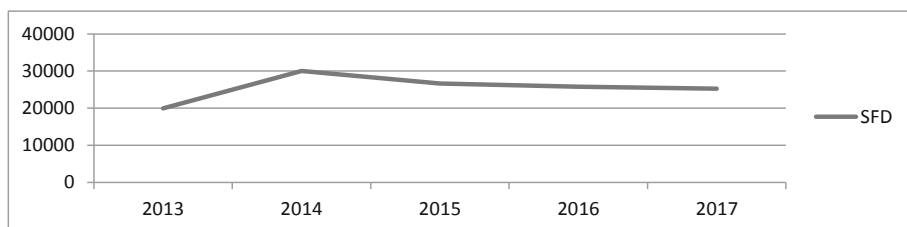


Fig. 2. Domestic expenditures on R&D in the regions of the SFD, mln. rubles

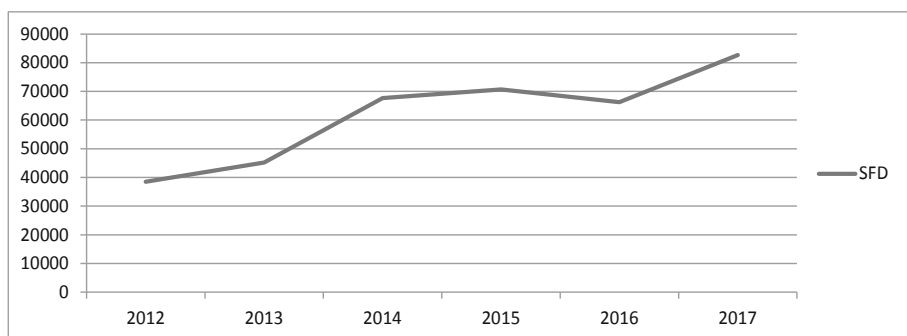


Fig. 3. Expenditures on technological innovations in the regions of the SFD, mln. rubles

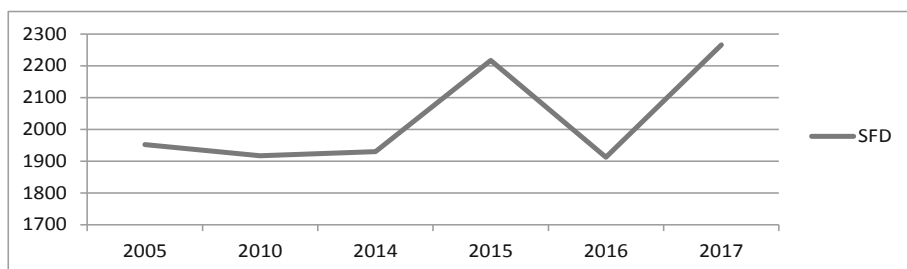


Fig. 4. Number of patents in the regions of the SFD, units

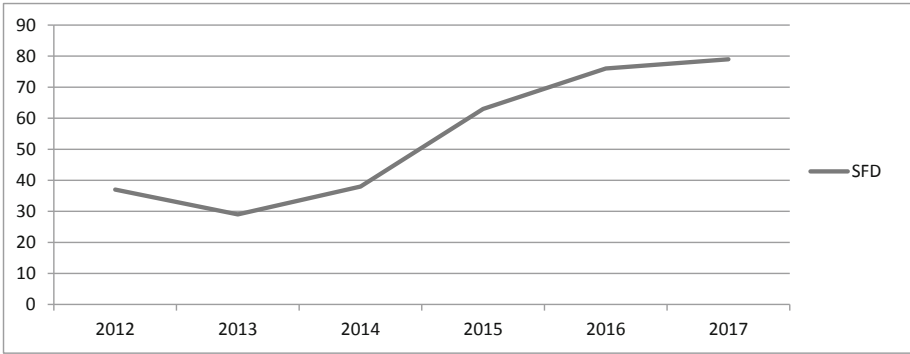


Fig. 5. Developed advanced technologies in the regions of the SFD, units

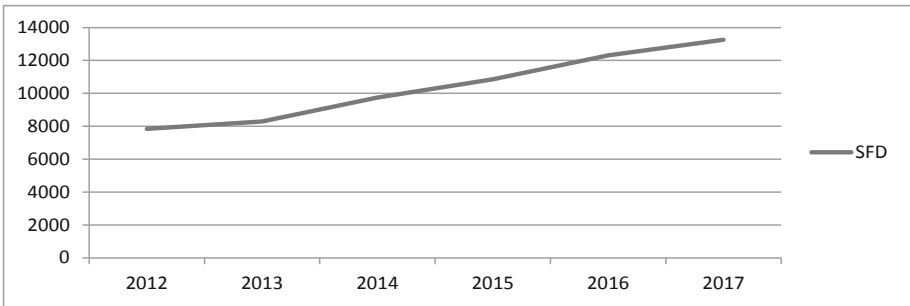


Fig. 6. Used advanced technologies in the regions of the SFD, units

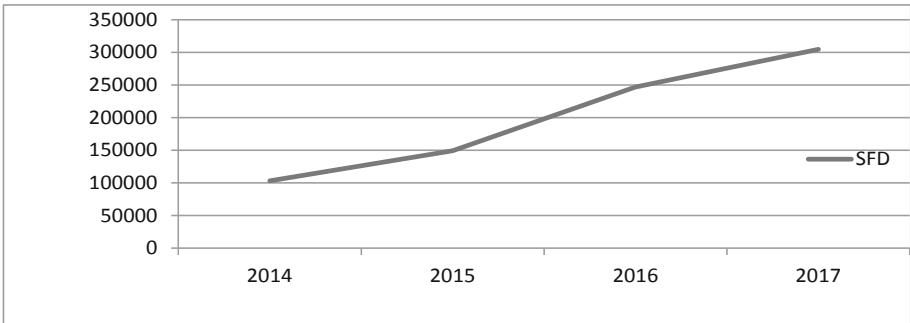


Fig. 7. Volume of innovative goods, works and services produced in the regions of the SFD, mln. rubles

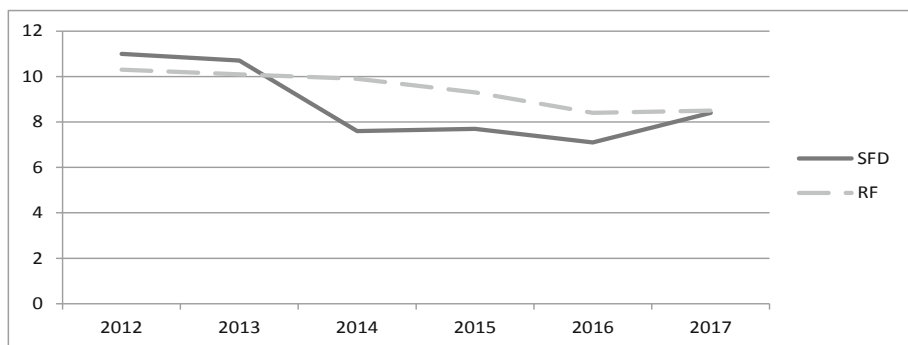


Fig. 8. Innovative activity of firms and organizations in the regions of the SFD, percentage

However, despite the existing positive shifts in specific industries and sectors of social and economic development of a region, a considerable differentiation of the industrial structure of innovative potential is observed. The innovative sector of the south of Russia makes only 5% whereas the preindustrial segment has 50% and the industrial segment has 45%. According to the indicator of innovation saturation, the commodity sector enterprises considerably are in advance of the non-commodity sector enterprises, especially in traditional industries.

Commercial and agricultural enterprises are major contributors to the GDP of southern Russian regions. Despite the existing growth rate of innovative production in processing enterprises, the industrial disproportions sectoral proportions shift into swing towards the advantage of the oil and gas industry, and unfinished goods production at the simultaneous reduction of automotive industry and light industry share. The share of production of high technology goods and science intensive industries is practically unchanged and makes up about 20%. This indicator in general corresponds to the general Russian indicator (21.3%), but in a way it lags from the dynamics (in average in Russia the growth rate during the latest 8 years made up 4%).

Another important feature of innovative potential development of the region and the emergence of innovative impacts is a high level of innovative potential differentiation between the center and periphery. During the implementation of import substitution projects the attraction of resources into the regional centers is taking place what threatens the transformation processes as the largest part of territories of southern Russian regions with a significant natural and resource potential remain isolated from the processes of innovative development.

In the authors' opinion, the main reason for the appearance of the existing situation is the absence of an integrated approach to the creation of an import substitution strategy. This leads to the violation of the equilibrium in the reproductive structure of regional economies that do not allow having influential innovative impacts. Thus, for instance, when the region has good milk production but lacks milk-processing plants. Simultaneously the cattle breeding grows at a slower pace and in the result one of the largest meat processing plants "Tavr" depends by 80% on the imported raw material.

4 Conclusion

A serious flexibility of factors and conditions that determine the state of the economic potential of the Russian regions leads to the situation when the structural shifts arising from the import substitution production can both contribute and restrain the modernization changes which are having place, determine the innovative impact varying in force and content. The coordination and synchronization of parameters of managerial impacts with the parameters of the dynamics of socio-economic development of a region is needed during the formulation of suggestions on the creation of conditions for the manifestation of innovative impacts.

The innovative impacts in the regional economy are formed as a result of the interaction in the process of import substitution of a number of regional actors (regional authorities, economic agents of various scale and economic sphere, population and so on). The given agents enter into correspondent relationships triggering the processes of self-organization and development of the regional system. In this respect, the innovative impact can be ensured through the influence on those constituents of the economic potential that provide the strongest connectedness of regional agents and processes, projects and environments in which they are realized.

For the regions of the south of Russia that are highly monocentric, the main goal of realization of import substitution policy should become the involvement of the periphery into the projects of innovative clusters' formation. Such an approach creates the opportunity of development of flexible forms of integration of low technological sector of periphery and the innovative production of regional centers.

It is deemed that the most important innovative impacts in the south of Russia can be obtained at the implementation of import substitution projects in the agriculture. The most promising in this respect is the creation of clusters in the sphere of the reprocessing of agricultural sector production, harvesting of medical plants and the production of commodities made of fur, leather, and decoration elements, in agricultural machine construction. The implementation of import substitution projects in the agriculture allows solving not only the goals of production security but also creating the finished production and technological chains including the economic agents of various scale with different economic modes.

In order to launch the processes of innovative impacts' creation in all sectors of the regional economy, it is necessary to overcome the institutional deficits in respect of the formalization of rules and conditions of regional distribution of modernization resources in regional space, growth of availability of production, transport and social infrastructural facilities in peripheral territories. Due to a completely destroyed infrastructure (social, transport, engineering and so on), the peripheral territories are poorly attractive for investors. In addition, a high drain of highly qualified labor resources characterizes the given territories. The solution of the given problem is possible by means of the realization of an integrated program of facilities' construction for the import substitution projects.

The encouragement of innovative impacts appearance in the regional economy in the result of import substitution projects is expected to be carried out on the basis of an integrated solution of problems with its structural disequilibrium. In particular, the

investments into import substitution projects must be accompanied by the restoration of professional education system, solution of infrastructural problems of periphery development, institutional provision of business integration. The use of structural and dynamic approach to the study of problems of encouragement of innovative impacts in the regional economy gives the opportunity of an integrated approach to the solution of strategic goals of import substitution. The carried out analysis showed that the existing potential for import substitution in the economy of the south of Russia allows obtaining a significant synergistic and multiplicative effect by means of creation of the completed production and technological chains involving the economic agents of various activity scale with different economic modes.

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Development of Competitiveness and Competitive Environment in Russian Regions: Management Approach

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Abstract. Purpose: The article applies market relations theory to study the notions of competition, competitive advantage, competitiveness, competitiveness assessment and economic benefit in relation to socio-economic systems of various levels.

Design/methodology/approach: Competitiveness management aspects of economic entities are analyzed basing on the theory of famous researcher and manager Ichak Adizes. According to Adizes' methodology, each economic entity forms its behavior by fulfilling four management roles (P and E (the Producer and the Entrepreneur: short-term and long-term effectiveness), A and I (the Administrator and the Integrator: short-term and long-term efficiency)).

Findings: Management of an economic entity is determined by the combination of these management roles demonstrated dynamically. Thus, the authors believe dynamic changes in territorial economic systems that cause balance shifts promote development and competitiveness. Basing on this approach, we have analyzed competitiveness of all Russian regions (83 subjects except the Republic of Crimea and Sevastopol).

Originality/value: In order to assess regional competitiveness, we have established respective indicators and indexes basing on official statistical data. The authors also introduce the notion of socioeconomic system balance indicator. This article provides the competitiveness balance rating of Russian regions. In conclusion, the authors give recommendations to public authorities on improving competitiveness of territorial business systems.

Keywords: Competitiveness · Competitiveness assessment · Management approach · Region · Regional business system · Competitiveness balance · Russia

JEL Code: C10 · P51 · R10

1 Introduction

Competitiveness of socioeconomic system depends on the resources it uses. Resource management and application pattern affect the system efficiency. These resources can be human, natural, informational, technological or organizational (Inshakov 2018),

with each of resources having its own functionality and costs. The competitiveness of an entity is influenced by the way priorities are set and resources are involved in the economic activities. Every resource is unique for the socioeconomic system at the moment it is employed. For example, human resources of a specific organization can be used with different efficiency depending on the personnel management technologies. The same applies for technological resources, such as software and work process automation systems.

Competitive advantages determine the competitiveness of a socioeconomic system (in this case, an economic entity), i.e. its ability of competition or competitive struggle with similar entities (Korobov et al. 2017). It is worth noting that market environment affects this process greatly. Properties of a socioeconomic system can act as competitive advantages depending on external conditions (Drucker and Noel 1986).

If a product made in a certain region is in high demand outside this territory, it helps to import investments in the regional economy due to its competitiveness properties. In this case, the development and self-development of a region will depend on the balance between export of resources required for making this product and import of investments resulting from external sales of said product (Schumpeter 2010).

The notion of competition gets a lot of attention in various spheres of life. It is undoubtedly in great demand. Competition affects almost all aspects, even completely non-related ones, of human activity, if they involve a certain extent of market relations (Anholt 2007; Camagni 2002; Drucker 1987; Porter 1990). Competition brings an element of rivalry into these aspects, thus meeting the market demands both efficiently and effectively.

2 Materials and Method

Achieving high levels of competitiveness of socioeconomic systems depends primarily on efficiency of their assessment methods. The analysis provided in this article is based on works by M. Porter, P. Drucker, I. Adizes, J. Schumpeter and O. Inshakov covering multiple approaches to theoretical defining, providing, assessing and improving competitiveness of economic systems of various scales and levels. Practical aspects of assessing, providing and improving competitiveness of Russian regions are based on the Russian Federal State Statistics Service data.

This article has prioritized functional approach. The study is based on a complex of specific scientific methods: subjective and objective, functional and structural, comparative, factor modeling. This work adopts conclusions and concepts put forth by leading Russian and foreign theorists and practitioners in the sphere of competitiveness provision and assessment as well as management of complex socioeconomic systems.

In order to analyze management aspects that may cause changes in economic entity, we have used Ichak Adizes approach. According to Adizes' methodology, each economic entity forms its behavior by fulfilling four management roles (Adizes 1979; Adizes et al. 2017). The management style demonstrated by an entity at a certain period of time can be determined by the combination of these roles or the dominance of certain role. Successful management of an economic entity that enables its development requires fulfillment of a specific role or a set of roles at each specific stage of entity life cycle.

P and E management roles (the Producer and the Entrepreneur: short-term and long-term effectiveness) are aimed at achieving the results demanded by the market, or as Adizes puts it, doing “the right things”. The more demanded a product is and the better it meets customers’ needs, the more “right” it is. In its turn, market demand increases competitiveness. Thus, P and E roles (short-term and long-term effectiveness) help an entity to shift from one balance to another, potentially forming its competitiveness. Competitiveness is higher when the system meets a specific demand for a certain product or service.

A and I management roles (the Administrator and the Integrator: short-term and long-term efficiency) are aimed at achieving economic efficiency of a system. As the practice demonstrates, A and I roles regulate external and internal management processes and form various administrative systems. Thus, A and I management roles (short-term and long-term efficiency) help an entity to shift from one balance to another, potentially forming its competitiveness.

3 Results

This work provides a comparative assessment of short-term and long-term regional competitiveness. The Russian Federation consists of 83 regions. The short-term competitiveness index of a region has been estimated as the geometric mean of its functionality and systematicity; the long-term competitiveness index – as the geometric mean of its proactivity and harmony.

For estimating the competitiveness indexes, we have used the official statistical data (Federal State Statistics Service 2018).

As an example, we have analyzed regional business systems of the Russian Federation.

The functionality of regional business system depends on the competitiveness of its products, goods or services provided by small and medium business entities. The better the quality is, the higher is the regional share in the national turnover of businesses and companies.

Systematicity depends on the level of energy-saving technologies used by regional small and medium business entities while producing their products, goods or services. The more cost-saving the production is, the more competitive the business is. In the world of digital economy, efficiency and respectively, competitiveness depend on human resources primary. This is why short-term efficiency of regional system is estimated by the turnover share of Russian companies related to the personnel involved.

Proactivity of a regional business system is characterized by investment and innovation potential of small and medium business entities.

Harmony is estimated by the increase of small and medium business entities during various planning periods.

Table 1 provides the rating of Russian regions basing on their integral and specific competitiveness indexes.

Table 1. Competitiveness rating of Russian regions, 2017

Region	Russian region rating		
	C_{int}	C_{s-t}	C_{l-t}
Moscow	1	1	1
Saint Petersburg	2	2	2
Moscow Oblast	3	3	3
Khanty-Mansiysk Autonomous Okrug – Yugra	4	4	7
Krasnodar Krai	5	7	4
The Republic of Tatarstan	6	6	5
Yamalo-Nenets Autonomous Okrug	7	5	18
Sverdlovsk Oblast	8	8	6
Krasnoyarsk Krai	9	11	8
Samara Oblast	10	17	9
Nizhny Novgorod Oblast	11	9	11
The Republic of Bashkortostan	12	14	12
Chelyabinsk Oblast	13	15	14
Rostov Oblast	14	22	10
Leningrad Oblast	15	12	19
Perm Oblast	16	18	13
Tyumen Oblast	17	16	17
Kemerovo Oblast	18	10	22
Irkutsk Oblast	19	23	15
Novosibirsk Oblast	20	21	16
Sakhalin Oblast	21	13	31
Voronezh Oblast	22	31	20
Vologda Oblast	23	25	27
The Republic of Sakha (Yakutia)	24	32	21
Belgorod Oblast	25	20	33
Volgograd Oblast	26	28	25
Kaliningrad Oblast	27	30	24
Primorsky Krai	28	34	23
The Komi Republic	29	24	40
Kaluga Oblast	30	19	43
Orenburg Oblast	31	35	26
Tula Oblast	32	29	30
Tomsk Oblast	33	26	39
Khabarovsk Oblast	34	33	28
Lipetsk Oblast	35	27	46
Saratov Oblast	36	40	29
Stavropol Oblast	37	38	32
Yaroslavskaaya oblast	38	36	36

(continued)

Table 1. (continued)

Region	Russian region rating		
	C_{int}	C_{s-t}	C_{l-t}
The Udmurt Republic	39	37	42
Omsk Oblast	40	46	34
Altai Oblast	41	44	38
Vladimir Oblast	42	39	48
Kursk Oblast	43	41	47
Arkhangelsk Oblast	44	45	45
Tver Oblast	45	51	37
Ryazan Oblast	46	43	49
Murmansk Oblast	47	48	44
Astrakhan Oblast	48	52	41
Amur Oblast	49	63	35
Ulyanovsk Oblast	50	55	52
Smolensk Oblast	51	50	55
Novgorod Oblast	52	49	56
Tambov Oblast	53	59	53
Penza Oblast	54	58	54
Bryansk Oblast	55	56	58
Kirov Oblast	56	66	50
The Republic of Mordovia	57	57	61
The Republic of Karelia	58	60	59
The Chuvash Republic	59	65	57
Kamchatka Krai	60	54	66
Zabaykalsky Krai	61	71	51
Magadan Oblast	62	47	72
Oryol Oblast	63	61	65
Nenets Autonomous Okrug	64	42	75
The Republic of Buryatia	65	70	62
Pskov Oblast	66	64	67
Ivanovo Oblast	67	72	63
Kurgan Oblast	68	67	69
The Republic of Khakassia	69	62	73
Kostroma Oblast	70	69	68
The Mari El Republic	71	68	71
The Republic of Dagestan	72	78	60
Chukotka Autonomous Okrug	73	53	83
The Karachay-Cherkess Republic	74	73	76
The Kabardino-Balkar Republic	75	77	70
The Republic of Adygea	76	75	77

(continued)

Table 1. (continued)

Region	Russian region rating		
	C _{int}	C _{s-t}	C _{l-t}
The Chechen Republic	77	81	64
The Republic of North Ossetia - Alania	78	80	74
The Altai Republic	79	76	79
The Tyva Republic	80	74	82
Jewish Autonomous Oblast	81	79	80
The Republic of Kalmykia	82	82	81
The Republic of Ingushetia	83	83	78

Source Compiled by authors based on materials (Federal State Statistics Service 2018).

The regions, in which the short-term competitiveness index exceeds the long-term index in more than 1.5 times, are: Nenets Autonomous Okrug (ranked 42nd by C_{s-t}, 75th by C_{l-t}, 64th by C_{int} in total); Chukotka Autonomous Okrug (ranked 53rd by C_{s-t}, 83rd by C_{l-t}, 73rd by C_{int} in total); Magadan Oblast (47th by C_{s-t}, 72nd by C_{l-t}, 62nd by C_{int} in total); Kaluga Oblast (19th by C_{s-t}, 43rd by C_{l-t}, 30th by C_{int} in total); Lipetsk Oblast (27th by C_{s-t}, 46th by C_{l-t}, 35th by C_{int} in total); Sakhalin Oblast (13th by C_{s-t}, 31st by C_{l-t}, 21st by C_{int} in total); the Komi Republic (24th by C_{s-t}, 40th by C_{l-t}, 29th by C_{int} in total); Yamal-Nenets Autonomous Okrug (5th by C_{s-t}, 18th by C_{l-t}, 7th by C_{int} in total); Belgorod Oblast (20th by C_{s-t}, 33rd by C_{l-t}, 25th by C_{int} in total); Tomsk Oblast (26th by C_{s-t}, 39th by C_{l-t}, 33rd by C_{int} in total); Kemerovo Oblast (10th by C_{s-t}, 22nd by C_{l-t}, 18th by C_{int} in total); Kamchatka Krai (54th by C_{s-t}, 66th by C_{l-t}, 60th by C_{int} in total); the Republic of Khakassia (62nd by C_{s-t}, 73rd by C_{l-t}, 69th by C_{int} in total).

On the contrary, the regions, in which the long-term competitiveness index exceeds the short-term index in more than 1.5 times, are: Amur Oblast (63rd by C_{s-t}, 35th by C_{l-t}, 49th by C_{int} in total); Zabaykalsky Krai (71st by C_{s-t}, 51st by C_{l-t}, 61st by C_{int} in total); the Republic of Dagestan (78th by C_{s-t}, 60th by C_{l-t}, 72nd by C_{int} in total); the Chechen Republic (81st by C_{s-t}, 64th by C_{l-t}, 77th by C_{int} in total); Kirov Oblast (66th by C_{s-t}, 50th by C_{l-t}, finally 56th by C_{int} in total); Tver Oblast (51st by C_{s-t}, 37th by C_{l-t}, 45th by C_{int} in total); Rostov Oblast (22nd by C_{s-t}, 10th by C_{l-t}, 14th by C_{int} in total); Omsk Oblast (46th by C_{s-t}, 34th by C_{l-t}, 40th by C_{int} in total); Voronezh Oblast (31st by C_{s-t}, 20th by C_{l-t}, 22nd by C_{int} in total); the Republic of Sakha (Yakutia) (32nd by C_{s-t}, 21st by C_{l-t}, 24th by C_{int} in total); Primorsky Krai (34th by C_{s-t}, 23rd by C_{l-t}, 28th by C_{int} in total); Saratov Oblast (40th by C_{s-t}, 29th by C_{l-t}, 36th by C_{int} in total); Astrakhan Oblast (52nd by C_{s-t}, 41st by C_{l-t}, 48th by C_{int} in total).

The interdependence of regions in relation to their general and special competitiveness indexes seems important for their socioeconomic analysis. Similar to studying the economic entity activities, we introduce the indicator of the **regional business system competitiveness balance**:

$$\Delta = \frac{C_{l-t} - C_{s-t}}{C_{int}} \times 100\%$$
, where C_{l-t} is the long-term competitiveness index, C_{s-t} is the short-term competitiveness index and C_{int} is the integral competitiveness index.

The value of regional business system competitiveness balance can be interpreted in the following ways:

- if the long-term competitiveness index prevails in the region, it indicates that the local authorities have the potential for developing small and medium businesses. These regions tend to focus on innovational business activities that attract investment capital for their development;
- if the short-term competitiveness index is higher, that means the local authorities focus on supporting local manufacturers and lobbying local entrepreneurs (see Table 2).

Table 2. Competitiveness balance rating of the Russian regions' business systems

Δ	The number of regions with Δ value
$\Delta > 100\%$	4
$100\% > \Delta > 50\%$	9
$50\% > \Delta > 25\%$	15
$25\% > \Delta > 0\%$	20
$0\% > \Delta > -25\%$	18
$-25\% > \Delta > -50\%$	7
$-50\% > \Delta > -100\%$	8
$\Delta < -100\%$	2

Source Compiled by authors based on materials (Federal State Statistics Service 2018).

Equalization of short-term and long-term competitiveness indexes of business systems ($25\% > \Delta > -25\%$) in 38 regions demonstrates that almost half of Russian regions have well-balanced policies for small and medium business support and development.

4 Conclusion

Basing on the research results, we can provide recommendations to the public authorities. We consider the following activities necessary for increasing competitiveness of regional business systems:

- improving regional education standards in accordance with changing demands of the population and prospective socioeconomic development objectives;
- maintaining environmental safety, protection and reproduction of hunting resources, increasing efficiency of usage, protection and replanting of forests;
- promoting and developing tourism, increasing public awareness of regional cultural and natural legacy;
- improving and developing the regional road infrastructure;
- supporting sustainable industrialization and innovational development;

- creating favorable conditions for implementing commercial projects that correspond to the priorities of regional industrial and agricultural development.

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Economic Growth and Structural and Technological Changes in the Economy of Russian Regions

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Abstract. Purpose: The purpose of this study is to quantify and identify the relationship between economic growth and structural and technological shifts in the economies of Russian regions, allowing us to conclude on the quality of observed economic growth or factors of economic recession.

Design/Methodology/Approach: The study is based on a structurally dynamic approach to the analysis of economic systems and the delimitation of elements of social production in accordance with the share of manufactured products, capital or employed population. The methods of a quantitative assessment of structural changes of such characteristics as the intensity, quality, and effectiveness of structural changes are used. The methods of the cluster and correlation-regression analysis are applied as formal statistical tools. The empirical base of the study was composed of statistical materials on the structure of the gross regional product (GRP), employment of the constituent entities of the Russian Federation for the period 2001–2017. The sectoral structure of GRP is represented by the volume of gross value added in the context of six sectors of the economy (types of economic activity) and two areas of production (the sphere of production of goods and the service sector). The GRP physical volume index for a comparable period is used as an indicator of economic growth.

Findings: The study obtained a quantitative assessment of structural changes and identification of the relationship between economic growth and structural and technological shifts in the economy of Russian regions. It is concluded that there is no positive effect of structural changes on economic growth in the regions of the Russian Federation.

Originality/Value: A typology of Russian regions was compiled according to the GRP structure. Different dynamics of structural changes in the economy of the regions in the field of employment, fixed assets and the ratio of industry contributions to the gross product are shown.

Keywords: Economic growth · Structural changes · Cluster analysis · Canonical analysis · Regression analysis

JEL Code: O11 · O47 · R12

1 Introduction

The solution to the problem of assessing the quality of economic growth has been a sought-after area of applied economic research since the advent of neoclassical models of its description. Observations of developing economies in terms of their economic growth, changes after the crisis and subsequent recovery showed that ensuring significant economic growth for long-term sustainable development may not be enough. A serious discussion arose about the necessary quality of economic growth and possible ways to quantify it.

Among the general questions of the theory of economic development, the question of indicators of assessing its level remains disputable. Most often, the growth rate of gross domestic product (GDP) at the national level and the growth rate of gross regional product (GRP) at the regional level are called the main one. An approach has also become in demand, according to which the level of socio-economic development cannot be expressed in one directly measurable indicator, which leads to the need for the systematic use of various indicators.

Modern economic science considers the structure not only as a result but also as a prerequisite for the development of the economy. In this study, economic growth is explored through concomitant structural changes. The theoretical and methodological foundations of such studies of the evolution of the structure of economic systems in the process of economic development are laid in the works of Schumpeter (Sukharev 2010), Bell (1999), Inozemtsev (2000).

Studying the structural changes in the Russian economy, scientists agree that the previous type of economic growth, based on the export of raw materials, has exhausted itself in the new geopolitical conditions (Malkina 2015). To achieve stable growth of the national economy in transition to the six technological mode, progressive factors that determine scientific and technological progress: innovative production and technology, highly qualified elements of human capital should be more widely involved (Inshakov et al. 2014; Krasilnikov 2017). Certain sectors of the national economy of Russia allow us to expect an acceleration of growth rates above the world average (Mironov 2019).

Close to this study are the works of foreign scientists in the field of cross-country comparisons of Asian countries (Neil 2016), regions of India (Aggarwal 2018), Schengen countries (Tahir 2017), Brazil and Argentina (Araujo 2017).

Given the heterogeneity of the economic space of Russia, the need for such studies at the regional level is being actualized, where structural imbalances vary significantly and can pose a threat to the country's economic security.

2 Materials and Method

The study is based on data from the Federal State Statistics Service (Rosstat) official publications "Regions of Russia. Socio-economic indicators" for the period from 2001 to 2017 (Rosstat 2001–2017). The Republic of Crimea, the Chechen Republic and the city of Sevastopol are excluded from the calculations since they are not displayed in statistics for the entire observation period.

The structural changes in the economies of the regions are studied in terms of the structure of gross regional product, employment, and fixed assets, which most closely matches the factors of the neoclassical model of economic growth (labor, capital, product).

The value of the study will increase significantly if the period of analysis of structural changes is significant. This is hampered by the change in 2004 of the methodology of statistical accounting and the introduction of the measurement “types of economic activity” to group all indicators. Moreover, the composition of the grouping, for example, for employment and gross regional product, may be different even in the same observation period. In this regard, it is necessary to determine the minimum possible list of industries into which it is possible to curtail the types of economic activity and determine the remainder in the grouping “other”. Despite some distortions of the measurement objects, this will allow us to move to homogeneous sections in the study of the structure of gross regional product, employment, and fixed assets. As a result, the following set of structural elements was learned:

1. Industry, includes manufacturing, mining, electricity production.
2. Agriculture, including forestry and fishing.
3. Construction.
4. Transport and communications, including information technology.
5. Wholesale and retail trade.
6. Other (this group covers the entire transactional sector of the economy: education, healthcare, finance, real estate operations, etc.).

The authors suggest that the economic growth of regions be measured by the index of the physical volume of gross regional product.

The proposed comprehensive methodology for the analysis of structural changes is carried out by the author in the following areas (Shevandrin 2007):

1. “Analysis of aggregate structural changes” - is the opening point of structural-dynamic analysis and involves the study of absolute and relative differences of structures through typological analysis and generalized indicators of structural changes, such as the coefficient of overall structural shift, the coefficient of unevenness, the coefficient of relative differences.
2. “Component analysis of structural changes” - involves the study of changes in the contribution and the ratio of structural units in the whole through indicators of mass, speed, intensity, and elasticity of structural changes.
3. “Analysis of the dynamics of structural changes” - involves the study of the direction and degree of progression of structural-dynamic processes, including their relative positioning and comparative analysis using a distinguished external structure.
4. “Analysis of the relationship of structural changes with other parameters of the economy” - involves the study of the relationship between structural changes and processes occurring in economic systems through the use of standard methods of correlation and regression analysis.

As a basic indicator of structural dynamics, we used the quadratic index of structural shifts of Kazinz (Persteneva 2012):

$$S = \frac{\sum |d_2 - d_1|}{n}, \tag{1}$$

where:

$|d_2 - d_1|$ - The absolute growth modulus of d shares in the current period (2) compared with the base (1).

n - The number of structural elements.

3 Results

The dynamics of the total physical volume of GRP of Russian regions for the period from 2000 to 2016 has an obvious declining trend, especially after 2011 (Fig. 1). The spatial distribution of economic growth is extremely uneven, practically no regions are showing steady comparable growth over the past 6 years. The highest GRP growth among the analyzed regions in 2016 was observed in the Karachay-Cherkess Republic (104.3%), a year earlier in the Tambov Region (106.9%), in 2015 in the Chukotka Autonomous Region (114.9%). It should be noted that the dynamics of this indicator shows significant volatility. For instance, the Jewish Autonomous Region in 2010 was a leader in economic growth, showing growth of 117%, but already in 2013 also showed a record drop in regional GRP to 82.5% of its physical volume.

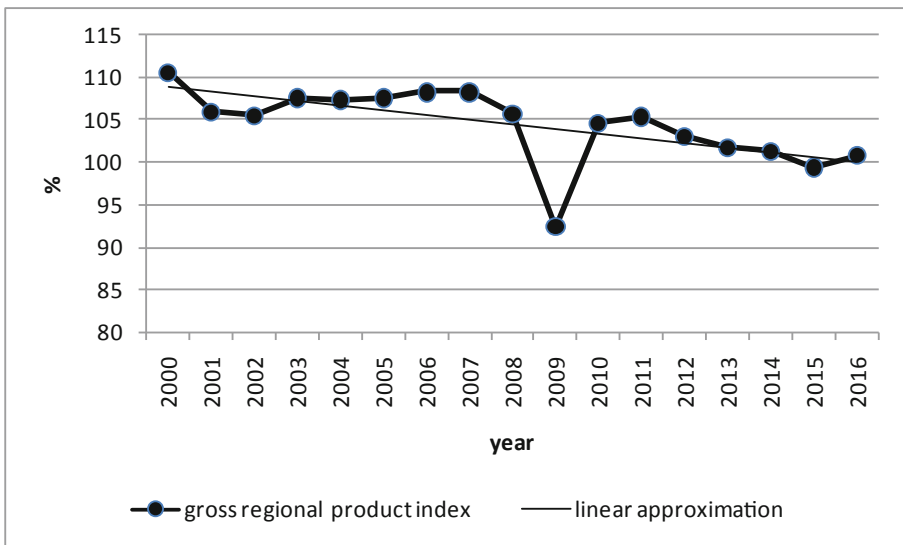


Fig. 1. Change in the growth rate of the volume of the total GRP of Russia (percentage). *Source* compiled by the authors based on materials (Rosstat 2001–2017)

The structure of the aggregate GRP of the regions of the Russian Federation for the same period does not undergo significant changes (Fig. 2). The structural difference index is from 0.93 to 1.3 units, which indicates the conservatism of structural changes in the aggregated representation.

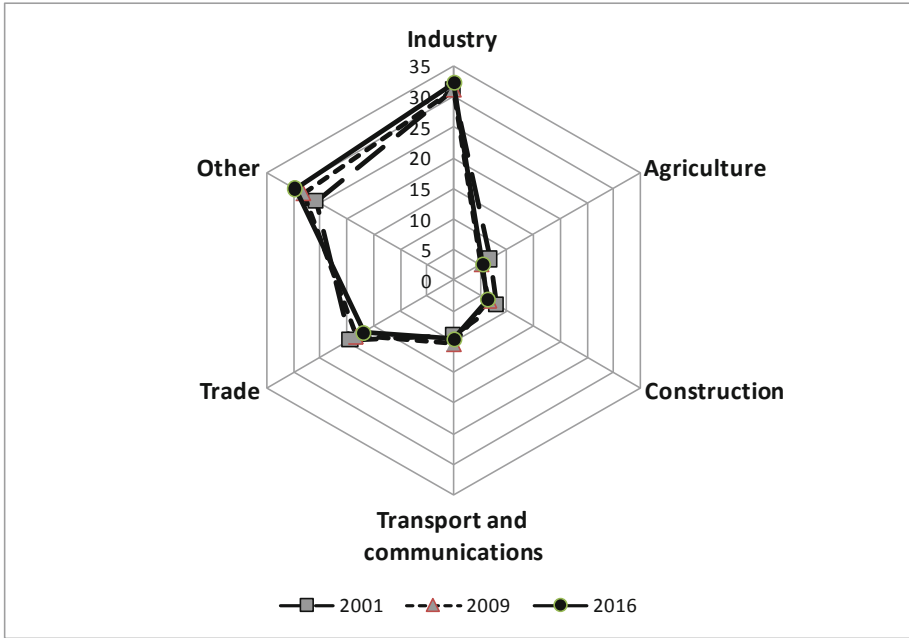


Fig. 2. Change in the structure of the total GRP of Russia for 15 years (percentage). *Source* compiled by the authors based on materials (Rosstat 2001–2017)

Despite the absence of significant structural dynamics at the macro level, the spatial heterogeneity of the Russian economic system actualizes the corresponding inter-regional comparisons. For this purpose, a cluster analysis of the regions of Russia according to the structure of their gross regional product in 2001 and 2016 was implemented.

The typological analysis made it possible to distinguish 3 types of regional economic systems: agricultural, industrial, and transaction-oriented (Table 1).

Table 1. Groups of regions of the Russian Federation on the GRP structure for 2001 and 2016

№	2001	2016
Cluster 1 (Industrial regions)	Arkhangelsk Region, Vladimir Region, Vologda Region, St. Petersburg, Ivanovo Region, Irkutsk Region, Kaliningrad Region, Kaluga Region, Kamchatka Region, Kemerovo Region, Krasnoyarsk Territory, Lipetsk Region, Magadan Region, Moscow Region, Murmansk Region, Nizhny Novgorod Region, Orenburg Region, Perm Region, Primorsky Territory, Republic of Bashkortostan, Republic of Buryatia, Republic of Karelia, Republic of Komi, Republic of Sakha (Yakutia), Republic of Tatarstan, Republic of Khakassia, Sama region, Sverdlovsk region, Smolensk region, Tver region, Tula region, Udmurt Republic, Khabarovsk territory, Chelyabinsk region, Yaroslavl region	Arkhangelsk Region, Astrakhan Region, Vladimir Region, Vologda Region, Irkutsk Region, Kaluga Region, Kemerovo Region, Krasnoyarsk Territory, Kursk Region, Leningrad Region, Lipetsk Region, Magadan Region, Novgorod Region, Omsk Region, Orenburg Region, Perm Region, Republic of Bashkortostan, Republic of Komi, Republic of Sakha (Yakutia), Republic of Tatarstan, Republic of Khakassia, Samara Region, Sakhalin Region, Tomsk Region, Tula Region, Tyumen Region, Udmurt Republic Lika, Chelyabinsk Region, Chukotka Autonomous Okrug
Cluster 2 (Agricultural regions)	Altai Krai, Belgorod Oblast, Bryansk Oblast, Volgograd Oblast, Voronezh Oblast, Moscow, Jewish Autonomous, Kabardino-Balkarian, Republic of Karachay-Cherkessia, Kirov Oblast, Kostroma Oblast, Kurgan Oblast, Kursk Oblast, Novosibirsk Oblast, Omsk Oblast, Oryol Oblast, Penza region, Pskov region, Republic of Adygea, Altai Republic, Dagestan Republic, Mari El Republic, Mordovia Republic, Republic of North Ossetia-Alania, Tuva Republic, Rostov Region, Ryazan Region, Saratov Oblast Last, Stavropol Territory, Tambov Region, Ulyanovsk Region, Chuvash Republic	Altai Krai, Belgorod Oblast, Bryansk Oblast, Volgograd Oblast, Voronezh Oblast, Kabardino-Balkarian Republic, Kamchatka Krai, Republic of Karachay-Cherkessia, Oryol Oblast, Penza Oblast, Republic of Adygea, Altai Republic, Republic of Dagestan, Republic of Ingushetia, Republic of Kalmykia, Republic of Mari El, Republic of Mordovia, Republic of North Ossetia-Alania, Republic of Tyva, Rostov Region, Saratov Region, Stavropol Territory, Tambov Region, Chechen Republic, Chuvash Republic

(continued)

Table 1. (continued)

№	2001	2016
Cluster 3 (Regions with a significant service sector)	Amur Region, Astrakhan Region, Krasnodar Region, Leningrad Region, Novgorod Region, Republic of Ingushetia, Republic of Kalmykia, Sakhalin Region, Tomsk Region, Tyumen Region, Chita Region, Chukotka Autonomous Region	Amur Region, Moscow, St. Petersburg, Jewish Autonomous Region, Trans-Baikal Territory, Ivanovo Region, Kaliningrad Region, Kirov Region, Kostroma Region, Krasnodar Region, Kurgan Region, Moscow Region, Murmansk Region, Nizhny Novgorod Region, Novosibirsk Region, Primorsky Territory, Pskov Oblast, Republic of Buryatia, Republic of Karelia, Ryazan Oblast, Sverdlovsk Oblast, Smolensk Oblast, Tver Oblast, Ulyanovsk Oblast, Khabarovsk Territory, Yaroslavl Oblast

Source compiled by the authors based on materials (Rosstat 2001–2017)

It was established that, despite the typological mobility of regions, the average sectoral structure of each type of region does not change significantly (Fig. 3). This allows us to represent the national economy as a superposition of 3 distinguished types.

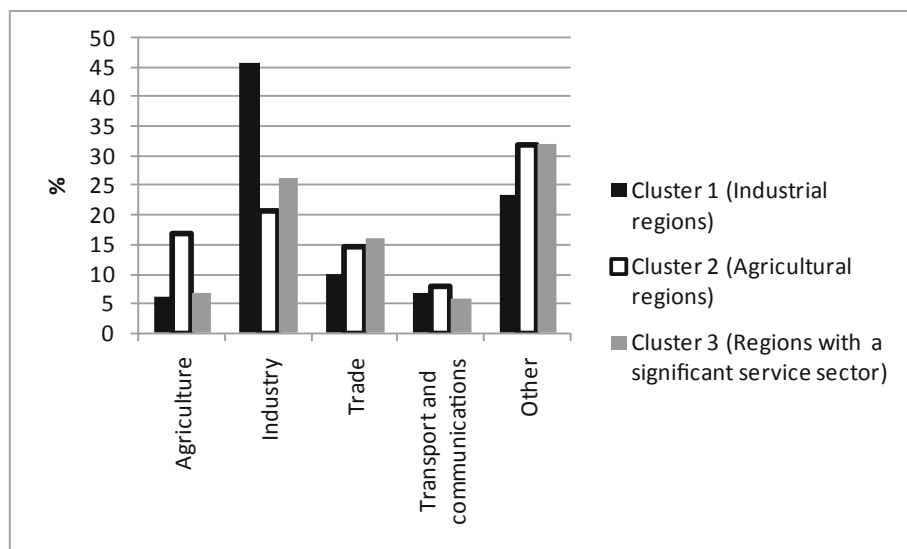


Fig. 3. Cluster profiles of regions by the GRP structure, 2016 (percentage). Source compiled by the authors based on materials (Rosstat 2001–2017)

The dynamics of the total structural changes calculated by expression 1 for the structure of employment, fixed assets, and gross regional product production is shown in Fig. 4. As can be seen from the diagram, the largest changes in the structure of regional economic systems of the Russian regions occurred in the crisis year of 2009. The change in the GRP structure is more pronounced, the structure of employment changes to a lesser extent (until 2016).

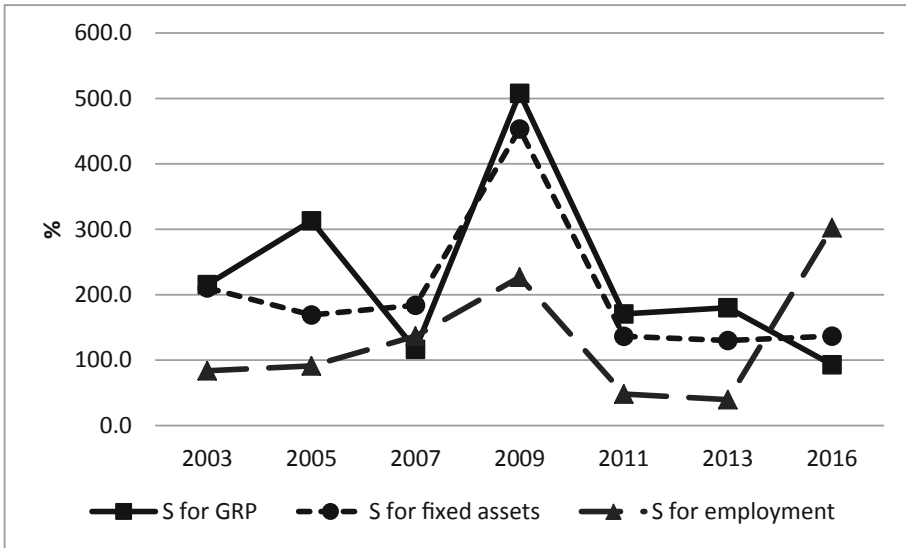


Fig. 4. Dynamics of aggregate structural shift factors for employment, fixed assets and GRP between 2003 and 2016 (percentage). *Source* compiled by the authors based on materials (Rosstat 2001–2017)

The cyclical dynamics of structural changes may indicate the absence of a positive effect of structural changes on economic growth. Similar results were previously discussed but at the level of research of the national economy as a whole (Tarasova 2017). To test this hypothesis, it is necessary to build the dependence of economic growth and structural changes based on the multiple linear regression model on the following set of factors:

1. Dependent variable (Y) - the rate of change of the index of physical volume of GRP.
2. Independent variables (S): total structural shift indices of the regions of the Russian Federation, calculated by the distribution of the employed population ($S_{Employment}$), fixed assets ($S_{Fixed\ assets}$) and gross regional product production (S_{GRP}).

The first results of evaluating the parameters of multiple linear regression showed the statistical insignificance of the second variable - the total structural shift for fixed

assets. Thus, according to the results obtained, the equation of multiple linear regression has the following form:

$$Y = -0,21 \times S_{GDP} - 0,16 \times S_{Employment} + 5,00 \quad (2)$$

The signs obtained for the coefficients of independent variables show that an increase in structural changes leads to a decrease in the growth rate of the physical volume of GRP, i.e. the hypothesis has been confirmed.

4 Conclusion

As a result of the study concerning the quantitative assessment and identification of the relationship between economic growth and structural and technological shifts in the economy of the Russian regions, the following was established:

- The authors revealed a progressive decrease in the growth rate of the total gross regional product of the Russian regions in 2001–2017.
- The structure of production of the total gross regional product of Russia in the period under review does not change significantly.
- The structure of the regional economies has significant differences but can be represented by three types: industrial, agricultural and transactional. A tendency towards an increase in the number of regions classified as a transaction type has been identified, which corresponds to the global tendency towards an increase in the tertiary sector in the economic structure.
- The greatest structural dynamics is observed in the production of gross regional product. The employment structure is more conservative. The greatest structural changes in the economy of the regions of the Russian Federation are observed during the crisis period (2009).
- The hypothesis is confirmed that there is no positive effect of structural changes on economic growth in the regions of the Russian Federation. Thus, the observed structural changes are not a source of progressive development but are a consequence of external factors. It is advisable to supplement such an analysis with an analysis of the direction and progression of structural changes.
- The inclusion of a greater depth of study of the structure of economic systems will make it possible to specify technological changes in the economy of the regions.

Acknowledgments. The study was carried out with the financial support of the Russian Foundation for Basic Research and the Volgograd Region in the framework of the scientific project «Improvement of mechanisms and instruments of economic growth in Russian regions in terms of development of convergent technologies», project No. 19-410-340014 p_a.

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Economic Growth in Russian Regions: Conditions and Factors Forming Convergent Technologies Development

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Abstract. Purpose: To develop the methods of description and examine basic economic indicators and indicators of NBIC-technologies expanding at a regional economy level with respect to their reciprocal influence and interrelationship.

Design/Methodology/Approach: The article presents a system of indicators corresponding to the main factors determining the general economic conditions and factors of economic growth of the regions of the Russian Federation. The following groups and indicators are defined and described: indicators of the economic development level; indicators of human capital, indicators of the infrastructure development level, and indicators of innovative and technical solutions. The classification of regions is carried out (“leaders”, “developed”, “developing”, “unstable”) by methods of the cluster analysis application.

Findings: The study reveals the economy-wide conditions for the designing of new approaches to the neo-industrial development of the Russian Federation based on the use of convergent technologies, and their implementation at the regional level.

Originality/Value: The study proposes the recommendations related to the strengthening of the innovation component and state proactivity in management with the formation of the appropriate institutional environment and the implementation of a system of interrelated policies according to the main aspects of economic development of the constituent entities of the Russian Federation.

Keywords: NBIC-technologies · Convergent technologies · Digital ecosystem · New industrialization · Fallouts of NBIC-convergence

JEL Code: O11 · O47 · R12

1 Introduction

Determining the factors of economic growth of Russian regions under transition to the sixth technological mode requires: providing analytical assessment of impact parameters of a synergistic combination of nano-, bio-, info-, and cognitive technologies (NBIC technologies) as one of the main directions of neo-industrialization of Russian economy, and revealing the involved spheres of the regional economy. Therefore, to deploy structural modernization of management systems, it is necessary to consider both the conditions and factors of these processes.

2 Materials and Method

Actual aspects, methodological problems of substantiation, principles of Actual aspects, methodological problems of substantiation, principles of development and implementation of modern regional policy and tools for effective management for economic development of the territories in the conditions of new industrialization are reflected in the works by Russian scientists (Amosov 2015; Auzan 2015; Glazyev 2012; Gubanov 2014; Inshakov et al. 2003). Foreign scholars (Sahin et al. 2014; Acemoglu et al. 2015; Mankiw 2016) focuses more on measuring the impact of information and communication technologies (ICT) on economic growth.

The general economic functioning conditions assessment system for the constituent entities of the Russian Federation includes the indicators united in three enlarged groups. Factor groups contain particular indicators that determine the integral indicator of the group from different positions. Classification of regions according to the proposed system of indicators is carried out by Ward's method and k-means clustering method. The system of indicators for assessing the general economic functioning conditions of the constituent entities of the Russian Federation is designed not only to measure, detail or compare the levels of development, but also can act as a methodological tool for monitoring the dynamics of changes in indicators at different levels of the economy.

In order to form an information and analytical representation of the assessment of the general economic functioning conditions of the constituent entities of the Russian Federation, a data warehouse was designed, developed by means of the Deductor analytical platform.

3 Results

The impact of NBIC-technologies on economic growth is evident in two directions: (1) technological developments, innovative products and ICT services (ICT walked away from their narrow role, became a universal tool, making fundamental changes in the mechanism of value creation (ITU 2017); (2) the use of nano-technologies, cellular technologies and genetic engineering, biotechnology in a wide range of fields is an important direction in supporting the development of territories, which leads to increased growth factors and the development of human capital, emergence of new economic activities, improving the level and quality of life of the population, the acceleration of growth in labour productivity, stimulating innovation.

The main condition for the use of NBIC-technologies in the economy is the existence of an appropriate human capital quality, level of infrastructure and institutional ecosystem development. A positive result can be achieved if there are organizational, institutional and economic structures that support investment in innovation and introduction of innovations in the economy (general development of territories and support of new activities growth). To manage the convergent technologies development it is necessary to assess the general economic conditions of functioning of the constituent entities of the Russian Federation. Considering the conditions and factors of economic

system development (Inshakov 2003) it is expedient to allocate four blocks of the indicators with respect to the NBIC-technologies impact (Fig. 1).

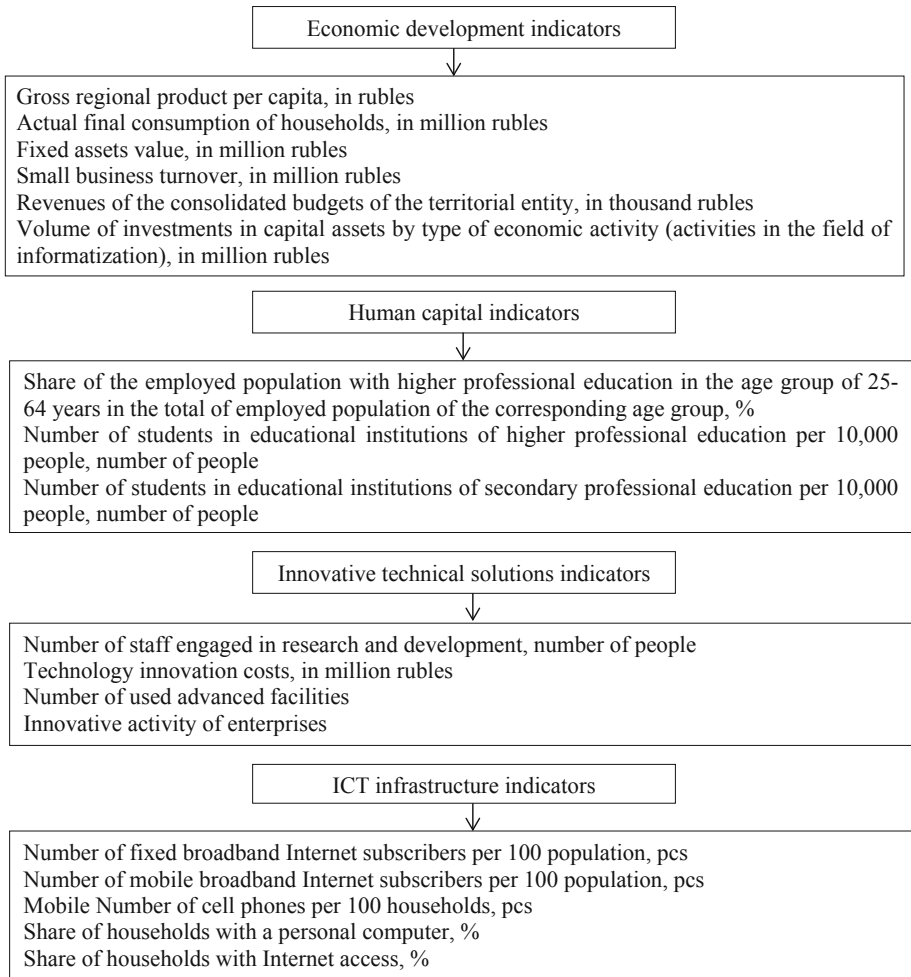


Fig. 1. Assessment indicators of the constituent entities of the Russian Federation functioning, with the consideration of the NBIC-technologies impact. Source: compiled by the authors based on the data presented in (Regions of Russia 2018).

According to the model of economic system development nucleus (Inshakov 2003), there are six factors that allow considering the potential opportunities and conditions for the achieving of growth and development of an economic system:

$$Q = F (A, T, Rn, Ins, O, Inf),$$

where Q – produced product, A – human factor, T – technical and technological factor, Rn – natural resource factor, Ins – institutional factor, O – organizational factor, Inf – information factor. Human capital and all transactional factors (Ins, O and Inf) have the greatest impact on economic growth.

Assessment of Russian regions’ potential opportunities requires analytical processing of the proposed indicators for the study period. At the initial stage, a rating scale is built based on the use of the interval scale method and rating points are assigned for each indicator. At the next stage, a summary indicator is calculated by factors and a rating of regions is formed on the basis of an additive scheme. The final stage of the analysis is carried out by methods of cluster analysis throughout the system of indicators, the result of which is the definition of four groups (clusters), the composition of which is given in Table 1.

Table 1. Distribution of Russian regions by clusters

Group number	The regions
1	“Leaders” (12 regions) 2 cluster Moscow region, Moscow, Saint Petersburg, Krasnodar region, the Republic of Bashkortostan, the Republic of Tatarstan, Nizhny Novgorod region, Samara region, Sverdlovsk region, Tyumen region, Chelyabinsk region, Krasnodar region
2	“Developed” (23 regions) cluster 1 Belgorod region, Bryansk region, Voronezh region, Kursk region, Lipetsk region, Tver region, the Republic of Karelia, the Komi Republic, Arkhangelsk region, Vologda region, Kaliningrad region, Leningrad region, Astrakhan region, Volgograd region, Rostov region, Perm region, Orenburg region, the Republic of Buryatia, Irkutsk region, Novosibirsk region, Omsk region, Primorsky Krai, Khabarovsk region
3	“Developing” (25 regions) 0 cluster Vladimir region, Kaluga region, Kostroma region, Ryazan region, Smolensk region, Tambov region, Tula region, Yaroslavl region, Murmansk region, Novgorod region, the Republic of Dagestan, Stavropol region, the Republic of Mordovia, the Udmurt Republic, the Chuvash Republic, Kirov region, Penza region, Saratov region, Ulyanovsk region, Kurgan region, Altai region, Kemerovo region, Tomsk region, Tomsk region, Amur Region, Sakhalin region
4	“Unstable” (22 regions) 3 cluster Ivanovo region, Oryol region, Pskov region, the Republic of Adygea, the Republic of Kalmykia, the Republic of Crimea, Sevastopol, the Republic of Ingushetia, the Kabardino-Balkarian Republic, the Karachay-Cherkess Republic, the Republic of North Ossetia–Alania, the Chechen Republic, the Mari El Republic, Altai Republic, Tyva Republic, the Republic of Khakassia, Transbaikal region, the Republic of Sakha (Yakutia), Kamchatka Krai, Magadan region, Jewish Autonomous region, Chukotka Autonomous Okrug

Source: developed and compiled by the authors.

“Leaders” are regions with the highest level of economic development and human resources, which is the main value of Russian society and the main factor of economic growth. This group of regions is characterized by the highest degree of use of ICT infrastructure, focus on the creation and promotion of new technologies.

“Developed” are regions with a high level of development. In this group, there is an increase in the use of innovative and technical solutions and a high concentration of human capital, which provides the need for qualified personnel in the economy in key areas of its development.

“Developing” are regions with an average level of the integral indicator. According to the resulting indicators characterizing the introduction of innovations in production, this group of regions is close to the average Russian level. In the regions, there have been some achievements in the use of ICT infrastructure, but generally insufficient for widespread use. Such relatively low positions of the regions can be explained by the lack of innovation orientation of the economy. This direction can be realized by means of creation of intellectual information and technological environment of the region. These regions require the development of measures aimed at intensifying the positive dynamics of the development of human capital indicators, the integration of education, science and production activities, the expansion of state support for scientific, technical and innovative activities, the development of digital economy technologies.

“Unstable” are regions having the value of the indicators below the average and characterized by a high degree of instability. Within this group, there is insufficient level of human capital development for the formation of the innovative economy of the region, there is a need to find ways to effectively use new technologies and intensify measures aimed at improving the indicators of economic development of the region. The development of the regions in this group can be significantly influenced by favourable external influence and the use of practices of more developed regions.

The classification of regions will allow forming a system of measures for each group, taking into account the peculiarities of their development for each group, according to the proposed process model of the influence of convergent technologies on economic growth (Fig. 2).

The entry into the era of a new, highly organized system of management pre-determines the need to implement the following measures:

- (1) Conducting research activities on challenges and new points of economic growth. Technological progress is the most important basis that forms the structure of economic relations in new conditions. Technologies converging processes form a single scientific and technological field of knowledge. Over the past few decades, the cycle of scientific and technical discoveries, best practices, and interdisciplinary opportunities in this field qualitatively increase the capabilities of economic entities (Inshakov and Inshakova 2017).
- (2) Creating a dynamic digital ecosystem. The primary importance for economic growth is the formation of a digital ecosystem in which the balance of interests of the three key stakeholders is maintained: civil society, business and the state.

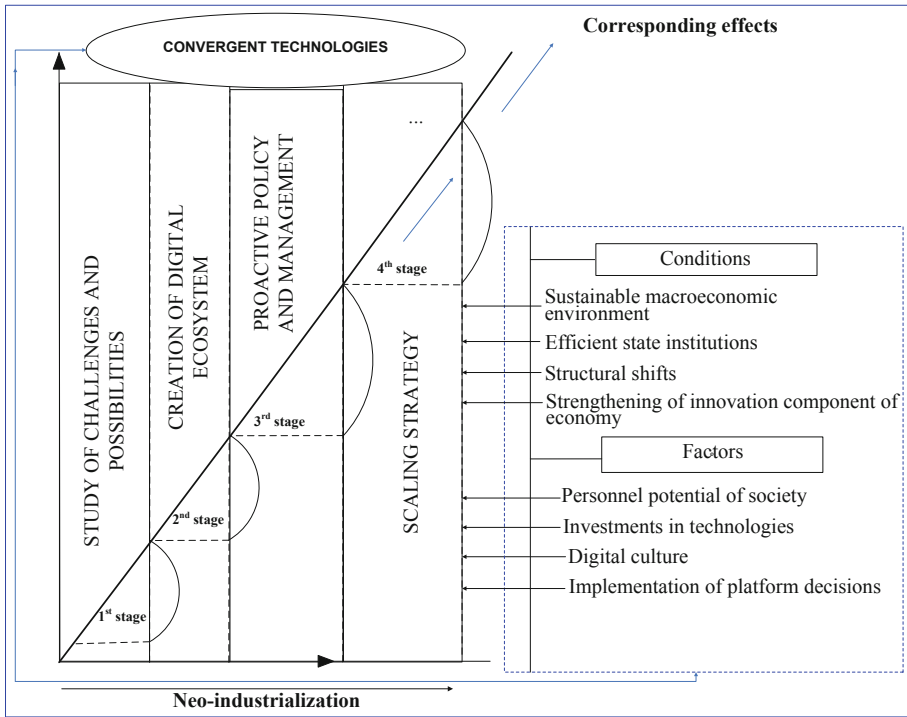


Fig. 2. Process model of the influence of convergent technologies on economic growth. Source: developed and compiled by the authors.

Digital ecosystem involves stimulation of innovation at all levels, creating the best conditions for stakeholders to generate new ideas, finance and commercialize them as new products and services (OECD 2018; Gartner Executive Programs 2017). A single digital ecosystem will concentrate significant resources, preserve specific assets and significantly reduce transaction costs. As a result, there is a steady tendency to accumulate their own economic and technological resources for subsequent investment in new developments. In these circumstances, the main task of the regional policy in the field of NBIC-technologies is to achieve a balance of elements of a single technical and technological man-made complex of the economy, to provide conditions for meeting the needs of stakeholders, new ways of cooperation to strengthen the base of attracting investments.

Thus, the digital ecosystem is focused on creating a “barrier-free” business environment for the emergence of these initiatives in local areas.

2.1. The adoption of approach to economic development based on the growth of investment in the human capital. In these conditions, we see the increase in the role of academic and university science in the training of specialists associated with the development and exploitation of new technologies, changing processes and models of activity. The involvement of human capital becomes relevant in the

conditions of initiation by the state of measures for its capitalization. The degree of such involvement depends on the rapidly changing competencies (flexibility, openness to change). According to the World Bank (The World Bank 2018), 90% of jobs within developed economies already require a measure for digital and data skills. Consequently, the role of higher education is increasing, which requires the adaptation of the continuing education institutions and professional development of labour force, allowing the participants of the working process to form a high level of cognitive competencies, abilities of complex perception and solving the problems of new industrialization (Schwab 2018).

Investments in human capital and proactive personnel policy will expand and diversify the economy and facilitate deep integration into global markets. This means recognizing that human capital is necessary to ensure the use of NBIC-technologies in the economy, so any policy that negatively affects the potential of the human factor will lead to a decrease in economic growth in the long term.

- 2.2. Bringing the regulatory framework at all levels of government including local self-government in accordance with modern requirements (new objects and subjects of information legal relations). Constant updating and correction of previously adopted legislative acts defining the principles of legal regulation of the technologically updated economy. Review of the rights, duties and responsibilities of economic activity participants, due to the particular changes in the NBIC-convergence process and the expansion of the sphere of influence, as well as the high degree of significance for economic growth. Participation of regions in the development of consolidated programs and measures to regulate the development of convergent technologies, supported by a high level of authority and areas of competence.
- 2.3. Development of digital culture and opportunities focused on open interaction and promotion of NBIC-technologies as a result of the proposed model implementation. The designing of digital development programs and introduction of NBIC-technologies requires the definition of the principles of cultural policy, which accelerate the use of new technologies in the interests of society. Considering the importance of these processes and the need to significantly speed them up, it is necessary to envisage the joint development of cultural and digital development programs.
- (3) Proactive policies and management systems. Convergent technologies inevitably create new challenges, new relationships and, accordingly, require significant institutional changes. The extent to which benefits are maximized will depend on the quality of governance – the rules, norms, standards, incentives and other mechanisms that shape the development and implementation of each particular technology.

The spread of NBIC-technologies has a significant impact on production, public administration, health, education and other areas, complementing the opportunities for the development of the Russian economy. This gives us the right to say that convergent technologies play an important role in the development of technological platforms as a single organizational and economic management mechanism at the micro, meso and macro levels, and create prerequisites not only for economic growth, but also for improving the level and quality of life of the

population. The development of a separate scenario of technological development for each platform and the deepening of cooperation between the participants can give a significant multiplier effect in the development of the economy on a national scale.

- (4) Development of a multidimensional scaling strategy. The consequence of the development of the ecosystem is the creation of digital communication platforms with a certain set of functions that will solve the following application problems: exchange of experience and scaling up of positive development practices of NBIC-technologies effectively promoting new industrialization. The implementation of the proposed model, based on a continuous process of technologies convergence, will allow developing and scaling management tools that will be used to solve problems associated with new technologies.

4 Conclusion

In connection with the established heterogeneity of Russian regions by groups of indicators for assessing general economic conditions, there is a need to use the organizational effect determined by the cluster approach. Homogeneous clusters of regions change the components of competencies and standards, it is possible for them to establish unified methodological rules and procedures for organizing the process of managing economic growth, taking into account the influence of convergent technologies.

The main deterrent to the introduction of convergent technologies is the low level of economic development of individual regions. Weak position in terms of innovation and technical element is explained by the low synergy of technological and innovative development of the subjects of the Russian Federation, a minor dependence of key sectors in the development of new technologies.

The identified level of basic skills in the use of new technologies in most regions will form on the selected clusters a network of points of new industrial growth, cooperation and reproduction of new technologies and high-quality human capital based on new educational paradigms. Improving the quality of human capital involves the implementation of a number of conditions to improve the quality of higher professional education, including measures to enhance investment in human capital.

The identified conditions and factors of economic growth of Russian regions allowed the authors to develop a model of the process of convergent technologies influence on economic growth and to form recommendations for the implementation of the model in regional policy. The main directions of this model implementation assume, first, stimulation of interregional integration processes in the field of new technologies, and secondly, creation of more effective environment for interaction of the regional development participants.





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Prospects for the Development of the Volgograd Region Within of the Concept of the Industrial Revolution 4.0

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Abstract. Purpose: The authors analyze and assess the readiness of specific constituent entities of the Russian Federation for the changes caused by the fourth industrial revolution, as well as the degree of potential adaptation to them and development opportunities in a new “way”, taking into account historical, geographical, social and economic prerequisites.

Design/Methodology/Approach: The materials of the article include the analysis of the main factors restraining the economic growth at the international, national and regional levels, and the conditions for a full inclusion of the domestic economy into the Industry 4.0. The differentiated development of meso-economic systems in Russia determines the specificity of approaches to the adaptation of the country’s regions to rapidly changing technological realities. The study is based on the analysis of the social and economic components of one of the regions of the Russian Federation in particular of the Volgograd region, with the aim of subsequently identifying the degree of its readiness for the planned development in the new neo-industrial era.

Findings: Systems analysis of statistical indicators characterizing the economic system of the specified entity allowed revealing a set of problems (similar to global issues) of a demographic, financial, informational and technological nature.

Originality/Value: The problems identified require the development of directions for their solution (economic and institutional focus) in order to reduce the level of losses in transition to a new industrial model of economic development and growth of the ability to provide the competitive advantages of the region.

Keywords: Economy of a region · Industrial revolution · Neo industrialization · Innovations · Sectoral structure of economy

JEL Code: O14 · O20

1 Introduction

The realities of modern life set many tasks for the society, and one of the key goals is the formation of the conditions for the transition to a new technological revolution, which provides the fundamental changes in the life of mankind. The basis for these transformations will be the cardinal changes in all sectors of the economy caused by technological breakthroughs in a wide range of areas. Along with the positive changes for the economy (new products and services appear, the cost of information storage is reduced, production costs are reduced, consumer value is increased, etc.), the society will face a number of relevant problems such as: increasing unemployment due to the replacement of labor by capital, the growing gap in the welfare of the population, the need for a “constant innovation” of enterprises, etc. (Schwab 2016). Such changes will affect the economy of any country, including the Russian Federation, and will also actively manifest themselves at the mesoscale together with a manifested disruption. This circumstance necessitates the comprehensive studies of possible consequences for the region’s economy (specific regions of the country, federal districts), allowing not only to reveal their readiness for such transformations, but also to identify the areas of prevention or leveling of negative manifestations while maintaining the positive effects.

2 Materials and Method

The last few years were marked by the interest of the scientific community to a detailed study of the processes of formation of the industrial revolution 4.0, its main characteristics and factors that encourage or inhibit the involvement of the economic entities into this phenomenon. The study of the basics of this phenomenon is associated with the research papers of the foreign scientists (Gaver and Cusumano 2014; Schwab 2016; Schwab and Davis 2018; Sakr and Zomaya 2019; Hoffman 2019, etc.).

Certain aspects of the impact of the industrial revolution 4.0 on various spheres of society are reflected in the works of domestic scholars (Inshakov and Fesyun 2014; Belousov et al. 2015; Ryazanov 2017; Suharev and Popov 2018; Bubkin 2019; etc.).

Along with the general macroeconomic problems of neoindustrialization, the scientific papers devoted to the readiness of specific regions to adapt to the changing conditions caused by the phenomenon under study (Volkov 2018; Belokrylova 2019; etc.) are also relevant today.

However, despite the relevance of the papers devoted to the problem mentioned above, in the modern scientific literature this phenomenon is poorly studied from the point of view of the regional specificity. This circumstance determines the usefulness of the studies of the meso level of economic systems.

During the research the methods of system and structural analysis were used to examine in detail the components of the fourth industrial revolution and the factors that determine it. In order to study the modern domestic situation from the regional point of view in the context of the identification of the current state, as well as for the identification of potential problems the comparative and statistical methods are used. In its turn, the development of measures for the solution of problems and contradictions that reduce the positive effects of neo-industrialization was founded on positive and normative approaches.

3 Results

Initially, it is necessary to focus on the analysis of the existing components mentioned above and formulated by K. Schwab.

However, the transition to the 4th industrial revolution, emphasized in 2010, which coincided with the post crisis 2008 year and actual slowdown in global economic growth in the diapason of 3–3.5% per year. The factors, which cause such a condition, are as follows: excessive indebtedness; population aging (entailing a decrease in the rate of savings' accumulation and investment); “productivity paradox”; the pace of technological change, its breadth and depth (Schwab 2016).

Speaking about some indicators that reflect the factor influence on the formation and development of the industrial revolution 4.0, it is advisable to reflect the fact that, according to a survey of the leaders of the largest companies in the world, Russia's investment attractiveness is ranked 11–10 for 2017 and 2018 respectively. At the same time, the following countries are more attractive for investments. They are the USA, China, Germany, Great Britain, Japan, France, Brazil. Among the factors which restrain the economic growth, the ranking mentions: a shortage of qualified personnel; changing demographic characteristics of the labour force; pace of technological change; insufficient development of basic infrastructure, etc. (21 surveys of executives 2018).

The Russian economy lags behind the leaders in terms of investment attractiveness and consequently it needs new solutions that will bring the country to a higher rank. This fact determines the necessity of a detailed analysis of the structural components of the regional economy.

It is advisable to analyze the regional economy according to the impact of the factors mentioned above having chosen as the object of the study one of the regions of the Russian Federation, i.e. the Volgograd region.

The primary indicator for the analysis is the dynamics of the volume of gross regional product (GRP) (Table 1).

Table 1. GRP dynamics of the Volgograd region, 2010–2017

Indicator	Year							
	2010	2011	2012	2013	2014	2015	2016	2017
GRP in constant prices, % to previous year	103.7	103.3	102.8	101.4	104.7	93.8	98.6	99.9

Source: compiled by the authors using the materials (Volgogradstat 2017)

Judging from the data provided in the table it follows that the GRP growth for the period (2010–2014) is slowing down and in average equals 3.2% per year, which corresponds to the global statistics. The crisis of 2014 worsened the situation in the region (the negative dynamics in 2015–2017 was observed by 2.6% per year).

When analyzing the factors determining this circumstance, it is necessary to turn to the analysis of statistical data reflecting the social and economic condition of the region (Table 2).

Table 2. Dynamics of demographic indicators of the Volgograd region, 2010–2017

Indicator	Year							
	2010	2011	2012	2013	2014	2015	2016	2017
Population number, thousand people	2614.2	2607.5	2594.8	2583.0	2569.1	2557.4	2545.9	2535.2
Life expectancy at birth, years	69.7	70.5	71.0	71.4	71.6	72.0	72.5	73.54
Natural population increase (loss), pro mille	-3.4	-2.6	-1.9	-2.0	-2.1	-2.3	-2.5	-3.1
Net migration rate, per 10 000 of population	8	-22	-27	-34	-25	-22	-18	-23
Active age population, % from the total population number	60.4	59.8	59.0	58.2	57.4	56.6	56.0	55.4

Source: compiled by the authors on the basis of materials (Volgogradstat 2018; Federal State Statistics Service 2018)

The data presented in the table show a decrease in the total number of population for this period by 79 thousand people, which is due to the following circumstances: the excess of the number of deaths over the number of births for the entire analyzed period; migration flows which are characterized in this case by negative balances factually for the entire period under analysis. It is also worth mentioning a decrease in the share of the labour force in the total number of population by 5%.

The mentioned indicators of the demographic development of a region show the similarity of the dynamics of regional importance with the global trends (aging of the population; decrease in the number of working population, increase in life expectancy, etc.).

Let us turn to the analysis of financial indicators characterizing the development of the region within the framework of the mentioned concept formulated in Davos (Schwab 2016) (Table 3).

Table 3. Dynamics of financial indicators in the Volgograd region, 2010–2017

Indicator	Year							
	2010	2011	2012	2013	2014	2015	2016	2017
Investments into fixed capital, % to the previous year	183.5	132.7	130.8	103.3	129.9	109.5	91.7	103.9
Liabilities of the organization, million rubles	248980	282850	350085	391508	440275	456390	455156	446204
Degree of depreciation of fixed assets, %	54.0	54.5	56.6	56.5	57.4	57.9	56.4	56.1

Source: compiled by the authors on the basis of materials (Volgogradstat 2018; Federal State Statistics Service 2018)

The data show a slowdown in the growth of investment into fixed assets, the exception is 2016, when the region showed a decrease in investment volume by 8.3% in comparison with the previous year.

Also a negative manifestation is the increase of organizations' indebtedness over 8 years in fact 1.8 times. This circumstance is correlated with a reduction in investments into capital assets, as the organizations "accumulate" the financial obligations and the investment aspect ceases to be one of their priorities.

It is worth mentioning that in the region the degree of depreciation of fixed assets exceeds 50%, which, in principle, corresponds to the situation in the Russian Federation in general, and is recognized as "unsatisfactory" in accordance with the accepted norms.

The next indicator reflecting the influence of general economic trends on the region's economic activity is the dynamics of innovative characteristics (patenting volumes, quantitative characteristics of organizations which carried out the R&D and bought the innovative technologies), and the state of informational and communication system (digitalization rate, broadband and mobile Internet accessibility) (Table 4).

Table 4. Indicators of innovative activity of the Volgograd region, 2010–2017

Indicator	Year							
	2010	2011	2012	2013	2014	2015	2016	2017
Patents and certificates for the results of intellectual activity, units	366	433	380	306	425	431	354	468
Organizations making technological innovations, %	8.6	8.0	7.1	7.3	5.6	6.8	6.6	4.7
Organizations which purchased innovations, %	8.6	8.0	11.4	7.3	7.1	10.9	6.1	8.3

Source: compiled by the authors on the basis of materials (Volgogradstat 2018; Federal State Statistics Service 2018)

It should be noted that in general in the region there is an increase in the attachment of intellectual property rights. At the same time it is worth mentioning the reduction in the number of patents and certificates for industrial patterns (over the past 10 years, their annual expression has actually decreased 3 times).

There is also a gradual reduction in the share of organizations making the technological innovations (the gap between 2010 and 2017 is 1.8 times). The decrease in incentives for business entities for the implementation of the factors mentioned above are as follows: increased indebtedness of organizations; increase of the depreciation of fixed assets and the necessity for their replacement, etc.

In its turn, the number of organizations that purchased innovations varied ambiguously; however, there were no significant changes in the data for year 2017 in comparison with year 2010.

Then, let us analyze the informational and communicative infrastructure in the region (Table 5).

Table 5. The state of informational and communicative infrastructure of the Volgograd region, 2010–2017

Indicator	Year							
	2010	2011	2012	2013	2014	2015	2016	2017
Digitalization rate of the local telephone net, %	76.1	77.1	78.5	79.7	80.8	80.3	81.7	82.7
Number of fixed broadband Internet access subscribers per 100 people of the population	–	12.1	13.9	15.9	14.1	14.9	14.1	15.8
Number of subscribers of mobile Internet access per 100 people of the population	–	44.9	49.0	53.6	58.0	61.6	65.4	71.5

Source: compiled by the authors on the basis of materials (Regions of Russia 2018; Unified Interdepartmental Statistical Information System 2019)

The data show a gradual development of ICT infrastructure in the region, however, a comprehensive analysis is not possible, since there is no periodicity of the published data for a number of indicators (digital broadcasting availability for the population, tariffs for communication services to average per capita income, etc.).

On the basis of the analysis, it is possible to identify a set of problems that have arisen in the Volgograd region, within the realities of the industrial revolution 4.0.

One of the key problems is the primary slowdown of the growth rates, and then a drop in the real GRP for the period under analysis. This indicator is one of the key indices characterizing the social and economic development of the region, and the task of its increasing is a priority when implementing the economic policy of the region.

The solution to this problem is connected with the answers to a number of questions characterizing the demographic, financial, innovative, informational and technological state of the Volgograd region.

These aspects have a particular relevance within the idea of the list of factors identified by Schwab (Schwab 2016) that hinder the formation of a new “image” of the country or a region as part of the changes generated by modern neo-industrialization processes.

4 Conclusion

Let us systematize and summarize this list of problems for the region of the Russian Federation under analysis:

A. Demographic issues:

- natural population decline and negative migration balance in the region;
- decrease in the share of the working population in its total number.

The mentioned problems, along with the seemingly positive phenomenon of growth in life expectancy, cause the complex phenomenon of “aging of the

population”, which affects the economy negatively in the following aspects: the qualitative structure of the workforce is changing; pension costs increase, etc.

A partial, and ambiguous, solution to this problem is the increase of the retirement age. A simpler option in this case is the social, economic, and institutional encouragement of the birth rate in the region. An increase in the level and quality of life of the population will be long-term and strategically significant.

B. Financial issues:

- decrease in investments into fixed assets;
- increase of the indebtedness of organizations in the region;
- high degree of the depreciation of fixed assets (over 56%).

The problems mentioned above are interrelated and complement each other, and, therefore, their solution is systemic in nature and can be implemented using the tax measures (tax incentives, tax holidays), organizational and financial (attracting investors, direct loans), administrative and economic (providing benefits for rent) measures of encouragement of the economic development.

C. Innovative issues:

- decrease of the share of organizations making and purchasing technological innovations;
- lack of a number of infrastructural elements of the regional innovative system: federal innovation centers; technological platforms; government research centers; industrial parks; nanocenters; consulting centers; transfer centers; venture capital funds, etc. (National Center 2019).

The solution of the problems is determined as the creation of an additional number of infrastructural facilities will expand the ability of enterprises to carry out the innovative activities, and therefore, can potentially contribute to an increase in the volume of innovative goods, work, and services in the region.

D. Informational and technological issues:

- insufficient number of organizations using the informational and communicative technologies (in 2017, the Volgograd region has a worse indicator than the Krasnodar Krai and the Rostov Region 1.5 times) (Federal State Statistics Service 2017);
- insufficient costs for communicative technologies (in 2017 in the Volgograd region this indicator was 3 times worse than in the Krasnodar krai and 1.2 times worse than in the Rostov region) (Federal State Statistics Service 2017).

The mentioned problems coexist with positive changes in the region, i.e. an increase in the digitalization rate of the local telephone network, a consistent increase in the number of subscribers with the Internet access.

In order to solve these problems, the regional executive authorities should create the following conditions: availability of digital technologies, openness of this market for investments, possibility of a flexible entry and leaving high-risk projects in this field. The institutional support of these decisions is to improve the legislation for the

redistribution of resources, which implies the presence of additional tax and regulatory benefits.

Thus, the general economic situation, which has arisen in the Volgograd, region demonstrates the above-mentioned global negative trends. However, the region's readiness to form the adaptive qualities to the changing conditions generated by the phenomenon of the fourth industrial revolution raises certain doubts. This statement is valid in view of the identified complex of social and economic problems in the region. The suggested solutions of these problems in the demographic, financial, innovative, informational and technological areas will expand the region's prospects for the economic growth in the framework of Industry 4.0, and, therefore, will generally strengthen the ability of this constituent entity of the Russian Federation to withstand modern challenges of the society.



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Industrial Revolution 4.0: Tendencies and Risks of Social and Economic Changes in the Regions of Russia

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Abstract. Purpose: The article was written for a scientific substantiation of the necessity of a systematic restructuring of the government policy aimed at the creation of conditions for the sustainable maintenance of a high level of innovative capability of the Russian society with an emphasis on traditional values and institutions which contribute to the transition of Russia and its regions to Industry 4.0.

Design/Methodology/Approach: In order to achieve this goal the authors reveal the main social and economic prerequisites for the implementation of a new industrial revolution in Russia, as well as the risks that arise in this process using as the methodology a materialistic, positive ideology.

Findings: The fourth industrial revolution is considered by the authors as a stage of social and economic progress, since it allows solving many problems facing the humanity. However, the period of its formation engenders a range of negative social consequences that present significant risks to the society. The factors of global and national risks are worsened due to a high regional differentiation and specificity of the social and economic development of every region of Russia, along with a high level of spatial uncertainty. At the same time, the provision of conditions, resources, and factors of reproductive processes in the region, their involvement and effectiveness, influence the amount of risk.

Originality/Value: The systemic detecting elements which characterize the obtained data of production parameters, calculated according to a special pattern, which takes into account both comparative values and also the return arising from their combination during the reproduction process, should be applicable for the analysis of conditions of the evolution of production factors in a region.

Keywords: Industry 4.0 · Social and economic potential · Risk · Risk assessment · Regional economy

JEL Classification: D81 · R58 · G32 · F63

1 Introduction

A feature of the modern society development is the growing innovative character of all spheres of human activity. The breakthrough innovations appear in plain view in technologies that change not only the technical and technological foundations of the economy, but also radically affect many processes in the social sphere. In fact, we are witnessing the initial phase of the fourth industrial revolution or Industry 4.0.

We can find a number of fundamentally different interpretations and definitions of the process that is currently taking place together with the acceleration in technology.

- Thus, according to S. Glazyev's concept of technological modes (Glazyev 2017), which, in turn, uses the methodology of the theory of large economic cycles of N. Kondratieff (Kondratieff or K-wave cycles), the modern historical period, which began around the 2010s, corresponds to the beginning of the sixth technological mode. Meanwhile, the first technological mode deals with the period of the first industrial revolution and covers the historical period from about 1770s to 1830s.
- The interpretation of the current stage of production development is quite common and influential. This stage is seen as a continuation of the third industrial revolution for the next 20–30 years, which is based on the emergence, and widespread use of computers and computer technologies in all areas of life according to Rifkin (2011).
- Finally, a third approach appeared later than the ones discussed above according to which we are currently witnessing the initial phase of the fourth industrial revolution or industry 4.0.

2 Materials and Method

The tasks of the comparative and descriptive analysis of social and economic prerequisites for the implementation of the new industrial revolution in Russia, as well as the risks that arise in the process, are solved in the article on the basis of a set of sources. The theoretical basis of the article was formed using the scientific papers of domestic and foreign researchers (Glazyev 2017; Inshakov 2003; Kachalov 2018; Knight 2003; Rifkin 2011; Schwab 2016, etc.).

The scientific research of this article was carried out on the basis of the universal scientific method of historical materialism from the point of view of positivism. The general scientific methods of research were used: the dialectic, hypothetical and deductive methods, generalization, induction and deduction, analysis and synthesis, empirical description, classification. The specific methods of research were also used: the method of specific sociological research, statistical and mathematical methods.

3 Results

The Industrial Revolution 4.0 is a fusion in a single process of physical, digital and biological technologies creating an entirely new quality of development and systemic changes that will affect business, society, politics, which will require new forms of organization of work of government and private sector.

The main elements and manifestations of the fourth industrial revolution include:

- Digitalization of the economy and all public life.
- Development of artificial intelligence.
- A widespread use of robotics, production robotics, the interaction of robots among themselves.
- Internet of things.
- Autonomous (unmanned) vehicles (primarily unmanned trucks and passenger cars).
- Additive manufacturing technologies based on 3D printing technologies on 3D printers.
- Nanotechnologies, biotechnologies.
- Creation of new materials with predefined properties.
- New energy technologies, suggesting a significant reduction in energy consumption while switching to renewable energy sources, etc.

The Industrial Revolution 4.0 is considered by the scientists as a process that unites many innovative factors, gives support to the development of the economy (primarily industry), a certain “trigger” that can start the economic development (to provide an increase in the pace of the economic development), a slowdown which we have been witnessing worldwide for over fifty years (Schwab 2016).

By the way, such conditional “launches” took place in history three times, every 50–60 years due to the following events:

- The first industrial revolution which lasted in total according to the researchers opinions about 100 years and was associated with a complex of studies and inventions for exploiting steam energy, introducing mechanization of technological operations that were previously carried out in the form of manual labor, enlarging industrial complexes starting from the manufacture to industrial and/or factory production,
- The second industrial revolution which dated by the early 20th century and involved the expansion of electricity and conveyors in production processes,
- The third revolution of the second half of the 20th century, which implies the introduction of automated computer systems in industry.

These industrial revolutions brought in a large number of new technologies that increased the labour productivity. Every time, the labour productivity became a factor of growth.

The fourth industrial revolution in our opinion is a stage of social and economic progress, since it allows us to solve many problems facing the humanity. At the same time, the period of its formation gives rise to a whole range of negative social consequences that create significant risks to the society (Table 1).

Table 1. Positive and negative social results of the emerging industry 4.0

Expected positive results	Negative results
<ul style="list-style-type: none"> – acceleration of economic growth – multiple growth of labor productivity – reduction of logistic and communication costs – emergence of new markets – disappearance or multiple reduction of heavy, unskilled, uncreative labor 	<ul style="list-style-type: none"> – increasing income inequality between separate groups of the employed and unemployed population within the countries due to changes in the structure of the labor market – a significant increase in unemployment in certain segments of the labor market due to the automation and robotization of labor and the disappearance of many professions – aging of the population as a result of the increased life expectancy – acceleration of the process of obsolescence of human knowledge and the need for a continuous learning – intensification of global social inequality between countries and regions

Source: compiled by authors.

It should be noted that as a result of this phased development, the emergence of a generation of risks arising in different evolutionary periods is expected. It is the age of craftsmanship and the simplest types of agricultural work which was accompanied by the threats of robbery, a high incidence of disease, a possible shortage of food, etc. The period of mass production is associated with the risks of malfunctions in industry and transport, military clashes. In the process of development of the modern society, the information risks are associated with the scarcity of information, its fragmentation or lack or reliability were identified. The risks of hereditary diseases, threats of loss of semantic content, breakdown of unique technical structures, negative impact of technologies on the environment, etc. have appeared.

Also, the development of post-industrial society, the development of international trade, the merger of capital markets, the instability of international currencies, the increasing importance of stock and futures markets have led to the emergence of new financial risks and the intensification of the dependence on human actions, individual and organizational behavior (Pantin et al. 2018).

Thus, the fourth industrial revolution having a global manifestation is not realized simultaneously all over the world, but only in the most advanced countries, which have the corresponding potential and resources for this, which are the key states for the development of the core of a new technological structure. For example, currently 13% of people worldwide do not have access to electricity, which means that more than a billion persons have not yet passed the second industrial revolution; half of the humanity does not have access to Internet, which means that almost 3.5 billion people have not yet entered the third industrial revolution (Gusov and Repkina 2019). This asynchronicity of the passage of technological revolutions causes quite acute social risks and problems, turning the technological inequality into global social inequality. Thus, the modern stage of “entering” the Industrial Revolution 4.0 is in many respects difficult for Russia and for the whole world, since the introduction of the latest

technologies provides a country that implements these technologies faster with undeniable competitive advantages. At the same time, the states that have lagged behind in technological terms are losing their positions in the global economy, as well as in domestic and foreign policy (Pas'ko 2015). Therefore, many advanced countries make significant efforts to launch this process (German Industry 4.0 2015).

It is the country's government policy aimed at the creation and maintenance of a high level the innovative capability of the Russian society with an emphasis on traditional values and institutions that should contribute to the transition of Russia and its regions to the Industry 4.0.

Russia has started preparing for a new industrial revolution. So, the government program "National Technological Initiative" sets the goal of creation of the conditions for a global technological leadership of Russia by year 2035 (Yudina 2017). At the same time today due to external and internal problems, Russia has found itself in a difficult situation due to the failure to comply with previously taken decisions concerning the reformatting of the areas of development, modernization, etc.

This fact was influenced by external problems, aggravated by the introduced sanctions from the West, price fluctuations, as well as the turning points caused by the next stage of the evolution. Thus, during the transition from the fifth to the sixth stage of technological development, the crisis of a wide diversity in technological development of industries and spheres of national economy emerges (Buyanova and Mikhaylova 2018).

At the same time, serious unresolved internal problems caused by a developed extractive industry and industrial underdevelopment complicate the resistance to external threats.

These factors of global and national risks are exacerbated by a high regional differentiation and specificity of social and economic development of each region of Russia along with a high level of spatial uncertainty.

To quantify the risks of regional development, the authors used the risk management model based on the model of the economic system "development nucleus" recommended by O. Inshakov in order to reflect the influence of the transformation (Rn, H, T) and transaction (Ins, O, Inf) production factors (Inshakov 2003) development in a region.

The proposed model is described as the functionality of a number of components, which include the set of six critical components:

$$RRD = F(Rn, H, T, Ins, O, Inf),$$

where RRD – rate of integrated risk of regional development; N – natural resource factor; H – human factor; T – technical and technological factor; Ins – institutional factor; O – organizational factor; Inf – informational factor.

The availability of conditions, resources and factors of reproduction processes in the region, their involvement and effectiveness influence the amount of risk. The development, coordinated interaction, and the effective use of the first three factors (Rn, H, T) in the regional reproduction process in order to meet the needs of the regional community in goods and services gives the transformation risk. The insufficient provision of the regional economy with factors of the second group (Ins, O, Inf), a

violation of the harmonious interaction of these factors, negatively affects the coherence, integrity of the economic space of the region and a compromise interaction of its regions creates the transaction risk.

The systemic detecting elements characterizing the obtained data of production parameters, calculated according to a special scheme, which involves taking into account both comparative values and the return on their combination during reproduction, should be applicable for the analysis of the conditions of the evolution of production factors. This approach allows you operating with six indices, consisting of “cross through” sets of statistical indicators for each region within a group that is homogeneous in terms of development level. The value of each population is “indexed” with respect to an average indicator for the corresponding group of regions.

In order to calculate the integrated indicator of the status and production factors endowment of regions, the authors applied the method of the interval free factor-by-factor ranking of regions together with the scoring method and the presentation of the calculation results in the form of standardized ratings. The feature of the used methodology is the inclusion into the general ranking of the Russian Federation, which thus gets its system number. This allows us to evaluate various aspects of the factor endowment of each region in comparison with the corresponding Russian average (Buyanova 2012). A comprehensive multivariate assessment of the integral risk using as the example the regions of the South of Russia made it possible to rank the regions according to the level of factor endowment and the risk of social and economic development. Using this approach, the authors got three groups of elements of the regional economy:

- the first group of elements which corresponds to the pre-industrial mode is presented in the regions where the conditions for the transition to the industrial revolution 4.0 are not formed, the level of social and economic development is low, the subsistence farming predominates (these are the republics of Adygea, Ingushetia, Kalmykia, Karachaevo-Cherkessia, Kabardino-Balkaria).
- the second group of elements corresponding to the industrial mode is presented in the regions where the conditions for the transition to the industrial revolution are partially formed and the elements of simple reproduction remain unchanged (these are the republics of Dagestan, North Ossetia-Alania, Crimea, as well as the Stavropol Kray, Astrakhan and Volgograd Regions).
- the third group of elements corresponding to the new industrial mode of social and economic life prevails in the regions with the conditions created for the transition to Industry 4.0 with the elements of an expanded reproduction (Rostov Region and Krasnodar Kray).

4 Conclusion

It should be noted that the consequences of the identified tendencies are sharp contrasts in the social and economic development and living standards from one part of the country to another. For the most part, such differences have a significant inertia, which affects the speed and effectiveness of the ongoing reforms, as well as the ability to

synchronize the positive reforms in different regions. In order to overcome these trends, the imperatives of the development of constituent entities of the Russian Federation should be the promising resource and factor saturation of the regional space and the concentration of the most valuable factors and resources at the points of innovative growth (Buyanova and Shiro 2018).

Hence, the most important task in the near future is the correction of the policy concerning the creation of conditions for a much more efficient use of the economic, educational, scientific, informational potential for the development of the country taking into account the current situation. All the mentioned above is possible by means of the implementation of a model consisting of three key elements. The first (the markets and sectors of the economy falling under the digitalization task) includes such areas as smart city, government, digital healthcare and education, and the list of these industries should be expanded. The second element (the platforms and technologies) is designed to provide support for the research and development, which will consist in the coordination of the efforts of key market players, encouragement of the interaction between universities, manufacturing enterprises and scientific organizations. The third element is the creation of conditions for the development of the legislative regulatory environment, human resources and the relationship mechanism.

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Industrial Clusters in the Regions of Russia: Growing Pains and Development Constraints Overcoming

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Abstract. Purpose: The paper deals with assessment of the current state of industrial clusters in the context of cluster effects for the implementation of neo-industrialization of the regions in the Russian Federation.

Design/Methodology/Approach: The paper explores the dynamics of regional and cross-regional industrial clusters in Russia included and non-included in the Register of Industrial Clusters of the Ministry of Trade of the Russian Federation with the focus on discrepancies in metrics presented in various sources. An attempt has been made to improve methodology for calculation of the location quotient (as the basis for determination of industry cluster formation potential) to ensure more accuracy compared to calculations performed within the framework of quantitative assessment of the regional industrial specialization.

Findings: The study confirms that advantages of the cluster organization of the economy are determined by its transactional nature, the persisting incompleteness of information on the dynamics and current state of clusters in the Russian Federation; the paper identifies institutional and organizational barriers that impede development of cluster ecosystems in the regions of Russia, and proposes a modified formula for calculating the location quotient that takes into account the size of a particular industry in the region in relation to that one on a country scale.

Originality/Value: The results obtained can be relevant for state and private institutions of cluster development in the Triple Helix interactions improvement to foster industrial clusters performance and strengthen competitiveness of the regions of Russia.

Keywords: Cluster · Industrial cluster · Neo-industrialization · Competitiveness · Cluster ecosystem · Regional specialization · Modified location quotient

JEL Classification: L14 · O18 · O25 · R12 · R15

1 Introduction

The strategic goal of neo-industrialization of the economy in Russia, that is a crucial factor for acceleration in the economic development and progress in infrastructure, technology, science and social spheres, which will strengthen national competitiveness and ensure the country's leadership in areas that shape the future of Russia and the whole world, determines the situation where the state as well as business and scientific community gives primary attention to the development of industrial clusters.

Intensive studies (e.g. Porter 2003; Feser et al. 2008; Delgado et al. 2010, 2012; Martin et al. 2015; Ferreira et al. 2012; Chatterji et al. 2013; Inshakov et al. 2016, 2017) have proved that industrial clusters produce significant internal (relevant for cluster members) and external (relevant for the economy and society of the region on the whole and across the regions) effects.

The cluster form of the regional economy organization provides conditions for a group of companies to effectively implement interrelated projects based on the development of transformational and transactional production factors (Inshakov 2003), reduction of aggregate and individual transaction costs, growth of stability and guarantee of cross-cluster economic collaboration. In clustered economic systems, network effects to a great extent increase the productivity of existing production factors (Delgado et al. 2010). An effectively operating cluster system does not only affect key sectors of its specialization, but also has an impact on related and service industries (industry clusters) (Porter 2003; Delgado et al. 2012). Clusters do not only generate profit, but also create conditions for self-realization, professional and personal growth, and contribute to the realization of the intellectual and creative potential of employees (Martin et al. 2015).

To determine trends in the development of clusters within the framework of evolutionary economic theory, it is important to take into account that clusters have their own "life cycle" (Feser et al. 2008; Iammarino et al. 2006; Inshakov 2017). Understanding the life cycle of clusters is indispensable for correct assessment of their scale, relations between small and large firms, understanding the need for change (Kuah 2002), and determination of stages, forms, methods, and tools of policies that are developed to support them. In addition, the innovative potential of the cluster manifests itself in different ways depending on the phases of its life cycle: there is a greater propensity for innovative activity to cluster during the early stages of the industry life cycle, especially when it concerns a new industry, innovative activity tends to be more highly dispersed during the mature and declining stages of the life cycle. However, the key to understanding the innovative nature of a cluster is the conclusion: "... clusters are locations of unusually high innovation activity" (Ferreira et al. 2012, p. 71).

The mentioned above cluster effects contribute to the growth of competitiveness for cluster members and the regions where they are located. Indeed, "competitiveness upgrading should have a cluster/sectorial dimension..." (Ketels 2013, p. 9).

Thus, industrial clusters can be considered as an effective form of consolidation and collaboration (Inshakov 2013) of economic entities in the Russian regions, which ensures their competitiveness in the face of growing uncertainty in the global external environment (Inshakov 2017).

The identification of institutional and organizational barriers that impede efficient operation of industrial clusters in the Russian Federation and improvement in methodology for substantiating cluster initiatives as an urgent need for strategizing the socio-economic development of the regions in the Russian Federation are becoming urgent tasks for researchers and practitioners of clustering.

2 Materials and Methods

The conceptual framework of the study is based on rethinking the results of numerous investigations related to identification of indicators that characterize cluster evolution and life cycle (Porter 2003; Kuah 2002; Feser et al. 2008; Iammarino et al. 2006; Inshakov et al. 2016, Inshakov 2017), the internal and external effects of their operation, the role of industrial clusters in the process of innovation and development of entrepreneurship (Delgado et al. 2010; Ferreira et al. 2012; Chatterji et al. 2013; Martin et al. 2015), analysis of characteristics, achievements of clusters and challenges they face in different countries of the world (Lines et al. 2006; Delgado et al. 2012; Ketels 2013) and in Russia (Inshakov 2017; Abashkin et al. 2018).

Based on methodological approaches described in (Jensen et al. 1980; Lahr 1993; Flegg et al. 1995; Diniz et al. 2010; Pechatkin 2010; Banouei et al. 2011; Flegg et al. 2013; Beloglazova 2018), we consider industrial specialization as the basis for determination of the regional cluster formation potential and propose improvement in methods for its quantitative assessment.

The study uses empirical data provided by the European Commission, the European Cluster Observatory, Harvard Business School, the Ministry of Industry and Trade of the Russian Federation, the Ministry of Economic Development of Russia, the Russian Cluster Observatory of the Higher School of Economics (HSE), data on the cluster operation and cross-cluster partnerships in the EU and the Russian Federation.

The research objectives are completed within the framework of the evolutionary paradigm using structural and functional, temporal and spatial, comparative, statistical and econometric methods.

3 Results

Despite the proven positive impact of clusters on economic performance (Porter 2003; Kuah 2002; Delgado et al. 2010, 2012; Ferreira et al. 2012), Russia has implemented a support program for innovation regional clusters since 2012, when the Ministry of Economic Development of Russia launched a program to support pilot innovative territorial clusters as part of the implementation of the Innovative Development Strategy for the period up to 2020. However, industrial clusters became the focus of attention of state development institutions in late 2015, and the list of specific clusters that meet the requirements to obtain state support was approved in early 2016.

Given the inherently innovative nature of clusters that has been proved by numerous studies (Porter 2003; Iammarino et al. 2006; Ferreira et al. 2012; Chatterji et al. 2013), North American and European practice (e.g. Lines et al. 2006; Delgado et al. 2012;

Ketels 2013), the focus on innovation-oriented clusters as objects of primary importance that were put on a short list for implementing state cluster policy, and lack of attention to the development of industrial clusters does not seem entirely justified. Indeed, maintaining a share in industry markets enables industrial enterprises to constantly generate innovative solutions, therefore, industrial cluster associations seek to localize scientific knowledge and modern technologies. The growth of innovation activity within the cluster is ensured through the integration of personnel and cooperation between industry, research and educational organizations.

Researchers (Ketels 2013) believe that the state needs to subsidize all existing and emerging clusters in every sector of the economy (not exclusively innovative ones), and clusters with initially high development potential should not be in a privileged position when money from the state budget is allocated.

Since November 2015, the RF Ministry of Industry and Trade has started support for industrial clusters within the framework of the state program “Industrial Development and Competitiveness Enchantment”. Clusters that meet the requirements defined by the Register of Industrial Clusters of the RF Ministry of Industry and Trade were included in the program. At the beginning of 2018, thirty-eight clusters out of 28 Russian regions were included in the Register. The main indicators of their operation are presented in Table 1 (III Annual Review 2017; Joint projects 2018). By February 2019, the number of clusters in the Register rose up to 44, and the number of regions where they are located increased up to 38 (Specifics of industrial clusters 2019, p. 5-7).

Table 1. The RF Ministry of Industry and Trade sponsored industrial clusters’ performance indicators during 2015–2018

Industrial clusters development indicators	2015	2016	2017
Total number of clusters, units	25	26	38
Number of the regions of clusters’ allocation, units	25	25	28
Number of industrial enterprises, units	421	427	592
Working places number, thousand units	162.9	171.5	305.2
Volume of output, billion rubles	679.0	714.8	1,300
Volume of tax payments, billion rubles	81.6	85.9	155.0
Share of imported goods, raw materials and component, %	31.2	30.9	26.4

Source compiled by the authors based on materials (III Annual Review 2017, pp. 8, 12; Joint projects 2018, p. 7)

It should be noted that as to the Association of Clusters and Technology Parks of Russia (ACTP of Russia) experts’ opinion the number of cluster units in Russia that have characteristic features of industrial clusters exceeds the number of clusters in the Register of the RF Ministry of Industry and Trade. The dynamics of these clusters, including those that receive state funding from the Ministry, is presented in Table 2.

Table 2. The indicators of industrial clusters development (in a broad sense) in the period between 2015 and 2017

Indicator	2015	2016	2017
Number of clusters, units	125	130	137
Number of regions in the RF, units	56	56	52
Number of participants, units	2750	3900	4785
Workforce productivity in cluster, million rubles per person	2.2	2.5	2.8
Total volume of tax payments, billion rubles	275	380.9	422.8
Degree of cooperation between the participants, %	15	16.7	20

Source compiled by the authors based on materials (III Annual Review 2017; Abashkin 2018)

A positive trend in cluster formation is the emergence of cross-regional industrial clusters (their members are located on the territory of two or more regions of the Russian Federation), the number of which in 2018 was equal to five. This is an industrial cluster of metro car building (Moscow and Tver' regions); national aerosol cluster (Stavropol kray, Karachay-Cherkess Republic); industrial photonics cluster (Perm kray, Udmurt Republic, Sverdlovsk Region); pump-building cluster (Voronezh and Lipetsk region); Cross-regional Industrial Cluster 'Composites Without Borders' (Republic of Tatarstan, Moscow and Saratov Regions). Cross-regional clusters provide high level of interaction between industrial enterprises of the regions involved, creation of new cooperation chains, expansion of sales markets for manufactured products, and more efficient utilization of existing cross-regional cooperation links.

However, it is quite difficult to form an exhaustive understanding of industrial clusters state of development in the Russian Federation due to the discrepancy in information presented by state development institutions and their structural units (for example, the Geoinformation System "Industrial Parks. Technoparks. Clusters" (GISIP) of the Ministry of Industry and Trade of Russia, website <https://www.gisip.ru>), specialized public associations (e.g. ACTP of Russia, website <http://www.akitrf.ru>), research organizations (the HSE Russian Cluster Observatory, website <https://cluster.hse.ru>, etc.).

So, the above data on the industrial clusters operation (44 clusters that receive state funding from the RF Ministry of Industry and Trade) retrieved from the ACTP of Russia differ from the current information provided by the GISIP of the RF Ministry of Industry and Trade: in 2019 as many as 41 clusters are presented, while in the section "Summary statistics of clusters" the financial and economic performance indicators are given for 21 or 23 clusters.

This situation actualizes the need for official clarification of statistical information on the strategically important field of state industrial and regional policy under consideration. However, these data are sufficient to draw a conclusion about the catch-up nature of the cluster policy implementation in Russia. For example, according to Clusterplattform Deutschland (website <https://www.clusterplattform.de/>), which is sponsored by the Federal Ministry for Economic Affairs and Energy and the Federal Ministry of Education and Research of Germany, the total number of clusters in the country is 435 units.

The catch-up nature of the development of cluster processes in Russia is also confirmed by data on organizational development of national clusters (Figs. 1 and 2). So, despite different statistics on the number of clusters in a broad sense (industrial, innovative territorial, supported by cluster development centers), both the GISIP of the RF Ministry of Industry and Trade and the HSE Russian Cluster Observatory attribute about 3/4 created clusters to the basic (low) level of development.

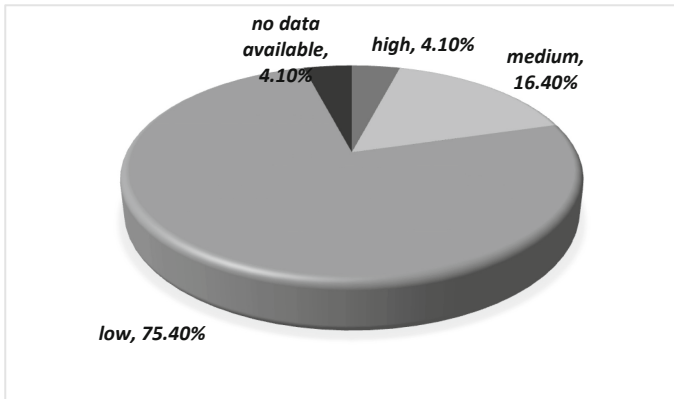


Fig. 1. The level of clusters organizational development based on the data retrieved from the GISIP of the RF Ministry of Industry and Trade

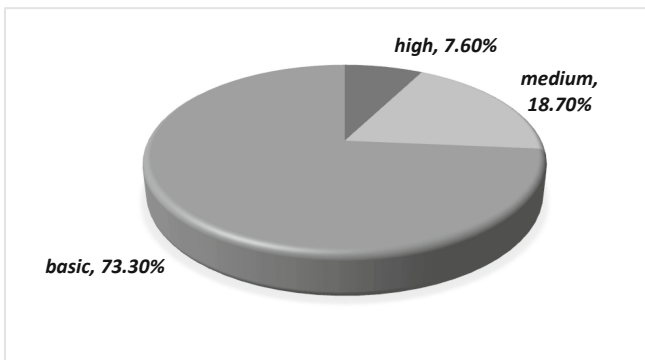


Fig. 2. The level of clusters organizational development based on the data retrieved from the HSE Russian Cluster Observatory

State development institutions are actively trying to give impetus to the development of industrial clusters in Russia by providing state funding on a competitive basis for cluster projects (Specifics of industrial clusters 2019) and stimulating attraction of

private investments (benchmark to achieve is 1: 3). Enterprises included in the industrial cluster that has passed the competitive selection process can subsidize up to 50% of the costs incurred in implementing investment projects to produce new types of industrial products, especially import-substituting ones. Cost subsidies are provided at all stages of the industrial production life cycle: from development to serialization.

We define the following institutional and organizational barriers that impede the development of cluster ecosystems in the regions of Russia:

1. Low level of trust on behalf of potential cluster members to new forms of operation, which determines their weak interest in entering the cluster as they have doubts about the benefits of coordination with competitors and feel uncertain about cluster effects; despite the promised state support, private business lacks funds to invest in cluster projects or private business feels uncertain about an expected return on investments made.
2. An insufficient degree of cooperation between the participants, which prevents the creation of cooperation chains, reduces the transactional and synergistic effects of cluster membership. In this sense, the feasibility of the ACTP of Russia initiatives requires more detailed argumentation. The initiatives provided are as follows:
 - (a) relief in the requirements for cluster member cooperation level is suggested, it is proposed to reduce the requirements from 50% to 20%, and then even to 5% for particular cluster members, for example, in machine-tool building;
 - (b) it is proposed to include into a cluster members who do not have current cooperative links within the framework of industrial clusters and provide them with state funding on condition that they invest into projects that are in line with the priorities of innovative development of industries with promising economic specializations in the Russian region.
3. Lack of objective prerequisites for the bottom-up formation of clusters, which are replaced by the implementation of rather an interventionist cluster policy than supportive or catalytic one in some regions of the Russian Federation. In this regard, we should highlight the validity of the statement: “While cluster programs can be launched by different levels of government, clusters and thus cluster initiatives are always regional in nature” (Ketels 2013, p. 11).
4. Lack of fully justified regional key specialization, which results in inefficient expenditure of budget funds when the outcome of a cluster project implementation does not come up to expectations (especially in a situation when implementation of the state cluster policy is directed “from top to bottom”).

Since one of the main requirements for an inclusion of an industrial cluster in the Register of the RF Ministry of Industry and Trade (respectively, receiving state funding) should be its creation and development in line with the territorial development strategy of the Russian Federation, as well as territorial planning schemes of the Russian Federation and the regions of the Russian Federation where the cluster is located (Specifics of industrial clusters 2019), the development or updating of strategic planning documents for Russian regions requires scientific substantiation for promising economic specializations and directions of cross-regional collaboration and cooperation development.

The cluster development strategy is directly related to the quantitative analysis of the region's specialization, primarily based on the calculation of the regional location quotient (LQ). In literature, the spread of threshold values for this coefficient is from 0.8 to 2.0; moreover, industries with a LQ value of 1 and higher have significant potential for creation of clusters (Porter 2003; Pechatkin 2010).

However, in (Jensen et al. 1980; Lahr 1993), it was confirmed that the simple (or standard) LQ (SLQ) when applied provides overestimated levels of industry specialization and does not take into account the scale of the regional economy. An attempt to solve this problem was made in (Flegg et al. 1995; Flegg et al. 2000; Flegg et al. 2013) based on the proposed Flegg's location quotient (FLQ) formula and the augmented version of the FLQ (AFLQ) formula, which takes regional scale into account. AFLQ calculations for Scotland, Finland, Japan, and a number of other countries show more accuracy than SLQ (Diniz et al. 2010; Banouei et al. 2011; Flegg et al. 2013).

The present study has found that the AFLQ calculation method yields both underestimated and overestimated LQ values for the region in relation to others. If a region has a small GRP in relation to GDP, then adjustment for the size of the regional economy can lead to an underestimation of the localization indicator, and vice versa, for a large region with a relatively small specific gravity of an individual industry in GRP, one can get an overestimated value of the degree of production concentration in this industry across the country.

In order to eliminate the problem, the modified AFLQ (AFLQ') that takes into account the relative size of a regional industry on a country's scale instead of the relative size of a regional economy was proposed (Beloglazova 2018):

$$\text{AFLQ}' = \frac{I_r}{\frac{P_r}{I_c}} \times \left[\log_2 \left(1 + \frac{I_r}{I_c} \right) \right]^\delta,$$

where I_r – output of an industry in the regional economy; P_r – economic output in the region; I_c – output of an industry in the country's economy; P_c – a country's economic output; δ – a parameter that defines a degree of standard location quotient correction in relation to the size of a geographical region and international trade volume.

As regional input-output tables (IOTs) or tables of balance across industries for the regions in Russia are not accessible, an approach proposed in (Flegg et al. 2013) for the analysis of twenty regions of various size ($0.1 \leq \delta < 0.3$) in Finland was used to define the δ value. Based on this approach, a contingency table of the value of δ on the specific weight of GRP in GDP (Table 3) was constructed.

Table 3. The value of δ in relation to the specific weight of GRP in GDP

Specific weight of GRP in GDP (%)	δ
0–2	0.1
2–3.2	0.15
3.3–6.0	0.2

Source: compiled by the authors.

Correspondingly, for the regions of the Southern Federal District the following values of δ (Table 4) were defined:

Table 4. The value of δ for the Southern Federal District regions (2017)

SFD regions	Specific weight of GRP in GDP (%)	δ
Krasnodar Krai	2.97	0.15
Volgograd region	1.03	0.1
Rostov region	1.80	0.1

Source: compiled by the authors.

Further, taking into account a regional industry share in the total volume of industrial output in the country the value of δ was used to calculate SLQ, AFLQ и AFLQ' for the regions of the Southern Federal District in 2017 (Table 5).

Table 5. Values of SLQ, AFLQ и AFLQ' for the Southern Federal district regions (2017)

	Krasnodar Krai			Volgograd region			Rostov region		
	SLQ	AFLQ	AFLQ'	SLQ	AFLQ	AFLQ'	SLQ	AFLQ	AFLQ'
Agriculture, hunting and forestry	2.26	1.17	1.09	2.67	1.56	1.37	2.41	1.16	1.09
Natural resource mining	0.07	0.03	0.03	0.40	0.23	0.21	0.10	0.05	0.05
Processing industry	0.71	0.37	0.35	1.41	0.82	1.02	1.18	0.57	0.59
Production and distribution of electricity, gas and water	0.82	0.43	0.41	0.77	0.45	0.44	1.36	0.66	0.69
Construction	1.26	0.65	0.55	1.53	0.89	0.93	1.24	0.60	0.82
Whole sale and retail	1.02	0.53	0.53	0.78	0.45	0.44	1.07	0.52	0.66
Hotels and restaurants	3.30	1.71	1.48	0.80	0.47	0.46	1.30	0.63	0.65
Transport and communications	1.66	0.86	0.80	0.75	0.43	0.42	0.81	0.39	0.49
Financial sector	0.40	0.21	0.24	0.40	0.23	0.21	0.40	0.19	0.22
State government and military security; social insurance	0.87	0.45	0.44	1.21	0.71	0.72	1.02	0.49	0.63
Education	1.03	0.54	0.54	1.13	0.66	0.67	1.10	0.53	0.68
Health care and social services	1.18	0.61	0.51	1.10	0.64	0.65	1.18	0.57	0.58

Source: compiled by the authors.

The calculations made it possible: (a) to reduce the list of industries that can potentially serve as a base for creation and effective operation of clusters in the region, as objects of state supportive cluster policy; (b) identify industries with average

clustering potential as objects for catalytic cluster policy. The results obtained are significant for clarifying the priorities and prospects for the implementation of the regional cluster policy in Russia.

4 Conclusion

The formation and development of industrial clusters can be considered as an advanced form of organization of the regional economy that promotes investment attractiveness of the Russian regions, enhance the development of industrial cooperation, contributes to a large-scale introduction of advanced production technologies and creation of the industrial basis for neo-industrialization of the Russian Federation in the context of challenges and opportunities arising from the emergence of a new sixth technological mode.

In the framework of the cluster form of production and promotion of intermediate and final goods, a system of transactional relations of cluster members is formed, which ultimately ensures a synergistic effect for the development of all factor capital (including human capital) in the cluster, as well as significant spillovers.

Overcoming the main institutional and organizational barriers on the way to implementation of cluster initiatives (which are namely continued mistrust of potential members that determine lack of interest in joining the cluster, insufficient level of cooperation, the selective nature of state cluster policy and underestimation of the negative consequences of top-down government cluster policy, insufficient justification of sectoral areas of cluster development), and the effective use of state support measures provided for cluster members can give a strong impetus to the development of clustering process in the economy of the Russian regions.

Improved methodology for quantitative assessment of industrial specialization of the regions of the Russian Federation as one of the key stages in determination of the industry potential in cluster formation, including based on the calculation of the modified location quotient proposed in the article, will increase the level of scientific substantiation for the priorities and prospects of the regional cluster policy, its objectives and expected results, and optimize volumes of public and private investments in implemented and developing cluster projects.

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Strategic Targets and Empirical Trends in the Development of Small and Medium Scale Entrepreneurship (the Case of the Volgograd Region)

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Abstract. Purpose: The purpose of the chapter is to reveal trends in the development of SME in the Volgograd Region for 2014–2017 and analyze them for compliance with the goals set by the Strategy for the Development of SME in the Russian Federation until 2030 to assess the effectiveness of support measures for this sector of the economy.

Design/Methodology/Approach: The research is based on the methods of statistics and comparative analysis. To reveal trends in the dynamics of SME economic activity, the index approach has been used. Sources of statistics were: Federal State Statistics Service; Unified Register of Small and Medium Enterprises of the Federal Tax Service; regional State programs for SME support; some other official documents.

Findings: Over the period of 2014–2017, the turnover of SME in the Volgograd Region significantly exceeded strategic target. The indicator “share of SME in the Volgograd region’s GRP” was growing even faster. At the same time, increase in the share of manufacturing industry in the SME turnover was noticeable lower than strategic target, and this trend overcoming requires developing of special measures.

Originality/Value: The State strategy and numerous regional programs are developed and implemented in modern Russia, but there are no unified criteria, indicators and methods for evaluating the effectiveness of these ones. An urgent problem is connected with identification of trends in SME development and the analysis of their compliance with strategic planning goals. This research is the authors’ contribution to the study of this problem.

Keywords: SME policy · SME development strategy · Regional policy · SME turnover · SME turnover structure · Contribution of SMEs to GRP

JEL Code: L530 · R5

1 Introduction

Development of small and medium scale entrepreneurship (SME) plays an important role in ensuring economic growth, promotes the reduction of poverty and unemployment, the development of technology and innovation. Statistical connection between business activity in the SME sector and economic growth, as well as population welfare and technological progress, is confirmed by numerous empirical studies exemplified by different countries (OECD 2017; Ribeiro-Soriano 2017; et al.). In the modern Russian economy, business activity in the SME sector also represents a significant reserve of economic growth, which must be taken into account when developing strategies for the socio-economic development of territories (Inshakov 2018).

Russian economy's enterprises in the SME sector are represented with legal entities (medium, small and micro enterprises), as well as individual entrepreneurs without a legal entity (Federal Law 2019). Russia significantly lags behind the countries with developed market economies in terms of SME development (Strategy-2030 2016; Titov 2018), despite the fact that the country has worked out and been actively implementing a system of government support measures for this economic sector. State regulation of SME involves budget subsidization; preferential taxation; expanding access to public procurement and real estate; creating and maintaining investment and lending funds, business incubators, consulting centers, and other measures (Bogachkova et al. 2017).

Over the past 6 years, a number of fundamental documents on strategic planning for SME development have been adopted in the Russian Federation, such as Subprogram 2 "Development of small and medium entrepreneurship" of the State program of the Russian Federation "Economic development and innovative economy" (Subprogram-2 2014); the Strategy for SME development in the Russian Federation for the period until 2030 (Strategy-2030 2016); the National project "Small and medium-sized enterprises and support for individual entrepreneurial initiative" (hereinafter – the National project) (National project 2018). However, target indicators used in the above documents and in State programs for SME development are not always consistent with each other (Barinova et al. 2018).

SME regulation at the regional level plays important role, and, in 2019, indicators of Russian regions' SME development were included in the criteria for evaluating the effectiveness of governors' activities by the Presidential decree (Presidential Decree 2019).

Sustainable development of the SME sector is of special importance for the Volgograd region, since in the mid-2010s the economy of this region has been characterized by the signs of decline. Since 2014, the State program "Economic development and innovation economy", which includes the subprogram "Development and support for small and medium enterprises in the Volgograd Region" (State program 2017), has been implemented in the region. Over the period of 2015–2017, hundreds of millions of rubles were allocated from federal and regional budgets and spent on implementation of this program (Table 1).

Evaluating the effectiveness of financial support provided to SME in constituent entities of the Russian Federation requires introducing unified criteria, indicators and

Table 1. Total volumes of subsidies provided by State budgets for SME support in the Volgograd region (mln rub. in current prices)

Financial resources	2015	2016	2017
Federal budget	297.5 (of 2015) + 133.8 (remaining subsidies of 2014)	158.8	124.4
Regional budget	–	13.5	35.3

Sources: Report (2015); Report (2016); Report (2017); State program (2017).

methods into regional and municipal programs for SME development which are currently characterized by the lack of such uniformity (Kuznetsov and Bykova 2017). In these conditions, the Accounts Chamber points to inefficiency of budget funds' spending on SME support revealed by its auditors (Report 2018).

This makes urgent the problem of evaluating the effectiveness of SME sector regulation in the Volgograd region on the basis of analysis of SME development trends' compliance with those targets that can ensure the achievement of target indicators included in strategic planning documents. This work represents the authors' contribution to solving this problem through analysis of the Volgograd region' SME sector development in 2014–2017 with a view to its compliance with those targets that can ensure the achievement of the target indicators of the Strategy for SME development in the Russian Federation for the period until 2030 (Strategy-2030 2016).

2 Methods and Materials

The research is based on the general scientific methods of analysis and synthesis, descriptive statistics and comparative analysis, graphical and tabular visualization of results. The statistical data have been provided by Federal State Statistics Service (Rosstat), Unified Interdepartmental Statistical Information System (UISIS), Unified Register of Small and Medium Enterprises of the Federal Tax Service of the Russian Federation (Unified Register of SMEs). To reveal trends in the dynamics of SME total turnover in real terms, and its sectoral structure and components differentiated by type of economic activity, the index approach has been used. Empirically identified trends have been investigated with a view to their compliance with targets calculated in accordance with target indicators of the Strategy for SME development in the Russian Federation until 2030. We have also used materials of the National project “Small and medium entrepreneurship and the support for individual entrepreneurial initiatives”; regional State programs for region's SME support, and reports on their implementation; report of the Accounts Chamber of the Russian Federation of 2018.

3 Results

We have investigated key target indicators (Table 2) and calculated average annual targets of the Strategy for SME development in the Russian Federation for the period until 2030 on the basis of available official statistical data on SME development in the Volgograd region.

Table 2. Target indicators and average annual targets of the Strategy for SME development in the Russian Federation for the period until 2030

Target indicator	Actual value in 2014	Expected value in 2030	Target – annual increment (on average over the period)
SME turnover	100% (in prices of 2014)	250% (in prices of 2014)	Increment to the values of previous year in real terms: – by 5.9% from the value of previous year; – by 9.4% from the value of 2014
SME share in GDP	20%	40%	Average increment by 1.25% per year
Share of manufacturing industry in the SME turnover excluding individual entrepreneurs	11.8%	20%	Increment of manufacturing industry share in the annual turnover of the SME sector excluding individual entrepreneurs: – by 0.5% per year Increment of manufacturing industry turnover in the SME sector excluding individual entrepreneurs: – by 9% per year (in fixed prices of 2014)

Source: compiled on the basis of Strategy-2016 data (as regards target indicators) and authors' calculations based on these data (as regards targets).

The SME sector turnover is one of the main indicators of SME development in the Russian Federation. It is calculated as the sum of turnovers of medium, small and micro enterprises (legal entities) plus the revenue of individual entrepreneurs (Barinova et al. 2018). Turnover dynamics characterizes business activity of the SME sector.

SME Turnover Growth Trend and Increase in the Share of This Sector in the GRP

Figure 1 shows the dynamics of SME turnover in the Volgograd region as compared to the GRP dynamics. As we can see, business activity of the SME sector in real terms had been increasing in the conditions of the GRP reduction. Average annual increment of SME turnover made 12.33% from the value of 2014 that significantly exceeded the strategic target of 9.4% (Table 2). At the same time, the GRP in fixed prices of 2014 decreased by 6%. Multidirectional dynamics of SME business activity, on the one

hand, and regional economy, on the other hand, accelerated the rates of SME sector growth in the GRP of the Volgograd region. It should be noted that values of this share as a target indicator may be increased not only through SME turnover growth, but also as a result of GRP reduction. Consequently, this indicator should be used together with other indicators and targets so as to avoid incorrect conclusions.

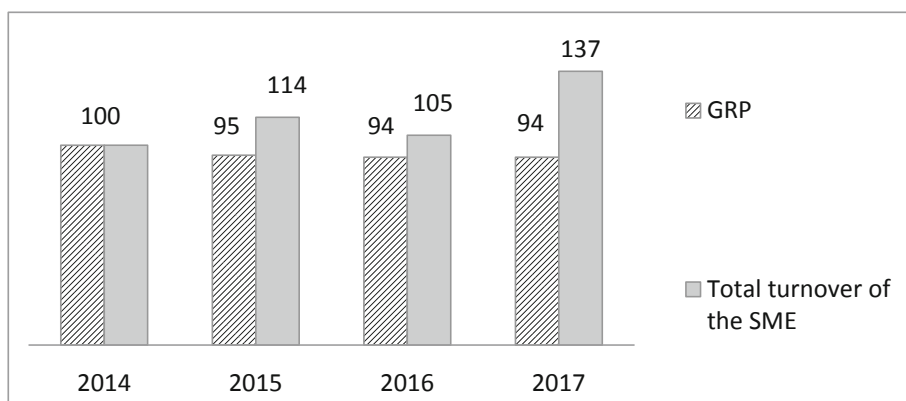


Fig. 1. Dynamics of SME turnover and GRP of the Volgograd region over the period of 2014–2017 (in fixed prices of 2014; in % of the level of 2014). Source: based on authors' calculations built upon Rosstat's official data.

SME Sector's Structure and Diversification of Rates of SME Turnover Increment by the Types of Economic Activity

Rosstat's official data allow for studying 8 gradations of sectoral structure of the Volgograd region's SME turnover:

- agriculture, hunting and forestry, fishing and fishfarming;
- extraction of mineral resources;
- manufacturing industry;
- construction industry;
- wholesale and retail trade, repair of motor vehicles and motorcycles;
- transportation and storage;
- real estate transactions;
- other types of entrepreneurial activity.

Table 3 presents the results of SME turnover structural shifts' estimation based on calculation of the Ryabtsev index (Shmoylova et al. 2003) having values from 0 to 1. The lower the level of difference between two structures, the closer to zero the value of this index.

Table 3. Estimates of structural shifts of the Volgograd region's SME turnover

Period	2014–2015	2015–2016	2016–2017
Ryabtsev index	0.1084	0.0595	0.0633
Level of difference between structures	Low	Very low	Very low

Source: calculated by the authors on the basis of Rosstat's official data.

As shown in Table 3, the level of difference between the SME turnover's structures was low and very low over every two consecutive years during the period from 2014 to 2017. Consequently, the structure of SME sector did not undergo substantial changes over the period under study (Fig. 2).

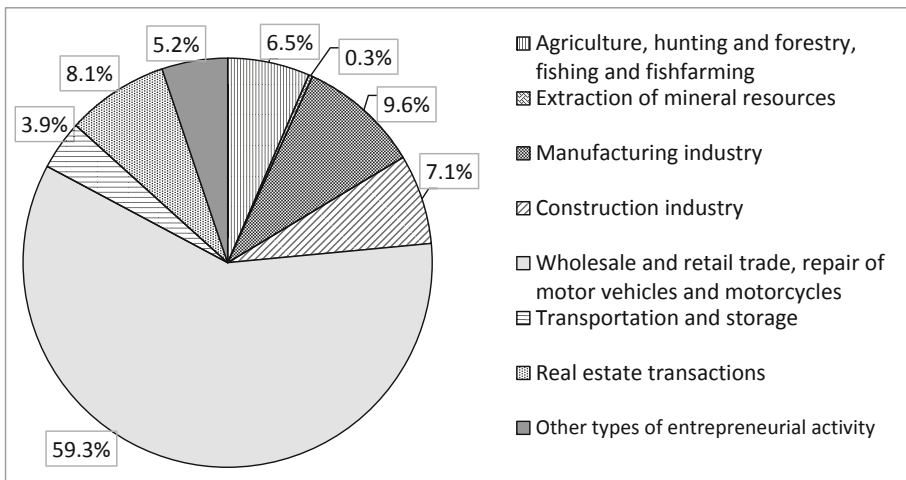


Fig. 2. Structure of the Volgograd region's SME turnover (on average over the period of 2014–2017). Note: the separator of the integer and fractional parts of numbers is a comma, not a dot on the diagram. Source: calculated by the authors on the basis of Rosstat's official data.

The largest contribution (59.3%) to the SME turnover's structure was made by the subsectors of trade and repair of motor vehicles and motorcycles, while the smallest one (0.3%) – by extraction of mineral resources. Shares of other subsectors varied from 3.9% (transportation and storage) to 9.6% (manufacturing industry).

Average annual growth rates of turnover of the SME subsectors diversified by economic activities are shown in Fig. 3. As we can see, the SME turnover in all industries, excluding extraction of mineral resources, was increased. Intensified business activity in agriculture, construction and rendering of services (with the exception of trade, transportation and storage, and real estate transactions), was observed both among SMEs (increment in gradations of the SME turnover structure) and in the regional economy in general (increment in gradations of the GRP structure). Business activity of

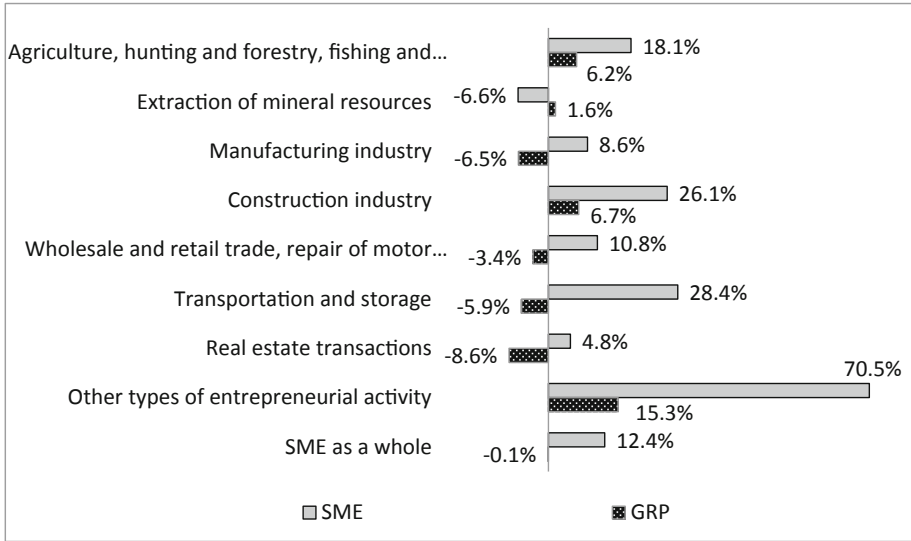


Fig. 3. Average annual growth rates of GRP and SME turnover diversified by the types of economic activity in fixed prices over the period of 2014–2017. The case of the Volgograd region. Note: the separator of the integer and fractional parts of numbers is a comma, not a dot on the diagram. Source: based on authors' calculations built upon Rosstat's official data.

SME in manufacturing, trade, transportation and storage, and real estate transactions increased due to reduced gross output in the industry as a whole.

The share of manufacturing in the SME turnover (Figs. 2 and 3) is shown taking into account individual entrepreneurs' revenues. On average, from 2014 to 2017, it had made 9.6%, with annual increase by 6.8%. This may be considered as a positive trend against the background of reduced contribution of the manufacturing industry (in general) to the region's GRP.

However, comparing the trends of SME development in the manufacturing industry with the corresponding target value (Table 2) requires excluding individual entrepreneurs' revenues from the SME turnover. Strategic target for the indicator "share of manufacturing industry in the SME turnover excluding individual entrepreneurs" was an increase by 0.5% per year, starting from a baseline of 11.8% in 2014. As a result, by 2017, the value of this indicator should have approached the value of 13.3%.

Actual value of the share of manufacturing industry in the SME turnover excluding individual entrepreneurs in the Volgograd region was 12.4% in 2014, which exceeded the value of this share on average in the Russian Federation (11.8%). However, by 2017, the actual value of the share under consideration dropped to 10.2%, which was significantly lower than the strategic target (13.3%).

Thus, the manufacturing industry has been characterized by negative development trends, both in the sector of regional economy (as a whole) and in the corresponding

SME subsector. Dynamics of the manufacturing industry's contribution to the SME total turnover (excluding individual entrepreneurs) deviates significantly from strategic targets. To achieve the target value (20%) of this indicator by 2030, it is necessary to develop special measures aimed at overcoming this trend.

4 Discussion

Due to objective reasons, the calculation results are characterized by some degree of inaccuracy. The fact is that in 2016 in the Russian Federation the criteria for classifying companies as small enterprises were amended in terms of increasing the upper limit of their annual income (Federal Law 2019). As a result, the number of SMEs as well as the total turnover of this sector increased sharply, since the status of medium enterprises was acquired by companies that had not previously been assigned to this sector. Besides, the classification of SME economic activities was adjusted, which led to the problem of "linking" the old and the new list. Despite this, the results obtained can be considered as an approximate estimation of conformity of the identified trends in the dynamics of SME turnover's volume and structure with the strategic targets for development of the sector.

5 Conclusion

Over the period of 2014–2017, the turnover of SME in the Volgograd region in real terms grew by an average of 12.33% per year from the level of 2014, which significantly exceeds the strategic target (an average of 9.4% per year from the level of 2014). The target indicator "share of SME in the region's GRP" was growing even faster, since the GRP of the Volgograd region was declining in real terms. Since the values of this indicator can grow not only due to expansion of the SME sector, but also due to a decrease in GRP, it should be used together with other targets and target indicators.

SME sector's structure in the Volgograd region over the period of 2014–2017 did not undergo significant changes. The largest contribution to the SME turnover structure in the region (59.3%) was made by the subsector of trade and repair of motor vehicles and motorcycles, and the smallest contribution (0.3%) was made by extraction of mineral resources. The shares of other subsectors varied from 3.9% (transportation and storage) to 9.6% (manufacturing industry).

Actual value of the share of manufacturing industry in the SME turnover excluding individual entrepreneurs in the Volgograd region was 12.4% in 2014, which exceeded the value of this share on average in the Russian Federation (11.8%). However, by 2017, the actual value of the share under consideration dropped to 10.2%, which was significantly lower than the strategic target (13.3%). To achieve the target value (20%) of this indicator by 2030, it is necessary to develop special measures aimed at overcoming this trend.




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Government Support of Small and Medium-Sized Enterprises as a Factor of the Competitiveness Strengthening of Russia

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Abstract. Purpose: The aim of this study is to devise the practical recommendations on developing government financial support as a factor responsible for the small and medium-sized enterprises enhancement in the Russian Federation.

Design/Methodology/Approach: In this study, the authors used systems, economic and statistical analysis and the dialectical method realized through general scientific methods and techniques.

Findings: The sustainability and competitiveness of the small and medium-sized enterprises can be ensured by encouraging the government financial support for the aforementioned segments of the economy in terms of the lack of financial resources. However, in the Russian Federation and its regions, the current support programs of this kind do not let realize the financial potential of the government support. This article provides statistical data analysis on the modern practices of the government financial support for the small and medium-scale entrepreneurship. The SWOT-analysis of the development of this segment of the economy was conducted, which revealed the perspectives for the government financial support for this segment.

Originality/Value: A range of legislative, organizational, financial and economic measures have been suggested in order to obtain high-quality results of the Russian government financial programs of the small and medium-sized enterprises support.

Keywords: Financial support · Small business · Medium-scale business · Government · Region

JEL Code: E62 · G32 · G38

1 Introduction

Under market conditions, the small and medium-sized enterprises (SMEs) are the crucial institutions, which ensures social and economic development of the modern state. This institution is mobile enough, resilient, and active in terms of innovation implementation, able to create new industries and job opportunities. Nevertheless, it is highly sensitive to the external situation, which is sometimes characterized as quite

mobile and volatile, and this may lead to substantial adverse impact on the entrepreneurial activity. Given this background, as well as the risk character and the peculiarities of the financial management in the SMEs it is important to develop and implement the government financial support programs, which will foster the sustainability and competitiveness of the small and medium-scale businesses. Besides, this support should be complex, timely, and corresponding with the current stage of entrepreneurial activity development. On the whole, the government financial support for the SMEs can be regarded as a means of the government incentive which is applied through direct and indirect financial instruments under government (municipal) programs (subprograms) for the development of the given economic sector following the principles of targeting, availability, transparency, effectiveness, and efficiency.

In the European Union, approximately 35 000 rub is allocated per one small and medium-scale business entity, while in Russia in 2018, the expenditure was only 830 rub. In its turn, insufficient and decreasing financing of the small and medium-scale business (e.g. in 2015, 16.9 bln rub was allocated within Russia's 85 federal subjects, while in 2018, the expenditure was only 5.02 bln rub) means that the effectiveness of this mechanism is in peril. In terms of budget underfunding, the focus of the local authorities is on providing information and advisory support when implementing government (municipal) programs (subprograms) for the development of the small and medium-scale businesses. Consequently, it is impossible to draw conclusions about the breakthrough in the development of the given economic sector according to the key indicators (e.g. these key indicators are the share of SMEs in GDP; the number of small and medium-scale business entities for one hundred inhabitants). According to these indicators, Russia significantly falls behind the leading foreign countries.

Thus, nowadays there is an urgent need in creating a set of measures for developing the current mechanisms of the government financial support for the SMEs in the Russian Federation. These measures are aimed at increasing the sustainability and competitiveness of the given economic sector.

2 Materials and Method

The methodological framework of the study is based on modern authors' theoretical and applied research on the issues of development and implementation of the government financial support programs for the SMEs as well as the information found in the periodical press and on the Internet (Park et al. 2019; Chernenko and Chernenko 2016; Gorfinkel 2014; Inshakov 2018; Ismagulov 2015; Kondrakov 2017; Kryshtalyov et al. 2015; Zabolotskaya 2015). In this research, we used systematic, economic and statistical analysis and the dialectical method that was realized through general scientific methods and techniques (observation, synthesis, comparison, grouping, consolidation of theory and practice).

The SWOT-analysis was conducted in order to define the perspectives for the government financial support as a factor responsible for the SMEs enhancement. This method enabled us to determine strengths and weaknesses, opportunities and threats in the given economic sector performance.

3 Results

The analysis of the statistical data that we have conducted on the current implementation of the government financial support programs has helped draw the following conclusions:

- The federal budget resources from the government program ‘Economic development and innovative economy’ used to finance the SMEs enhancement were not fully exploited (in 2014–2017, 120.5 bln rub was allocated from the federal budget which accounts for 98% of exploitation);
- The transparency principle of the budget system is not fulfilled in Russia. The government program ‘Economic development and innovative economy’ includes the major measures for the SMEs improvement on the federal level. In terms of the budget classification, under this program only, the budget funds are allocated for the government financial support of SMEs (The Government Decree 2014). However, government financial support is executed under other government programs. As a consequence, it seems impossible to identify the corresponding expenditures;
- The procedure for establishing the planned characteristics for the SMEs development in the regions does not correspond with the quantity of allocated budget resources. Thus, there is no correlation between the number of new job opportunities, created in this economic sector, and the provided amount of subsidy. For example, under the plan for creating 73 workplaces, 209 mln rub was allocated for Adygea, while 9 mln rub was allocated for Yamalo-Nenetsky Avtonomny Okrug under the plan for creating 81 workplaces (Accounts Chamber of the Russian Federation 2019);
- The procedure for allocating the subsidies from the federal budget does not ensure a level playing field for the SMEs growth in the regions. Thus, in 2014–2016, more than 20% of the subsidies from the federal budget was allocated only in five regions out of 85. In 2017, approximately 40% of the subsidies accounted for 11 regions;
- The credit support for the SMEs is not sufficient enough. More than that, it had been decreasing in 2015–2017. The percentage of the credits guaranteed under the National guarantee system is low: as of 1 January 2016, it was 1.5%, and as of 1 January 2018, it was 4.8%.

In terms of the results of the government financial support for the SMEs implementation in Russia’s regions, it is possible to define problem areas. Thus, it can be concluded that the targeted indicators of the sustainable development of the given economic sector are not reached. We will take the Volgograd region as an example.

The Volgograd region ranked the fourth in the Southern Federal District according to the number of the small and medium-scale businesses, 96% of which account for micro-business (The Single Registry of SMEs 2019). According to the production (services) turnover per capita produced by small enterprises in all Russian regions, the Volgograd region resides in the 58th place (Regional economy research center 2019). The conducted analysis proves that the aim of the ‘Economic development and innovative economy’ program in the Volgograd region has not been reached and the sustainability of the SMEs development has not been ensured (The Decree 2013; The

Decree, 2017). Thus, compared to 2015 and 2016, in 2017, the number of the small and medium-scale enterprises dropped by 0,8 and 3.8 thousand units, respectively; the average number of workers employed in the small and medium-scale enterprises decreased from 164.9 thousand people in 2015 to 157.4 thousand people in 2017; etc.

It is crucial to mention that in 2015–2017, there was a decrease in resource allocation for the SMEs progress under the ‘Economic development and innovative economy’ program in the Volgograd region. In 2015, it was 484.5 mln rub; in 2016, it was 172.3 mln rub (−64.4%); in 2017, it was 159.4 mln rub (−7.5%) (The Chamber of Audit 2019). In addition, there were also the following adverse circumstances:

- A set of targeted indicators of this program does not include individual indicators that characterize the effectiveness of the federal funds use; in the effectiveness evaluation of this program, the individual indicators were not assessed;
- There was no effectiveness evaluation of the budget funds use for loans for the small and medium-scale enterprises and this indicates a formal approach to evaluating this instrument of the SMEs growth;
- Since the Economic policy and Development Committee in the Volgograd region has not conveyed the planned indicators for the effectiveness of the subsidy implementation to the Microfinance Center and Guarantee Fund, there was no effectiveness evaluation of the previously granted funds.

All things considered, we can draw the following conclusion: the government financial support for the SMEs on the federal and regional levels cannot currently be called effective. Moreover, the adverse effect increases due to such factors as the lack of the loan sources, high tax and administrative burden, the unjustified use of the criminal code, the low level of potential recipients’ awareness of the support procedure; etc.

For solving the current problems and defining the perspectives of the government financial support for the SMEs, we have used the SWOT analysis to define:

its strengths (mobility; resilience; orientation towards innovation; autonomy in decision-making and realization; high motivation in creating family enterprises, farms; possessing the manufacturing knowledge and skills; eagerness to obtain them),

weaknesses (the dominance of non-market psychology; the low level of financial and legal literacy; restrained seed capital; the low level of trust of the financial institutions which restrains the availability of the funding sources),

opportunities (using government support mechanisms; occupying the available niche; ensuring sustainability with regard to the individual peculiarities of the potential consumers and the specificity of the regional market),

and threats (the economic and political instability; the decrease of consumer demand; the increasing costs).

The threats, which were revealed with the help of the SWOT analysis, defined the area for development. Thus, the authorities through affecting the external environment should create the conditions necessary for the SMEs progress. Consequently, it will minimize these threats and ensure the opportunities.

The numerous weaknesses and threats are conditioned by the following barriers: legislative (deficiencies in the tax legislation; the low level of the legal protection of the business enterprises; etc.), organizational (administrative barriers in for the

entrepreneur; corruption; etc.), financial and economic (high costs of bank credits and increased demands for loans; underdevelopment of the alternative sources of financing; etc.).

In its turn, not only do the barriers have the legislative, organizational, and financial and economic character, but also the growth points of the effectiveness of the small and medium-scale businesses, namely:

- the surveillance and implementation of the legislative framework for the entrepreneurship; ensuring the protection of the entrepreneurs' rights and legitimate interests; the improvement of the tax legislation for the SMEs with a view to optimizing its tax burden;
- the decrease in the number of inspection visits; implementing the modern international practices to change the mandatory requirements and regulation models for entrepreneurship; holding officials accountable for interference with the entrepreneurial activity; the removal of redundant reporting and implementing modern electronic slotting systems; increasing the awareness of the potential recipients in terms of the government support and its types;
- ensuring the completeness of the budget funds use provided for the SMEs growth; allocating the budgetary expenditure for the government support of the SMEs in the budget reporting according to the current budget classification and all government programs with a view to ensure the transparency principle; establishing the planned characteristics for the SMEs development in the regions in accordance with the amount of allocated funds; ensuring the universal pattern for the subsidy allocation and creating equal conditions for the SMEs progress in the regions; ensuring the availability of different financing resources through developing the credit standards, adjusting the program of lending stimulation in the high-tech industries, increasing the guarantee and surety status of the SME Corporation (SMEs Corporation 2019) and JSC "MSP Bank" (JSC "MSP Bank" 2019), etc.

For the Volgograd region, in particular, it is important to include the individual indicators (that characterize the effectiveness of the budget funds use) in the Volgograd region's government program 'Economic development and innovative economy'. In addition, it is important to assess the effectiveness of the budget funds use for the microlending for the SMEs in the region as well as to inform the Microfinance center (The government fund 2019) and the Guarantee fund (The Guarantee fund 2019) about the planned indicators of the effectiveness of the use of subsidies.

The increase of the economic activity of the SMEs in the regions can be ensured by creating a favorable environment for the entrepreneurship. This implies implementing a set of measures:

- the promotion of the entrepreneurship among the region's population;
- the organization of themed conferences, seminars and round tables on the entrepreneurship development in the region;
- the creation of the matrix of the consumed (manufactured) goods and services in the region;
- providing preferential sales points at trade fairs for particular categories of the regional (local) manufacturers.

We should also mention that it is crucial to ensure the government financial support for the SMEs that create highly productive jobs and specialize in areas crucial for the social and economic development of the region. For these businesses, it is advisable to set more preferable tax conditions with regard to the limits of the Tax Code of the Russian Federation.

All in all, the balanced interests of the state and business should be viewed as a basis for the improvement of the tax legislation of the government financial support for the small and medium-scale businesses. Nowadays, there is an urgent need to shift from the overused fiscal function of the tax regulation to the socially stimulating function, which will ensure the sustainability and competitiveness of the entrepreneurship.

In our opinion, the current state of the development of the government financial support programs for the SMEs in the Russian regions is adapting to the changing social and economic relationships. Thus, in order to improve the performance of this institution, it is crucial to reduce (eliminate) the weaknesses and threats for the SMEs while ensuring the successful use of the opportunities.

4 Conclusion

The analysis of the statistical data on the implementation of the government financial support for the SMEs in Russia in 2014–2017 helped us draw the following conclusions:

- the incomplete use of the budget funds provided for the SMEs growth;
- the failure to follow the transparency principle of the budget system in the Russian Federation;
- the lack of correlation between the procedure for setting the planned characteristics for SMEs development and the amount of the allocated funds;
- the failure to provide equal conditions for the SMEs progress in the regions when distributing the subsidies;
- the low level of the government credit support.

During 2015–2017 in the Volgograd region (which is the fourth in the Southern Federal District according to the number of the small and medium-scale businesses), there had been a decrease in the budget expenditure on the SMEs development. In addition, we have defined the following adverse factors:

- the individual indicators of the effectiveness of the budget funds use were not included in the set of planned indicators;
- the assessment of the effectiveness of the budget funds use for microlending and the effectiveness of the budget funds use provided for the Microfinance center and the Guarantee fund was not conducted.

With the help of the SWOT analysis, we can conclude that it is crucial to create the necessary conditions for the SMEs growth, which will help minimize the threats and create the opportunities when providing the government financial support.

We suppose that obtaining high quality results of the government financial support programs as a factor responsible for the development of the given economic sector

necessitates implementation of a range of legislative, organizational, and financial and economic measures, namely:

- Improving the legislative framework on the tax regulation,
- Providing legal protection for the small and medium-scale businesses,
- Removing the administrative barriers and to eliminate the corruption in business activities,
- Following the transparency principle,
- Ensuring equal opportunities for receiving the budget funds,
- Providing diversity and availability of the sources for the SMEs funding.

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On the Impact of Logistics Infrastructure of the Far Eastern Federal District on the Economic Indicators of the Region and the Russian Federation

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Abstract. Purpose: To uncover the impact of the Far Eastern Federal District logistics infrastructure on the regional economic indicators and general economic condition of the Russian Federation.

Design/Methodology/Approach: As indicators of the logistics infrastructure, parameters of the main (transport) and supporting (financial, information) infrastructures were selected. Multivariate multiple regression analysis performed using the IBM SPSS Statistics 20 application software package was performed using the data covering the period between 2004 and 2016. In order to eliminate redundant variables, an analysis was carried out to assess the quality of the selected independent indicators.

Findings: The linear model of multiple regression can be meaningfully interpreted for all the economic indicators of the Russian Federation and the Far Eastern Federal District. According to the models proposed, the transport (air and water) infrastructure of the Kamchatka Kray, the volume of foreign investment in the Sakhalinskaya Oblast' and the volume of exported goods from Sakha Republic and the Sakhalinskaya Oblast' have been identified as having the biggest impact on the dependent variables.

Originality/Value: The logistics infrastructure development programs proposed for these territories of the Russian Federation will contribute to the improvement in their social and economic development and enhance its attractiveness for business.

Keywords: Investment development program · Economic indicators · The Far Eastern Federal District · Logistic infrastructure · Linear model of multivariate regression

JEL Classification: R120

1 Materials

Russia's territorial development strategy defines key concerns and areas of priorities in the development of the country and sets goals for progress in the directions identified. As one of the challenges that requires urgent measures, it underlines infrastructural

constraints in the federal districts of Russia. Insufficient quality of transport infrastructure and lack of storage facilities are determined as the main factors of limitations in the country's transit potential that impede the flow of goods. Thus, elimination of infrastructural limitations on the federal and regional levels that will enhance a competitive advantage of the Russian Federation by facilitating access to the energy, telecommunications and transport sectors is defined as strategic goal for the territorial development of the Russian Federation.

To reach the desired goals, strategic planning documents proposed by the Government of the Russian Federation approve national projects, programs, etc., the implementation of which will contribute to comprehensive development of the country's territories. With regard to the Far Eastern region, the Government of the Russian Federation approved "The Strategy for the social and economic development of the Far Eastern and the Baikal region for the period until 2025" (Strategy 2009), hereinafter referred to as Strategy, directed to avoid transformation of the Far Eastern and Baikal regions into a source of energy and raw materials for the countries of the Asia-Pacific region. Within the framework of this Strategy, key goals have been identified, implementation of which will strengthen competitiveness of the region, eliminate the territorial imbalance in transport and energy infrastructure development and enhance its attractiveness for business.

The Strategy defines strategic projects for the development of transport infrastructure and improvement in the quality of transport and logistics services as the main investment programs for the development of the Far Eastern and the Baikal region. Despite the fact that the territory of the region is a link between Europe and Asia as Euro-Asian transport routes pass through it, the transport infrastructure in the region functions at the limit of its capacity and lacks adequate quality.

In order to identify strategic priorities for the development of transport and logistics infrastructure in the regions under study, the authors consider the interdependence between the key indicators of the logistics infrastructure of the Far Eastern Federal District and the economic indicators of the Russian Federation (Tatarkin 2016; Dybskaja 2005).

2 Methods

Based on Multivariate Multiple Regression Analysis and Multiple Dispersion Analysis, a linear model between dependent and independent variables was built in order to determine indicators that have the biggest impact on the economic indicators of the Russian Federation and the Far Eastern Federal District. The calculation was carried out using the automated linear modeling function of the IBM SPSS Statistics 20 program. As a research method, an incremental selection method was applied (Dubrov et al. 2000; Preusser et al. 2005).

The analysis can be described as follows. First, the indicators of the logistics infrastructure were checked against the normal distribution function using the Kolmogorov-Smirnov criterion to eliminate redundant independent variables. Those for which the distribution of values did not match the normal distribution were excluded from further consideration. Secondly, the Pearson correlation coefficient was

calculated for the economic indicators of the Russian Federation, the Far Eastern Federal District and the logistics infrastructure parameters. If no relationship between the variables was observed independent indicators were excluded from further calculation. Finally, an intercorrelation matrix was constructed to check multicollinearity of the variables. As a result, logistics infrastructure indicators with linear correlation coefficient values in excess of 0.7 were excluded from further calculation.

3 Introduction

Logistics infrastructure plays a crucial role in the social and economic development of the regions. If it has adequate quality it enhances investment attractiveness by providing comprehensive freight forwarding services, enabling redistribution of goods flows with minimum total costs. Logistics infrastructure contributes to population mobility and traffic integration both within a particular region and a country. Adequate logistic infrastructure will substantially increase the demand for international transit shipments through the Russian Federation.

Logistic infrastructure comprises the main and supporting (auxiliary) components. The first one is usually attributed to transport infrastructure (facilities and objects) and storage infrastructure. The supporting component is formed by information infrastructure and financial infrastructure (Prokof'eva 2009; Miranda and Garrido 2009). As development of logistics infrastructure requires significant expenditure, an emphasis should be placed on the development of those infrastructure facilities that have the biggest effect on the social and economic indicators of the region and the Russian Federation.

The following independent economic indicators for the period between 2004 and 2016 were selected as the main indicators of logistics infrastructure (Dybskaja 2011; Prokof'eva and Sergeev 2012; Sergeev 2012; Polyakova and Simarova 2014):

weight of seaborne freight, thousand ton (x_1);
 railways, passengers carried, thousand passenger (x_2);
 railways, goods transported, million ton (x_3);
 a number of transport companies and organizations, pcs. (x_4);
 road transport, passengers carried, thousand passenger (x_5);
 cargo shipment by truck, million ton (x_6);
 air transport, passengers carried, thousand passenger (x_7);
 air transport, goods transported, ton (x_8);
 imported goods, million dollar (x_9);
 exported goods, million dollar (x_{10});
 industrial production index, % (x_{11});
 water transport, passengers carried, thousand passenger (x_{12}).

The following indicators were selected as the characteristics of the financial and information components of the logistics infrastructure:

foreign investment, million dollar (x_{13});
 the number of companies providing financial services, pcs. (x_{14});

the number of companies using IT, pcs. (x_{15}).

The key (resulting) economic indicators of the Russian Federation/Far Eastern Federal District were:

gross domestic product (GDP)/gross regional product (GRP), billion/million ruble y_1/y_4 ;

fixed investment, billion/million ruble $\mathbb{E}(y_2/y_5)$;

consolidated budget revenues, billion/million ruble y_3/y_6 .

4 Results

On the independent variables being checked for redundancy, a linear model of multiple regression was built for all the economic indicators. According to the calculation results (Table 1), the linear model of multiple determination can be meaningfully interpreted for all the economic indicators of the Russian Federation and the Far Eastern Federal District, since the adjusted R-square is at least 90.

Table 1. The model data

Dependent variable	R	R - square	Adjusted R - square	Standard assessment error	F-Fisher's	Value
The Russian Federation						
y_1	0,999	0,998	0,997	1329,2	1308,85	0,0001
y_2	0,99	0,979	0,972	690,96	141,05	0,0001
y_3	0,992	0,984	0,977	1160,47	125,93	0,0001
The Far Eastern Federal District						
y_4	0,994	0,988	0,983	50322,86	197,99	0,0001
y_5	0,984	0,977	0,971	10231,12	152,26	0,0001
y_6	0,986	0,972	0,961	26943,31	86,883	0,0001

The values of the coefficients for the variables of the logistics infrastructure, Student's t-test and significance levels are presented in Table 2.

Table 2. Co-efficient values

Dependent variable	Indicators	Co-efficient	Significance	Value
Russian Federation				
GDP, billion ruble	Independent variable	-11011,771		0,001
	Air transport, goods transported, ton, Kamchatka kray	0,089	0,428	0,0001
	Foreign investment, million dollar, Sakhalinskaya oblast'	6,59	0,345	0,0001
	Exported goods, million dollar, Sakhalinskaya oblast'	1,452	0,227	0,0001

(continued)

Table 2. (continued)

Dependent variable	Indicators	Co-efficient	Significance	Value
Fixed investment, billion ruble	Independent variable	-20968,745		0,0001
	Number of transport companies and organisations, pcs. Kamchatka kray	18,684	0,814	0,0001
	Road transport, passengers carried, thousand passenger, Sakha Republic	0,046	0,065	0,008
	Railways, goods transported, million ton, Khabarovskiy kray	0,445	0,047	0,017
	Imported goods, million dollar, Kamchatsky kray	20,009	0,039	0,025
	exported goods, million dollar, Primorsky kray	0,533	0,034	0,032
Consolidated budgets revenues, billion ruble	Independent variable	-9542,852	-	0,0001
	Foreign investment, million dollar, Sakhalinskaya oblast'	2,441	0,642	0,0001
	Exported goods, million dollar, Sakhalinskaya oblast'	0,418	0,143	0,001
	Exported goods, million dollar, Sakha Republic	1,873	0,128	0,001
	Exported goods, million dollar, Amurskaya oblast'	15,393	0,087	0,004
The Far Eastern Federal District				
GRP, million ruble	Independent variable	-814858,921		0,0001
	Air transport, goods transported, ton, Kamchatka kray	4,377	0,471	0,0001
	Foreign investment, million dollar, Sakhalinskaya oblast'	304,901	0,412	0,0001
	Weight of seaborne freight, thousand ton, Kamchatka Kray	591,691	0,069	0,001
	Exported goods, million dollar, Sakhalinskaya oblast'	35,973	0,048	0,003

(continued)

Table 2. (continued)

Dependent variable	Indicators	Co-efficient	Significance	Value
Fixed investment, million ruble	Independent variable	-1753752,363		0,0001
	Foreign investment, million dollar, Sakhalinskaya oblast'	139,028	0,274	0,0001
	Exported goods, million dollar, Sakha Republic	105,1	0,265	0,0001
	Weight of seaborne freight, thousand ton H, Kamchatka kray	465,939	0,211	0,0001
	Weight of seaborne freight, thousand ton, Khabarovsky kray	104,822	0,122	0,001
	Road transport, goods transported, million ton, Sakha Republic	15205,719	0,09	0,001
	Road transport, passengers carried, thousand passenger. Sakha Republic	5,39	0,038	0,01
Consolidated budget revenues, million ruble	Independent variable	-164380,125		0,13
	Foreign investment, million dollar, Sakhalinskaya oblast'	67,083	0,464	0,0001
	Carriage of goods by air, ton Kamchatsky kray	0,83	0,394	0,0001
	Weight of seaborne freight, thousand ton, Kamchatka kray	127,604	0,075	0,016
	Exported goods, million dollar, Sakhalinskaya oblast'	8,875	0,067	0,02

According to the results obtained (Table 2), the values of linear multiple regression coefficients should be interpreted as statistically significant as the significance level is below 5%.

As the analysis shows, GDP of the Russian Federation is mostly affected by the quality of the air transport infrastructure of the Kamchatka kray, as well as the volume of direct foreign investment in the Sakhalinskaya oblast'. Also, a close dependence was established between the size of investments in fixed assets and revenues of consolidated budgets; the transport infrastructure of the Kamchatka kray and the volume of direct foreign investments in the Sakhalinskaya oblast', respectively.

The indicators of the logistics infrastructure of the Far Eastern Federal District that have the biggest impact on the economic indicators of the region have been identified as follows: the transport infrastructure of the Kamchatka kray, the volume of direct foreign investment in the Sakhalinskaya oblast' and the volume of exported goods from Sakha Republic.

The linear model of multiple regression for the economic indicators of the Russian Federation and the Far Eastern Federal District can be represented as follows.

$$Y_1 = 0,089X_8 \text{ Kamchatka Kray} + 6,590X_{13} \text{ Sakhalinskayay Oblast'} + 1,452X_{10} \text{ Sakhalinskayay Oblast'} - 11011,771$$

$$Y_2 = 18,684X_4 \text{ Kamchatka Kray} + 0,046X_5 \text{ Sakha republic} + 0,445X_3 \text{ Khabarovsky kray} + 20,009X_9 \text{ Kamchatka Kray} + 0,533X_{10} \text{ Primorsky kray} - 20968,745$$

$$Y_3 = 2,441X_{13} \text{ Sakhalinskayay Oblast'} + 0,418X_{10} \text{ Sakhalinskayay Oblast'} + 1,873X_{10} \text{ Sakha republic} + 15,393X_{10} \text{ Amurskaya Oblast'} - 9542,852$$

$$Y_4 = 4,377X_8 \text{ Kamchatka Kray} + 304,901X_{13} \text{ Sakhalinskayay Oblast'} + 591,691X_1 \text{ Kamchatka Kray} + 35,973x_{10} \text{ Sakhalinskayay Oblast'} - 814858,921$$

$$Y_5 = 139,028X_{13} \text{ Sakhalinskayay Oblast'} + 105,1X_{10} \text{ Sakha republic} + 465,939X_1 \text{ Kamchatka Kray} + 104,822X_1 \text{ Khabarovsky kray} + 15205,719X_6 \text{ Sakha republic} + 5,39x_5 \text{ Sakha republic} - 1753752,363$$

$$Y_6 = 67,083X_{13} \text{ Sakhalinskayay Oblast'} + 0,83X_8 \text{ Kamchatka Kray} + 127,604X_1 \text{ Kamchatka Kray} + 8,875X_{10} \text{ Sakhalinskayay Oblast'} - 164380,125$$

5 Recommendations

An analysis of the results showed that in order to improve the social and economic situation of the Far Eastern Federal District, it is necessary, in particular, to implement a targeted program for the development of transport infrastructure in the Kamchatka Territory as the main economic indicators such as the GDP of the Russian Federation, investments in fixed assets, and revenues of consolidated budgets show strong correlation with the logistics infrastructure of this region. As has been found, the development of transport infrastructure will contribute to tourist attractiveness of the region and help implement large-scale investment projects in mining and processing industries.

A program for the development of the logistics infrastructure of the Sakhalinskaya oblast' will contribute to enhancing the investment attractiveness of the region that is due to its geographical location and hydrocarbon production and industrial projects. The implementation of the program will allow increasing the volume of foreign investments, which, according to the obtained models, will have a significant impact on the key economic indicators of the region.

A significant impact on the size of investments in fixed assets has the volume exported goods from Sakha Republic. The main exported goods are precious metals. The main exporting country is Belgium. Based on the fact that transportation costs comprise a rather substantial share in the overall cost, an improvement of the logistics infrastructure will reduce overall costs.

6 Conclusion

Based on the results of the study, the following conclusions have been drawn.

1. The transport infrastructure of the Kamchatka kray has the biggest impact on the GDP and investments in fixed assets of the Russian Federation. Consolidated budget revenues of the Russian Federation show dependence on the volume of foreign investment in the Sakhalinskaya oblast'.
2. A strong correlation was found between the GDP of the Russian Federation and consolidated budget revenues of the Far Eastern Federal District, transport infrastructure of the Kamchatka kray and the volume of foreign investment in the Sakhalinskaya oblast'.
3. The size of investments in fixed assets of the Far Eastern Federal District is most affected by the volume of foreign investment in the Sakhalinskaya Oblast' and the volume of exported goods from Sakha Republic.
4. To develop a strategy for the improvement of logistics infrastructure in the territories of the Far Eastern Federal District, models proposed in the papers (Ivut et al. 2016; Miretskiy et al. 2017; Popov et al. 2017; Popov et al. 2016; Johnson et al. 1999; Sebastian 2012) can be applied.

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Foresight Research of Reserves: Scale and Historical Conditions of Their Formation and Use

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Abstract. Purpose: To compare the total volume of the largest financial reserves created in the Russian economy to the size of the Federal budget and GDP.

Design/Methodology/Approach: The research methods applied included methods of measurement, statistical and historical comparison, and method of comparing vocabulary from different lexicographic sources. The authors claim that, due to the enormous size of modern financial reserves, there is a need to create an independent section in economic science devoted to studying the influence of the reserves on the economy, conducting a comparative analysis of the size of the reserves, developing their classifications etc.

Findings: In theoretical terms, reserves, including financial ones, have not yet been explored deeply enough. This applies to insufficiently accurate vocabulary definitions, which highlight mainly the insurance function of the reserves. In addition, the allocation of reserves to either income flows or expense flows is debatable. Reserves, and in particular, financial reserves form their own flow, which exists in parallel with the movement of income and expenses. Besides, there is neither any generalized statistic data of financial reserves, nor an independent code for them in the classification list of JEL (Journal of Economic Literature).

Originality/Value: The article offers (a) authors' definition of reserves that identifies their two key characteristics — the dispatch of a part of financial resources and temporary exclusion of this part from the current consumption by the owner of these resources, (b) calculations of the current volume of accumulated financial reserves of various types compared with the size of the Federal Budget and GDP, and (c) historical data about the financial reserves in the Soviet economy at the beginning of the 20th century, during and after World War II.

Keywords: Reserves · Reserve fund · Financial reserves · Development of the reserve system of the economy

JEL Code: E6 · H6 · N2

1 Introduction

The present foresight study of reserves is the authors' attempt to determine the approximate proportion of the reserves in the national economy, and to predict the direction of possible scientific research in this area. So far, the most relevant topics in this regard have been the specificities of the formation and use of a limited number of reserves and reserve funds. Moreover, they were studied in isolation from each other without taking into account the influence of the entire reserve mass on key macro indicators. Any reliable or at least once tested methods for determining the effect of reserves on the state of the economy are not yet available. There are also no approaches to reveal a correlation between sustainable economic growth and the presence of diverse financial reserves in the economy, as well as their volume.

2 Materials and Method

The study is based on statistical data and information on the movement of financial reserves in Russian state structures in different historical periods including analytical and reporting materials of the Ministry of Finance and the Central Bank of the Russian Federation (the Bank of Russia), as well as laws and regulations functioning on the federal level. The study applied methods of measurement, statistical and historical comparison, a method of comparing vocabulary from different lexicographic sources.

3 Results

Currently, we have found three approaches to the constructing of the definition of "reserve" in different dictionary entries. The first one, neutral, defines a reserve as a stock of various resources "in case of need; a source from which specially conserved resources are drawn in case of urgent need for their use" (The Economic Encyclopedia 1999, p. 667). The second approach highlights the narrow aspect of creating a reserve as it is defined in book keeping and accounting. In accordance with this approach, the reserve is the types of liabilities that characterize future expenses (The New Russian Encyclopedia 2003, p. 48–49). And finally, the third approach defines the reserve exclusively as a resource for risk management, and only financial reserves are empowered with such properties. In particular, the following interpretation of financial reserves is given in the Financial and Credit Economic Dictionary: "a special form of financial resources, established by state and municipal authorities and economic entities to be used in the event of unforeseen expenses and specific needs arising from the need to eliminate the negative consequences of accidental, unexpected events and circumstances" (Financial and Credit Encyclopedic Dictionary 2002, p. 1036). This interpretation is extremely common in economic scientific publications. In particular, it can be found in the monograph by V.N. Gorelik, who claims that all types of income in households and in the enterprise system fall into current consumption and savings.

He further believes that any savings are used either as investments or as reserves: “<...> savings are a kind of “financial reserves” of households designed to prevent various kinds of risks or cover the damage” (Gorelik 2012, p. 59).

However, our observations on the processes of formation and use of reserves in various industries and spheres of the economy show that the reserve is not merely and solely an instrument of protection against risks. The reserve has two important properties. Firstly, it is an independent flow of resources, which is allocated by its owner from their total mass. Secondly, this allocation temporarily excludes the reserved resources from the current consumption by its owner. All the main parameters of a moving flow called the “reserve” (its volume, speed, life cycle, storage, conditions of its placement in profitable assets, destination etc.) are set by its owner. If this is an individual, then, for example, he can either use it as a self-insurance tool for the risks he has, or buy foreign currency, and thereby ensure his participation in the so-called “capital outflow from the country” (now this process is called “financial operations of the private sector”, instead of “reserve”, by the Bank of Russia). Let us look at one more example. The state as the owner of the Pension Savings of the Pension Fund of the Russian Federation is developing special standards for the pension legislation regulating the ways of existence of this allocation, which is, in fact, a reserve.

In order to get an idea of the extent of monetary reserves alone in the domestic economy, it is necessary to have information about the largest types of reserves. In the

Table 1. Volume of various financial reserves in the economy of the Russian Federation

Type of reserve	Unit of measurement	Reserve value
National Wealth Fund (as of 1.01.2019)	Billion US dollars/Billion roubles	58.10/4 036.05
International reserves (for 28.12.2018)	Billion US dollars	466.9
Insurance reserves of all insurance companies (as of 31.12.2018)	Mln roubles	1 831 109.0
The authorized capital of all insurance companies (as of 31.12.2018)	Mln roubles	200 058.2
The balance sheet volume of the Deposit Insurance Agency (as of 1.01.2019)	Billion roubles	40.2
The amount of mandatory reserves in correspondent accounts (sub-accounts) of the Bank of Russia supported by credit organizations (the average value of the compulsory reserves) for the period 10.10.2018–06.11.2018	Billion roubles	2 210.1
Pension savings of the Pension Fund of the Russian Federation/Non-State Pension Funds	Trillion roubles	1.8/2.6
Savings of the population on bank deposits	Trillion roubles	21.79

Source: compiled by authors based on materials (Banks ru 2018; Falyakhov 2019; Profbanking.com 2019; The Bank of Russia 2018a, b, 2019a, b; The Ministry of Finance of Russia 2019).

table, we have listed the most significant reserve capacities in monetary terms. However, this is not the entire list of reserves, it does not contain information on reserves created by enterprises from unencumbered balances on their accounts, reserves of the Federal Compulsory Medical Insurance Fund, and the Social Insurance Fund. Nor did we include the reserve resources of Gokhran, the State Reserve of the Ministry of Emergencies, etc., although, having been measured in terms of value, they would have significantly increased the reserve volume. The table shows the data in those units of measurement and for those dates on which a particular reserve is registered by the financial regulator or the Ministry of Finance of the Russian Federation.

For comparison let's consider the data on the reserve volume of GDP and the Federal Budget of the Russian Federation for the year 2018. The former amounted to 103 trillion 626.6 billion rubles (Vesti. Economy 2019) while the Federal Budget for the year 2018 amounted to more than 19 trillion rubles of income (19 454 953.8), and expenses amounted to 16.71 trillion rubles. The surplus amounted to 2.745 trillion rubles (Tekhekspert 2019).

The approximate volume of all the reserves indicated in the table is 63.47 trillion rubles, which is more than half of the annual GDP for 2018 or more than thrice the amount of all actual revenues in the federal budget for the same period.

Obviously, this comparison technique is not accurate enough. Meanwhile, any other technique does not exist yet. For scientific research, reserves remain overshadowed by other economic processes. There is no generalized statistics, and there is no independent code in the classification list of JEL (Journal of Economic Literature). So far, there are only fragmented pieces of information about the dynamics of certain reserves, their role and functions in state and private economic and social processes, more or less correct classifications and typologies, which always include only a part of the available reserves. However, the data presented in the table can characterize at least the scale of cash flows that turn into reserve resources. In this regard, the question arises of how deep is our knowledge of the reserves created in different historical periods in the Russian economy.

It should be noted that in the pre-Soviet era we could not find any independent scientific studies on reserves in the Russian economy. Therefore, we were guided by the description of financial reserves taken from 'Capital' by K. Marx. Marx noted that capitalists are obliged to create the so-called reserve fund, which they need to ensure the reproducing of money. He emphasized that "hidden cash capital exists in the form of money that generates money, for example, in the form of deposits in any bank that bring interest, in bills or securities of any kind" (Marx 1867 p. 97). He argued that the source of the reserve fund is surplus value, a resource which "performs special functions outside the turnover of the industrial capital from which it emerged: functions that, firstly, have nothing to do with the turnover of this capital as such and, secondly, they imply the functions of capital that are different from the functions of industrial capital and that have not yet been studied here" (Marx 1867, p. 97–98). We should emphasize that no research of this kind was carried out in Capital. Explaining the reasons according to which reserve funds must be compulsory, K. Marx pointed out: "The capitalist should create reserve capital not only in order to protect himself from price fluctuations and be able to wait for the most favorable conditions for buying and

selling; he must accumulate capital in order to thus expand production and introduce technological achievements into his ‘productive organism’” (Marx 1867, p. 137).

Methods of creating reserves during the Soviet period underwent changes in several stages, each of which was directly related to the level of economic development as well as political and ideological conditions that had been established by the Soviet construction. During the NEP, a relatively calm period after the revolutionary events of 1917, the traditions of compulsory formation of various kinds of target reserves were still strong at enterprises. However, as early as in the 1920s, the reserve activities began to be completely controlled by the state, for which purpose a special Decree, often called the ‘Regulations on Trusts’ in the scientific literature, was adopted. This document provided for paying 20% of net profit as contribution made by independent economic entities to their reserve fund (Decree, 1923). During that period, the trust was the simplest form of economic society. It is a micro level of economy. Articles 45 and 46 of Chapter VI, “Depreciation, reserve capital, distribution of profits”, of the Decree the following norms were described: “All the profit of the trust is paid to the treasury, with the exception of paying at least twenty percent to the reserve capital of the trust, until the latter reaches half of the authorized capital, and deductions for bonuses to members of the board and bonus workers.... The reserve capital serves both to cover losses and to expand enterprises”.

At the macro level, the state budget was formed, and the only national reserve of financial resources for cases of sudden catastrophes and disasters was the funds of the USSR State Insurance. As A.M. Birman notes, “Towards the end of the 1920s, as spending by the state increased, decentralized financial reserves gradually faded away. In the years of the Great Patriotic War, the state was obliged to withdraw from enterprises even the remains of depreciation deductions and part of its own working capital” (Birman 1972, p. 123).

The initial theory which determined the focus of scientific views on the nature and specificities of reserve formation in the national economy of the USSR was the work of K. Marx (in particular, *Capital*), in which he justified the sources of formation of reserves, and, particularly, what was called Marx’s theory of insurance fund. However, in the study of reserve processes in economic science, only the key point of *Capital* was used - the conclusion that the only source of reserves can be the profit received, which was often equated with surplus value.

The post-war economic recovery required enormous resources, including financial ones, therefore, the issues of the formation of reserves at the national level, especially at the primary production level, were not of primary importance.

The domestic reserve system received gradual development, including in the form of a theoretical justification, only during the period of the economic reform of 1965, which introduced the full cost recovery by enterprises as the basis of the self-financing system. 12 years after its inception, in 1973, a monograph “Financial reserves in expanded production” by M.K. Shermenev’s was published, in which the author admitted that “unfortunately, the nature and significance of financial reserves have not yet received sufficient coverage in the financial and economic literature. The very concept of financial reserves remains highly controversial” (Shermenev 1973, p. 47–48).

By this time (the first years after the reform of 1965), an extensive system of financial reserves was gradually created in the USSR. The system had several levels and areas in which heterogeneous financial flows were interwoven.

The horizontal sphere totaled 12 enlarged “reserve” sectors. For example, in industry, the following reserves existed: financial assistance, capital investments, capital repairs, regulatory stability, and others. It should be noted that at the enterprise level, financial reserves were not created. Instead, the reserves of working capital were formed (reserves of raw materials, of fuel, semi-finished products). The financial reserves as such were formed on the accounts of ministries, steering committees (or “glavks”) and directorates. In addition to the reserves already indicated, it was allowed to form reserves in the following management bodies of industry and construction:

- reserves of raw materials, fuel, equipment and other material resources (in the amount of 5% of the allocated resources);
- reserves of the salary fund (within 2% of the allocated resources);
- reserves for unforeseen works and costs which was provided in cost estimates for the construction of enterprises, buildings and structures (as a percentage of the estimated construction cost).

Possessing substantial financial resources and being able to regulate the state of the working capital of enterprises under their jurisdiction, the ministries could withdraw their surpluses and “transfer” them to other enterprises that needed them.

In agriculture, reserves of collective farms, insurance funds of state farms, as well as insurance funds of the Ministry of Agriculture were created. In the sector of finance and trade, reserves of supply organizations, trade organizations, and consumer cooperatives were created. All types of reserves were kept in the settlement accounts of managing structures either at the State Bank or at the Industrial Bank of the USSR (or ‘Stroybank’). Through them, and sometimes directly, the resources of the State Budget were “poured”, as and when necessary, into specific economic enterprises and sectors.

The reserves created during the Soviet period that were kept in banks were essentially a source of credit resources of the country. Other investment locations for their temporary placement did not exist. The target nature of the reserves was not considered the main reason for their creation. For example, A.M. Birman, when answering the question of what might be kept in the financial reserve, answered that it is “obviously, part of the financial resources, i.e. part of the product produced for the society which after the sale transformed into monetary form and came in the budget or industry. In order to comply with the requirements and nature of the reserve, these financial resources should not be planned to be used for a particular purpose, although, of course, instructions and rules for their use are necessary” (Birman 1972, p. 128). In the Soviet period, the issue of the risks to which public production could be exposed, although it was discussed, did not have an independent character when planning budget expenditures, let alone creating reserves. A stable place among the risk factors was predominantly occupied by two possible risks: firstly, the failure to fulfill the planned profit targets and, secondly, the unexpected growth of investments in the development of scientific and technological progress (Birman 1972, p. 131).

The modern Russian economy is also characterized by a branched system of reserves, some of which have been listed in Table 1, above. However, a deeper study is

required. We consider it particularly important to establish criteria for the sufficiency of the reserve base, the correlation between the growth rates of the economy and the volume of all financial reserves, the costs of their maintenance and management, including in the form of salaries for employees of the financial sector, economic and legal studies of regulatory documents related to the formation and use of financial reserves, as well as the study of the specificities of state ownership of the reserved resources. In particular, it is required to investigate the issues of fee-charging for allocated reserves of one owner. In addition, it is necessary to construct a correct and unambiguous interpretation of the term “reserve” merely as it is used in state regulatory documents.

4 Conclusion

1. The definition of reserves is currently controversial. We believe that the reserve is the aggregate of any isolated resources that is excluded from the current consumption of their owner. It has not yet been established what is the unifying feature of all types of reserves created in all sectors of the economy. We believe that such a unifying characteristic is the fact that the status parameter of the movement of each reserve is determined by its owner.
2. Calculations show that the aggregate size of the largest financial reserves in the Russian economy is 63.47 trillion rubles, which is more than half of the annual GDP for 2018, or more than three times all actual revenues in the federal budget for the same period.

Acknowledgments. This paper is dedicated to the memory of Dr. Oleg Vasilievich Inshakov, a great teacher and mentor who influenced in a significant way the basic vision of the economic issues developed in our research.




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Evolutionary Aspects of Digitalization in Industrial Policy

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Abstract. Purpose: The paper discusses evolutionary basis of the study of digitalization phenomenon in modern economic and industrial policy. The changes arising in the system of production factors are investigated. The main trends related to the use of digital technologies in modern economy sectors are shown.

Design/Methodology/Approach: Conclusions are drawn about the approaches to the choice of industrial policy vectors and the possibilities of digitalization in its context. The necessity of providing the digital economy with internal sources of computer equipment, software, microprocessors supply, as well as ensuring the creation of high-tech industries that create the basis for the digital economy is substantiated.

Findings: The new industrial policy should be based on the automation and computerization of productive forces. The scope of the changes brought about by digitalization confirms the notion of socio-economic evolution.

Originality/Value: It is assumed that a digital representation of the object in the information, material, energy flow change ways of converting enterprise resource into endogenous factors of production, and the nature of their use, which suggests that not only information “digitalizes” but also technological and even human error do. It is proved that the solution of the fundamental problems of neo-industrial policy can provide conditions for the accelerated development of the national economy and for the creation of competitive industries’ new circuits, independent of the world situation.

Keywords: Evolutionary economy · Evolutionary changes · Endogenous factors of production · Digitalization · Digital economy · Industrial policy · The fourth industrial revolution

JEL Code: L52 · O10 · M15

1 Introduction

One of the most discussed terms among economists, entrepreneurs and publicists is the term “digitalization”. In a sense, it is already seen as a vector of development, without which success in general economic, investment and industrial policy is unthinkable. The dualism “digital - analog system” is most often considered as a substantial basis of the concept. Being rightly associated with the spread of the fourth industrial revolution

ideas, put forward by K. Schwab and becoming a comprehensive transformation of life on the basis of artificial intelligence, robotics, three - dimensional printing, nano- and biotechnology, digitalization is in fact proclaimed the main vector of industrial policy. Thus, the emergence of “Industry 4.0” concept in Germany in 2011 demonstrates the activation of national governments in cooperation with the business, the work on the development of powerful cyber-physical systems, the development of technologies for the production and use of “smart things”.

2 Materials and Method

The study is based on works in the field of evolutionary and institutional economics, economic genetics. The study used the works of Russian and foreign economists devoted to the actual problems of the fourth industrial revolution, digitalization. The empirical basis of the research is publications on the problems of digital technologies implementation in Russia and abroad, critical works on the problems of neo-industrial policy.

The paper uses research methods of evolutionary economics, institutional economics, and elements of system analysis. The conceptual ideas of the new evolutionary production factors theory and the nucleus of economic development demonstrated in the works of prof. Oleg V. Inshakov, his ideas about the eco-gen of human economy are used as a methodological basis of the study.

3 Results

In the classical sense, digitalization can be considered from the same positions as mechanization and production automation, the key task of which is to save live labor. In this sense, digitalization should be understood as a systematic approach to the use of digital resources to increase productivity, especially in traditional sectors of the economy. Therefore, it becomes rather a means of carrying out neo-industrial policy, industrial policy on new grounds. At the same time, the phenomenon of digitalization is often seen separately from the needs of economy sectors, their resources and strategies.

Evolutionary foundations of digitalization phenomenon. Undoubtedly, the digital revolution reflects new trends in the analysis and use of conditions, resources and factors of production in the modern global economic system, which is changing its configuration before our eyes. There is an expansion of the economic agents' possibilities to cover more and more resources, turning them into new factors of production. Digital technologies, providing a new level of processing, storage, use, reproduction of information based not on analog, but on a discrete signal, should provide savings in the use of these traditional factors.

The scale of the changes taking place in connection with digitalization confirms the idea of socio-economic evolution, in which there is “...a change of technology, the transition to the production of new products, and the metamorphoses taking place with producing organizations and institutions...” (Mayevsky 2001, p. 291). The study of the evolutionary foundations of certain phenomena of economic life involves the study of

education processes, variability, selection and heredity of economy forms, changes in relations and relationships of people in the process of labor, including the emergence and development of new organizations and institutions, means of creation and consumption of material and ideal products. Investigating the elementary structure of components, functions and endogenous bases of economy, O. V. Inshakov notes that changes in the economic system occur in two ways: in the economic phylogenesis due to the quantitative increase or reduction of the number of elements in the process of new elements' accession from the environment or transferring them to the environment; and as a part of economic entities' ontogenesis by reducing the number of elements and their intrinsic capacity (Inshakov 2006, p. 15).

Manifestations of economic phylogenesis in connection with the digital economy development can be found in the emergence of such forms of business as virtual companies, including online stores, marketplaces, new financial services, business networking, the use of outsourcing schemes, remote access, etc. A slightly different direction of economic forms' evolution is the digital transformation in the real sector, expressed in the use of so-called "digital twins" of assets, the use of "big data" technology, cyber-physical systems, product lifecycle management, etc. In the first case, it is appropriate to talk about the transformation of information into a key factor of production, which has the greatest impact and alters economic structures, generating new forms of interaction in the market, mainly virtual in their form. In the case of digital transformation in the industrial sector, information remains one of the factors that change production technologies, but do not cancel the material basis of the production cycle. By their nature, the organizations and institutions of the first sector can be called transactional, and of the second sector—transformational ones, given the peculiarities of their inclusion into the reproduction process, the processes of distribution and exchange.

At the same time, the difficulty in clarifying the phenomenon of digitalization is also connected with the fact which production factors and their connections undergo essential changes in the course of the digital revolution. There is an active use of information technology, building global networks based on the Internet, using not analog media, but digital hardware and software solutions. The transition from analog, continuum, symbolic to digital, sign, discrete representation of reality through information as an endogenous factor is assumed.

Naturally, the very notion of "information and communication technologies" implies that the technological factor should experience similar changes. If we assume that digital means of the object's representation in the information, material, energy flow change ways of converting enterprise resource into endogenous factors of production, and the nature of their use, then not only information "digitalizes" but also technological and even human factors do. We would like to note the following changes. Since the digital form of representation and construction of economic reality reflects the actions of the information factor, and it is essentially transactional, then in the conditions of digitalization we can say that there is a transformation with a group of transformational factors too. They also become transactional to some extent. This can partly explain the increase in the share of transactional sectors of economic activity already at the meso - and macroeconomic level.

Obviously, the genetic structure of capital studied in the works of O. V. Inshakov, as well as the ratio of transformational and transactional capital, is also changing (Inshakov 2008).

Indeed, the active use of artificial intelligence technologies, the Internet of things, and the development of machine learning methods based on neurotechnologies are changing the very principles of the interrelations of such transformational endogenous factors as human, techno-technological, and natural ones. Without touching the moral and ethical aspect here associated with the introduction of new interfaces of human-machine interactions, it can be noted that already at the level of economic ontogenesis, significant changes can occur, the change of professional “competencies”. The main change is in the nature of labor relations, changing in connection with robotization, the introduction of additive manufacturing, augmented and virtual reality technologies. The emergence of a digital channel of reality perception and representation in the people’s simplest labor operations changes their character from creative-transforming to serving in a pre-defined field of technological process.

Evolutionary changes at the level of economic phylogenesis are also quite intensive and cover the processes of new industries and markets’ emergence, the effects of monopolization, the change of trends in global outsourcing. Noting the opportunities promised by additive manufacturing and multidimensional printing, which have become key ones in the digital revolution, K. Schwab predicts a broad decentralization and distribution of production capacity due to the increase in small-scale production based on 3D printing. An important consequence is the possibility of returning production to developed countries, as cheap technologies will replace cheap labor (Schwab 2018, p. 174). The expansion of available user data inevitably leads to changes in institutional, organizational and technological factors. The latter increasingly provide not so much the transformation of natural matter and energy into a product, but rather mediate the exchange and distribution of information about needs, the creation of new value chains. In these conditions, the boundaries between the producer and the market are blurred. As the same K. Schwab points out, as such technologies converge, the mechanisms for creating and sharing values will become as decentralized as the infrastructure underlying them (Schwab 2018, p. 122). Apparently, it is in the transactions of companies and consumers that a new product or service is generated as a result of the complex network interactions generated by the Fourth industrial revolution.

Revealing the concept of human economy eco-genesis, O.V. Inshakov writes: “In the production process, a person constantly transmits nothing but information due to his need or, more precisely, the model of the future product, which assumes in a certain way selected and combined factors of his production, directing the course of their interaction in the form of a continuous exchange of impulses with the environment” (Inshakov 2003, p. 20). This idea can be interpreted in different ways. Information driven by the demand, the model of the future product is the project designed under the influence of many technological and institutional factors. The rapid development of information and communication technologies, supported by convergence with groups of nano -, bio - and cognitive technologies, in our opinion, becomes decisive in changing the economic genome configurations.

Technologization of social interactions, social labor, based on digital models, allows, on the one hand, to save live labor, to increase productivity, on the other hand, to significantly modify the system of needs reflected in the information. A landmark, discrete, unified data model allows both to ensure the efficiency of its use, increasing its targeting, for example, in 3D printing, and to shift the needs as much as possible towards virtualized sectors of all kinds of services, financial transactions, changing, ultimately, the entire global economic landscape. Information technologies of the digital world are essentially social technologies, as they influence the formation of desired images, change the structure of needs, and manipulate consumer behavior. “Social technologies (in interaction with nano -, bio -, info -, cognitive technologies) are a sign of our time, - V. A. Lektorskiy notes, ...- Our time is the time of big projects, as evidenced, in particular, by the transnational corporations activities” (Lektorskiy 2012, p. 151). As a result, it is these influences that lead to a change in the structure of the world gross product towards an increase in the share of the service sector, reaching 70–80% in developed countries. It seems that there is a certain fork in the choice of vectors and opportunities for the digital transformation of the economy. Namely, it is important to understand to what extent digitalization increases the efficiency of production sectors and is applicable in industrial policy, and to what extent it generates and expands transaction sectors and markets.

Vectors of digitalization and industrial policy. The impact of digitalization on the choice of economic development is complex and contradictory. We can state the fact that most often digitalization turns into an independent sphere of firms, individuals, government agencies that use digital technologies as a tool to control consumer behavior, control over the consumer and his value preferences’ change. At the global level of the economic system, there is a large-scale consolidation of design and technological efforts to improve the understanding of artificial intelligence by society, as illustrated, for example, by the partnership of Amazon, Google, Microsoft, Facebook in 2016. The expansion of the highly capitalized artificial intelligence market, access to which by organizations already in the public sector (education, culture, health), is regulated by the new institutional framework.

Underpinned by neoliberal policies, these trends have had negative consequences related to restrictions on access to commercialized public services. It is this vector that makes it possible to idealize digitalization, tearing it away from the real needs of society and the economy. Sometimes the conclusion is even expressed about the change of socio-economic formation under the influence of digitalization. The lack of success of digitalization strategies is sometimes rightly attributed to the introduction of digital technologies into the analog economy, especially in selected heavy industries. However, in such assessments, assumptions of the following kind are allowed: “We lose the most important thing – the opportunity to get ahead, not realizing that new entities have appeared. First of all, this essence is not an analog person, around whom the analog economy, analog politics and analog legislation are built, but a person with a gadget and his digital profile,” - Y. Pripachkin argues (Analog economy is inferior to digital 2019).

Digitalization, which involves the change of mental and cultural foundations of life, education, management, in our opinion, causes the overflow of large amounts of resources for questionable purposes, generates artificial expectations. But the main

thing is that economic evolution will continue with further transformations in the system of production endogenous factors. If we talk about the priority of humanistic economic development, the human being should act as a measure of any purposeful changes. O. V. Inshakov notes: “each product of human activity is formed by nature and society at the same time and there should be two types of sequential connection of his activity factors that form its products. The initial for understanding and practical use is the elucidation of the composition of endogenous product production factors as the ultimate discrete bases of the method of social and natural existence of mankind” (Inshakov 2006, pp. 15–16).

The peculiarity of digitalization as the main direction of industrial policy is the construction of sustainable global markets. Yet it is important to understand what technological basis this is provided with, what gives control over the world markets—the control covering industrial, service, infrastructure, and even military-strategic areas. Thus, the annual growth of semiconductor production (5.3% per year) is a key element of “Digital economy of the USA” program. This is especially important in the field of ensuring technological independence in the creation of strategically important means of production – machine tools, production of mining equipment, military equipment. It is important to compare the scale of semiconductor manufacturing to understand the differences between US and Russian potential. TEXAS Instruments Lab alone produces several billion semiconductors, with a turnover of more than \$15 billion in 2018 (TI reports 1Q18 financial results and shareholder returns 2018). The total volume of production of about 10 Russian companies is \$450 million and the total number of employees is less than 4 thousand people. According to Acad. V.B. Betelin, Russia is a consumer of the products of the digital economy semiconductors from the USA. Most of the Russian companies—more than a half (64%)—are engaged in providing IT services and distribution of equipment and software, rather than commodity production and value creation. At the same time, 10 thousand employees in Russia account for 23 times less industrial robots than in the world on average. The share of CNC machines is 10%, while in China it is 30%, in Germany—70% (Betelin 2018).

4 Conclusion

In solving the problems of industrial policy, it is necessary to:

- (1) Provide orientation on construction of neo-industrial economy with a basis on labor saving, high knowledge intensity, transformation of public work into creative work, use of resources’ recycling and non-wastefulness.
- (2) Prioritize economic development not in terms of the formation of markets for digital services and technologies, but in accordance with the most important requirements in the field of economic, food and technological independence of the Russian economy and society.
- (3) Provide the digital economy with internal sources of computer equipment, software, microprocessors’ supply, to ensure the creation of high-tech industries that create the basis for the digital economy, and within the framework of the state program of digitalization adopted in 2017; to form multiplying production chains

with reasonable allocation of resources for them immediately with import substitution for a set of equipment entering the country (Sukharev 2018).

- (4) In establishing a national microprocessor manufacturing base, economies of scale should be used, given the existing break-even thresholds of \$3 billion to \$6 billion (Betelin 2016).

It is the solution of such fundamental problems of neo-industrial policy that can provide conditions for accelerated development of the national economy and the creation of new competitive production circuits independent of the world situation.

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New Opportunities for Harmonizing Tax Relations in the Conditions of Digitalization of the Tax System

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Abstract. Purpose: To analyze the need for scientific understanding of the directions of enhancing the interaction of tax relations subjects through digital technologies application as the priority area for harmonizing tax interests, and overcoming the opportunistic behaviour of taxpayers and the growth of financial losses in the budget system.

Design/Methodology/Approach: The study is performed within the systems approach using general scientific methods: analysis and synthesis, induction and deduction, scientific abstractions.

Findings: The article clarifies the conceptual apparatus of interaction of tax relations subjects, formulates intermediate purposes and results of enhanced interaction in the digital tax environment; presents the analysis of the automated service maintenance of taxpayers and concludes about its high level and effectiveness through increasing tax revenues of the budget system. The authors found that the indicator of tax debt growth rate signals the existing problems in the tax behaviour of payers and the insufficient efforts of the state in harmonizing the interests of tax relations subjects.

Originality/Value: To eliminate contradictions for tax entities, the authors proposed along with the digitalization of the tax system and the further improvement of state tax control mechanisms to apply positive foreign experience in state support and development of taxpayer advisory tools, disseminate tax monitoring more widely, and stimulate employees of the Federal Tax Service of Russia to professional growth and increasing the quality of tax interactions.

Keywords: Interaction · Harmonization of interests · Tax system · Digitalization · Electronic services

JEL classification: G2 · H3 · H6

1 Introduction

The interaction process of tax relations subjects allows achieving the harmonization of participants' interests, and the implementation of the national financial strategy and the tax policy current goals. Enhanced interaction of participants in tax relations in transforming tax administrations into adaptive digital platforms and increasing the

effectiveness of such interaction through modern business technologies should become a trend in modern tax policy.

The currently formed Russian tax system is quite capable to ensure a sufficient level of budget revenues for the implementation of innovative economic development and consider the interests of all participants in tax relations. However, in modern conditions, there is still no complete convergence of tax relations subjects interests as indicated by the tax debt. According to tax statistics by the second half of 2019, tax debt to budgets of various levels that make up the budget system of the Russian Federation amounted to almost 2 billion rubles, more precisely, 1 951.1 billion rubles, and grew by 34.5 billion rubles for the first half of 2019. The formation of a full-fledged relationship between the individual and the state, the taxpayer and the tax administration is impossible without further coordination of their interests that make a vital contribution to motivation of tax behaviour and formation of tax culture. Digital technologies penetration in various sectors of the economy and the tax environment facilitates this process.

The formation abroad of new fundamental civilization processes resulting from the leading role of rapidly developing digital technologies became the subject of a thorough comprehensive analysis already at the end of the 20th century. Numerous publications by the Spanish scientist Manuel Castells are particularly impressive, and his fundamental work *Information Age: Economy, Society and Culture* (Castells 1996–1998) is the most interesting. A valuable advantage of this three-volume work is that the author chose not only the USA, countries of Western Europe, China, Japan, other countries of the Southeast but also Russia, which makes the book especially valuable for domestic researchers.

In recent years, domestic academics and practitioners on digitalization of the tax system have published works on the achieved results, problems and risks (Goncharenko et al. 2018; Gulkova et al. 2019, Mishustin 2019).

One area of research includes the creation and development of the electronic tax service and contactless interaction with conscientious taxpayers (Gulkova et al. 2019, Mishustin 2019). In the framework of our study, these works provide the basis for the analysis of the enhanced interaction between taxpayers and tax authorities in the digital tax environment.

Another area of research is associated with the emergence of digital currencies, operations with them as an indefinite object of taxation (Goncharenko et al. 2018; Gulkova et al. 2019). The legal uncertainty of the tax base provokes opportunistic behaviour of taxpayers and prevents the enhanced interaction in the tax sphere.

2 Materials and Method

The informational basis of the study is tax statistics, the fundamental work (Castells 1996–1998); materials of authors on enhanced interaction of tax relations subjects (Perekrestova and Nadochiy 2013), on harmonizing the national interests, taxpayers and tax authorities (Perekrestova and Nadochiy 2013), on state tax monitoring (Irizepova et al. 2017).

The article uses the methods of statistical economic analysis: data collection; data processing by groupings, series of dynamics, relative values, tabular modelling; analysis of results using comparisons, analogies, objective logic.

3 Results

3.1 The Concept of Interaction of Tax Relations Subjects. Intermediate Purposes and End Results

In our opinion, the conceptual apparatus of interaction between tax system agents requires further development and refinement of key positions. Tax relations concept can have a narrower and broader interpretation. The study by (Pinskaya 2010) states that the concept of the subject of tax relations, unlike the participant of tax interaction, has an expanded semantic content. It includes not only persons directly involved in tax turnover at the current time but also persons with the potential ability to participate in the current conditions as well as persons who may acquire such ability in the future as a result of reforming tax relations (Nadtochy 2013; Perekrestova and Nadtochy 2013).

Russian scholars studied in detail the subjects of tax relations and the nature of relations in the field of taxation (Tyupakova and Bocharova 2007; Kucherov 2009; Khimicheva and Malko 2010).

Scientists believe that as society develops the goal of interaction and coordination of interests in the tax sphere comes down to simultaneously meeting the needs of society and the state, since taxes are the main source of revenue for budgets of all levels, and their complete receipt forms the material basis for the implementation of socio-economic development programs.

The interaction in the tax sphere, in the authors' opinion, means the form of tax relations implementation that creates the conditions for harmonization of multi-directional private interests of tax entities. This is, on the one hand, a process of simultaneous, interdependent fulfilment of duties in the tax sphere and the realization of legitimate interests and rights of participants in tax relations, on the other hand (Perekrestova and Nadtochy 2013).

Strengthening the interaction has both intermediate and final goals and provides incentives for the gradual formation of taxpayers compliance, and then the formation of a social tax culture that minimizes the material and moral costs of tax administration.

3.2 Automated Taxpayer Service

Since 1990, the Federal Tax Service of Russia (FTS) has been automating its work. The Nalog-3 modern automated information system of the FTS provides automation for all the FTS functions performed. The tax service processes information on 165.8 million citizens of Russia and other states, 4.1 million legal entities and 3.97 million individual entrepreneurs. Concurrently it automatically administers 76 million tax returns, 15 billion VAT invoices and information on 250 million transfer pricing transactions annually. The FTS is becoming a centre for collecting, processing and storing data, creating new products based on their analysis" (Mishustin 2019).

The FTS is actively developing electronic service: its official website presents more than 60 services that allow taxpayers to solve most of their issues online without visiting the office. One of the latest innovations was My Tax mobile application. Using this electronic service, self-employed citizens can register their income and pay taxes without any special tax accounts. For ease of reference, the FTS has developed an open API for interacting with banks and electronic platform operators. They can use it to integrate the functionality of My Tax application into their software products and services, and this will further simplify the payment of professional income tax.

The methodology and tools of tax control are being improved. An automated system for controlling the reimbursement of value-added tax (VAT) has appeared.

This system automatically controls the value chain. Its main function is to analyze the tax risks of taxpayers through the analysis of electronic VAT returns and prevent illegal deductions and refunds of this tax.

The use of cash registers with the online transmission of information also plays an active role.

In the future, digital technologies will increase the transparency of the economy for all constituent entities of the Russian Federation, improve the quality of budget planning and guarantee the stability of revenue in the country's budget (Mishustin 2019).

3.3 Increased Tax Revenues as a Result of Increased Interaction Between Entities in the Digital Tax Environment

The increase in tax revenues of the budget system reflects the interests of all participants in tax relations. We suggest using the growth rate of tax revenues as an indicator of effective interaction of tax relations subjects and ensuring their mutual obligations in the common interest (Table 1).

Table 1. Taxes and fees to the consolidated budget of the Russian Federation

Period	Received in the consolidated budget		Debt on taxes and fees	
	Total, billion rubles	In % to the previous year	Total, billion rubles	In % to the previous year
2014	12670.2	111.9	802.7	118.3
2015	13788.3	108.8	827.5	103.1
2016	14482.9	105.0	1031.7	124.7
2017	17343.4	119.8	1176.3	114.0
2018	21328.5	123.0	1548.5	131.6
Average annual growth rate		113.7		118.3

Compiled by the authors according to (Federal Tax Service of Russia 2019)

The revenues of taxes and fees to the consolidated budget of the Russian Federation over five years (2014–2018) increased 1.7 times.

The acceleration in the growth of tax revenues occurred in 2017 when compared to 2016, they grew by almost 20% and exceeded 17 trillion rubles. Almost 40% of the increase in revenue was due to an increase in oil prices by 29% in December 2016 - November 2017, from 40.3 to 52.1 dollars per barrel, which additionally brought 1.2 trillion rubles of oil and gas revenues. However, 60% of revenue growth, or 1.7 trillion rubles, was provided by non-oil and gas revenues, supported by good dynamics of key macroeconomic indicators (Burov and Ivanova 2018).

The growing influence of non-oil and gas revenues expresses a positive shift in the composition of budget revenues. According to experts, the total contribution of macroeconomic factors to the dynamics of tax revenues is about 3.9% or 554 billion rubles. About 5% or 725 billion rubles falls to the share of changes in tax legislation. First, it is a question of limiting the write-off of losses on corporate income tax and the annual indexation of excise rates. The remaining 2.7% of revenue growth or about 390 billion rubles resulted from the high-quality tax administration. These are additional income received due to the work of the tax authorities to whitewash the economy using tools of remote digital control and monitoring of the tax environment (Burov and Ivanova 2018).

In 2018, growth by 2017 amounted to almost 4 trillion rubles or 23%. The continued rise in oil prices and the steady increase in non-oil and gas taxes due to the continued growth of the economy accelerated the growth of taxes and fees.

The data presented indicate the influence of effective tax administration to increase tax revenues to the budget system, but the digitalization of tax authorities does not yet provide sufficient motivation to pay taxes and a noticeable reduction in tax evasion.

Table 2. Dynamics of results of control work of FTS of Russia, percentage

Indicator	2015/2014	2016/2015	2017/2016	2018/2017	Average annual growth rate
Number of desk audits	97.2	125.2	139.7	121.5	120.9
From them revealed violations	99.2	115.7	133.7	117.2	116.4
Additional charges	148.0	132.8	61.8	91.0	108.4
Number of field inspections	88.9	84.9	77.4	70.2	80.4
From them revealed violations	89.3	85.0	76.7	70.0	80.3
Additional charges	93.3	131.4	88.1	99.2	103.0

Compiled by the authors according to (Federal Tax Service of Russia 2019)

For the period 2014–2018 arrears of taxes and duties to the consolidated budget of the Russian Federation increased 1.9 times. The average annual growth rate of debt amounted to 118.3%, which is a 4.6% point higher than the increase in taxes and fees.

We analyzed the control work of the tax authorities emphasizing the dynamics of additional charges resulted from desk and field tax audits (Table 2).

From 2014 to 2018 control work of the tax authorities paid special attention to desk audits of taxpayer reporting. The number of desk audits increased by 21% on average during the period. Effective checks and the number of additional charges also increased.

A reduction in the number of field inspections by almost 20% an average over the period indicates cost savings by tax authorities.

The dynamics of field tax inspections revealing violations correspond to the general trend of field inspections, a decrease of 19.7% on average per year.

Tax offences and crimes identified during inspections and resulted from an increase in taxes and levies accrued during inspections indicate the opportunistic behaviour of taxpayers, or insufficient tax literacy, or financial insolvency of payers. In any of these cases, the growth of additionally accrued taxes and fees is an indicator of the discrepancy between the interests of the state and taxpayers and requires a correction of tax policy.

4 Conclusion/Recommendations

Despite the positive results of tax authorities' digitalization, the development of electronic services, automation of state tax control and the promotion of the payers' interests, the growth of tax debt in the budget system remains progressive. Debt forms an important fiscal reserve of budget revenues, and its growth rate indicates the continued negative trend of tax evasion, tax violations and crimes. This situation requires additional measures of the state tax policy to harmonize the general and private interests of tax entities.

Measures to strengthen and increase the effectiveness of the interaction of tax relations subjects should consider the interests of the state, taxpayers and employees of the FTS. Along with the digitalization of the tax system, to provide improving the mechanisms of state tax control and harmonizing the interests of tax relations subjects, it is necessary: (a) to apply positive foreign experience in state support and development of taxpayer consulting tools, (b) more widely extend tax monitoring, not only to large corporations, (c) stimulate the FTS employees to professional growth and reward for increasing the quality of tax interaction on the tax debt indicator.

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Financial Aspects of the Digital Economy Development in the Agricultural Sector

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Abstract. Our purpose is to scientifically substantiate the need to expand the sources and instruments of financing the digitalization of the Russian agro-industrial complex in the context of the expectation of a worsening situation with sanctions and geopolitical conditions to reduce the dependence of the agro-industrial complex on additional financial assistance from the state.

Design/methodology/approach: We analyzed the existing system of state support for agriculture. Moreover, we identified the prospects for self-financing in the context of increasing the margin of agricultural production, automating decision-making, minimizing human intervention in production processes, as well as increasing the number of jobs and developing exports, especially of high value-added products (environmentally friendly and organic goods).

Findings: We have identified objective reasons that hinder the attraction of investments in the development of agricultural sector organizations, as well as the reasons for the reduction in profits and profitability of agricultural production by categories of farms that necessitate the use of information technologies in agriculture, which will contribute to the large-scale transformation of the agricultural sector as a whole, and lower production costs in this area, investment growth.

Originality/value: A significant increase in the profitability of production in agriculture can free agribusiness from the need for additional state support. To increase marginality, agro-formations should position themselves along the entire value chain, up to the end consumer, by developing a food assistance program for low-income categories of the population, reducing retail prices by several times, automating the process of providing accounting and financial statements in the form of blockchain technology, and developing domestic and foreign markets ecological goods in Russia.

Keywords: Agriculture · Digital economy · Sources of financing · Governmental support · Private investment · Departmental project

JEL Code: E620 · G380 · Q140

1 Introduction

Questions of increasing the efficiency of the domestic agricultural sector are pushing inland agricultural producers to look for new ways and tools to saturate the domestic and international market with environmentally friendly and safe products.

As best practices show, the digital transformation of the agricultural production business model contributes to increasing the competitiveness of agriculture and transferring the industry to an innovative path of development. Today, digital technology is the key to the formation of a sustainable agro-industrial complex, the development of rural areas, improving the efficiency of farms, scientific, technological and innovative breakthroughs at the regional level.

The departmental project “Digital Agriculture”, developed by the Ministry of Agriculture, should provide a solution to this multifaceted and complex task of digitalizing the agricultural sector of Russia. Its implementation period is 2019–2024. As a result of the project, a digital transformation of agricultural production should occur, as digital technologies and platform solutions will be introduced, which will provide a technological breakthrough in agricultural production and increase labor productivity. The project provides for the digitalization of not only business entities, but also the agribusiness management system itself, which requires the attraction of significant external and internal investments.

2 Materials and Method

“Today, digital technologies are considered as the main factor in increasing competitiveness, productivity and profitability, the dominant accelerator of innovative economic growth (Dyatlov et al. 2018), “significant clarifications are needed in understanding the possible mechanisms and tools for implementing innovative policies. Although the use of existing mechanisms such as public-private partnerships, etc., but inevitably the emergence of new or updating existing instruments Discount policy to stimulate the development of the digital economy, its infrastructure component” (Romanova 2018).

Innovative strategies (if we take leading countries as a model) are a consistent approach aimed at “coordinating disparate policies regarding research, commercialization of technologies, digitalization and investment in IT, education and skills development, taxation, trade, intellectual property, public procurement and regulatory policies designed to support economic growth through fostering innovation” (Sheshtakov and Lovchikova 2019). In general terms, a country’s innovation policy is designed to directly connect science, technology, and innovation with economic growth, effectively creating a “game plan” for competition in innovative economic activity (Atkinson 2013).

However, these processes are restrained by the “deficit and disproportions of attracted capital, the insufficient variety of investment channels and equipment base for new technologies, as well as the barriers that have arisen as a result of the crisis and the imposition of sanctions, which have generated opportunism from external partners, and reduced investment and loans from EU countries for Russian companies and banking structures, freezing or rejecting nanoprofile projects” (Inshakov and Inshakova 2016), etc.

3 Results

The objective reasons that hinder the attraction of investments in the development of agricultural sector organizations are as follows: (1) low profitability, and, as a result, insufficient cash resources, (2) significant dispersal of farms in the country and a small number of roads that meet regulatory requirements, especially of regional significance (3) low business activity (capital turnover) and the duration of the production and commercial cycle, (4) the vast majority of agricultural enterprises could not allow themselves to use modern means of mechanization and automation, (5) high risks due to climatic conditions, (6) large crop losses during cultivation, collection and storage, (7) seasonality of agricultural production, (8) unfavorable socio-demographic situation, (9) lack highly skilled labor in rural areas and low labor productivity; (10) lack of price parity for agricultural and industrial, resource-providing products (services) used in villages (11) high share in the retail price of the share of trading enterprises, (12) low solvent demand of the population, (13) high competition, (14) the growth of cyber threats in the development of digital technologies that require participants in the financial market, and primarily its regulator, be able to quickly minimize them, and better prevent them (Kusmartseva 2018), (15) technology lag and physical lack of infrastructure facilities, especially for export (modern fruit and vegetable warehouses, port-transshipment complexes to the department regions, land reclamation facilities, transport infrastructure), (16) further deterioration of geopolitics and the situation with sanctions, (17) low financial literacy of the population, (18) unpredictable outbreaks of diseases, in particular poultry and pigs, (19) expensive short-term borrowed funds: soft loans for 5% per annum is a lot, especially for long-term investment and innovation projects, (20) low awareness of agricultural producers and the high cost of research and development, etc.

Although the sector has significantly more profitable enterprises (79.7% in 2018) (Table 1), an alarming trend has emerged: since 2016, the share of unprofitable organizations has increased (from 17.2% in 2016 to 20.3% in 2018). And this happens against the backdrop of a rapid increase in the total losses of unsuccessful sector representatives by 56.3% for 2016–2018, while the profit for the same period grew by only 35.1%.

Table 1. Balanced financial result (profit without loss) and the share of organizations that received profit (loss), working in agriculture, forestry, engaged in hunting, fishing and fish farming

Years	Balance of profit and loss (-)		Profit		Loss		Share of profitable organizations	The share of unprofitable organizations
	Billion rubles	% by previous year	Billion rubles	% by previous year	Billion rubles	% by previous year		
2018	349,8	129,0	427,0	128,6	77,2	126,9	79,7	20,3
2017	270,1	101,3	331,1	104,8	61,0	123,5	81,1	18,9

(continued)

Table 1. (continued)

Years	Balance of profit and loss (-)		Profit		Loss		Share of profitable organizations	The share of unprofitable organizations
	Billion rubles	% by previous year	Billion rubles	% by previous year	Billion rubles	% by previous year		
2016*	266,6	98,0	316,0	93,9	49,4	76,7	82,8	17,2
2015*	272,0	149,7	336,4	132,2	64,4	88,6	81,3	18,7
2014*	181,7	244,2	254,4	189,4	72,7	121,4	78,8	21,2
2013*	74,4	58,7	134,3	81,6	59,9	158,0	75,0	25,0
2012*	126,8	125,0	164,7	123,6	37,9	118,8	75,1	24,9
2011*	101,4	140,4	133,3	116,0	31,9	74,7	76,9	23,1
2010*	72,2	124,1	114,9	120,1	42,7	113,9	72,5	27,5
2009*	58,2	67,2	95,7	85,4	37,5	147,1	72,1	27,9
2008*	86,6	–	112,1	–	25,5	–	79,1	20,9

* - excluding organizations involved in fishing and fish farming

Compiled by the authors, based on materials (Federal state statistics service 2019).

There are two main reasons for reducing profits and rising losses. This is the low purchasing power of the population. And the growing technological lag, the lack of affordable and modern domestic equipment, modern vegetable and granaries. All this reduces the efficiency of agricultural enterprises, and government support measures are aimed primarily at increasing the volume of raw materials production, but not at the development of storage and processing.

On the whole, the industry is gaining plus (a balanced financial result –349.8 billion rubles), but the investment boom has not happened. At the same time, unsuccessful organizations are rapidly increasing their losses, and the “flagships” can no longer increase profits in the conditions when the negative effects of anti-sanctions (refusal from import) begin to appear: difficulties in obtaining equipment, spare parts, seed from abroad.

Prior to that, in 2014–2016, the financial situation of agricultural enterprises, judging by the data of the Federal State Statistics Service, was improving: the total profit grew, and in some periods by tens of percent, and the total losses seemed to begin to decline. It seems that the Russian agricultural sector has extracted everything it could from the food embargo, and the positive effect of import substitution is gradually disappearing.

In 2018, agricultural production at comparable prices decreased by 0.6% (in agricultural organizations by 4.5%, in farms by 5.4%) due to a decrease in crop production by 2.4% due to a decrease in the yield of main crops (wheat, rye, barley, beets, etc.), which was not offset by an increase in livestock production by 1.3% (against growth by 2.6% a year earlier). So, the agricultural production index for all categories of farms decreased in 2018 for the first time since 2012 (–4.8%) against an increase of 3.1% in 2017 and 4.8% in 2016 (Table 2).

Table 2. The structure of agricultural production by categories of farms in the Russian Federation (as a percentage of farms of all categories)

Commercial farm units	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Commercial farm units of all categories	100	100	100	100	100	100	100	100	100	100	100
Agricultural organizations	48,0	45,7	44,8	48,2	49,1	49,2	51,7	54,0	55,1	55,2	55,1
Household units	43,6	46,8	48,0	42,8	42,0	41,0	38,1	34,5	32,5	32,4	33,0
Farms, including FE	8,4	7,5	7,2	9,0	8,9	9,8	10,2	11,5	12,4	12,4	11,9

Compiled by the authors based on materials (Federal state statistics service 2019)

Each category of farms in the agricultural sector has its own specialization.

Peasant farms are engaged in the cultivation of grain, sunflower, sugar beets and vegetables, while their share in the structure of agricultural production declined in 2016–2018. By 0.5% to 11.9% against the background of an increase in the share of households and private farms producing 33% of agricultural products (mainly potatoes, vegetables, milk and meat). Agricultural organizations are mainly engaged in the production of those types of products whose production technology is mechanized and automated as much as possible (grain, sugar beets, sunflower seeds, eggs), and, therefore, is more cost-effective. They are characterized by a rational and efficient use of equipment and technologies, an optimal combination of industries, a high level of marketability both in Russia and abroad. In 2018, agricultural organizations accounted for only 55.1% of agricultural production at current prices, but even among them there are well-modernized businesses and companies (EkoNiva, Uralchem, Rusagro, etc.), known in the western agricultural markets, and working on outdated technologies.

It is impossible to judge the safety margin by financial results in the entire agricultural sector: the areas of agriculture are too heterogeneous. For example, meat farming has a sufficient margin of safety. Wheat producers traditionally can count on government support. But the producers of milk and potatoes are already on the verge: any market fluctuation or ill-conceived government actions can lead to massive bankruptcies.

In these conditions, to fulfill the May decree of the President of the Russian Federation V.V. Putin to increase the share of innovatively active firms in Russia to 50% from 10–12% at the beginning of 2019 in general and approximately 5% in agriculture, it is necessary to implement a series of national projects, for example, “Science”, “Labor productivity and employment support”, And in 6 years to create 15 scientific and educational centers working with the real sector of the economy. Innovative activity in the agricultural sector should be stimulated by the Federal Scientific and Technical Program for the Development of Agriculture until 2025, adopted in 2017, with very strict KPIs.

One of the key factors in the growth of agricultural production over recent years has been the provision of state support and the export potential of Russian products, which grew at a faster rate than the total financial result of agricultural organizations (Table 1). In 2018, total subsidies amounted to 234 billion rubles. (+62.6% compared to 2017). In 2019, 303.6 billion rubles are provided (+30%).

However, the existing system of state support is inefficient, as budget funds are distributed unevenly, for example, in 47 regions more than 70% of subsidies for soft loans issued for up to one year are received by the 10 largest players; in 43 regions, preferential investment (long-term) loans (70% of subsidies) are already issued to three holdings. Peasant farms and private entrepreneurs receive only about 6% of subsidies on soft loans.

The budget of the Digital Agriculture project will amount to 304 billion rubles, of which the state plans to give out 152 billion rubles as an additional subsidy, and the other 152 billion rubles are expected to come from extrabudgetary sources, namely, from agricultural and IT business. However, there are no measures in the departmental project that would encourage private investors to finance the digitalization of agriculture.

Resolution of the Governor of the Volgograd Region dated 04.23.2019 No. 204 “On measures to implement the national program” Digital Economy of the Russian Federation “on the territory of the Volgograd Region and on amending the resolution of the Governor of the Volgograd Region dated September 10, 2012 No. 832” On approval of the Regulation on Preparation drafts of legal acts of the Governor of the Volgograd Region and the Administration of the Volgograd Region “includes the regional project” Digital Agriculture “(responsible person is a committee of the rural economy ny Volgograd Oblast), which provides for the allocation of 2.4 million rubles from the regional budget in 2019–2021 for the only event “Identification of unused agricultural land in the municipal districts of the Volgograd Oblast using remote sensing data from the Earth.”

Agricultural lending continues to show growth at a reduced rate of no more than 5% (from January 1, 2017 through accredited banks) at the end of 2018 +69.32%, with a total volume of 1 trillion 123.8 billion rubles. Agro-industrial companies continue to actively invest in new agricultural production capacities (Table 3).

Table 3. Investments in fixed assets in agriculture, forestry, hunting, fishing and fish farming

2014		2015		2016		2017		2018	
Billion rubles	Billion rubles	% by previous year	Billion rubles	% by previous year	Billion rubles	% by previous year	Billion rubles	% by previous year	
524,3	518,8	98,95	623,4	120,16	705,5	113,17	777,0	110,13	

Источник: составлен авторами по материалам (Federal state statistics service 2019)

According to the Federal State Statistics Service, investment in fixed assets in agriculture in 2015 decreased by 1.05%. The growth immediately by 20.16% in 2016 was replaced by the sluggish dynamics of 2017 (+13.17%), at the end of 2018, investment growth in agriculture and related industries amounted to only 10.13%. Given the opportunities that have opened up, including due to the restriction of the import of certain food products (back in 2014), this situation should be assessed as negative.

In 2018, enterprises and agricultural organizations for seasonal field work received loans totaling 454.76 billion rubles. (+43.45%), including the Agricultural Bank issued 325.73 billion rubles. (+20.25%), Sberbank –129.03 billion rubles (179.6%). In 2017, 317.02 billion rubles were disbursed, including the Rosselkhozbank issued 270.87 billion rubles, and Sberbank –46.15 billion rubles.

In 2018, the Ministry of Agriculture of Russia with authorized banks processed more than 20 thousand applications for soft loans. It is important to note that the largest number of them, namely 11,392 applications (57%), fell on small forms of management (farmers and private entrepreneurs).

Argoproducers need to accelerate the process of transition to a new level of development in order to gain competitiveness and profit in the rapidly transforming agricultural market. According to Agro Digital, in Russia at the beginning of September 2019 the level of digitalization of agriculture does not exceed 15%, the transition to digital agriculture will save up to 40% of production that is lost at different stages of production. The introduction of integrated digital solutions for agribusiness enterprises, automation of control systems, artificial intelligence can significantly modernize the entire industry, reduce costs and increase production efficiency.

4 Conclusion

We recommend financing the development of the digital economy in the agricultural sector mainly through self-financing, due to limited budget support, and the main goal of such projects is to increase profitability, an unprecedented increase in the profitability of production in the agricultural sector due to the following measures.

- (1) Development of a food assistance program for low-income groups. The need for the vast majority of food in Russia is significantly lower than the medical norm of consumption in the face of a decline in real disposable income.
- (2) A multiple decrease in retail prices (not by 10–15%) while increasing agricultural margins.

We agree with the expert Alexander Gerasimov (Davletshin and Trofimov 2018) that an increase in food consumption in Russia is possible due to: (a) a reduction in the cost of production per unit when switching from the sale of agricultural machinery and automation to ownership to a payment model their functions in terms of actual volume or even consumption results; (b) the cross-cutting nature of digitalization, which allows for the informational linking of the needs of a specific end-user and the capabilities of a particular agricultural producer, thus eliminating a huge number of unnecessary intermediaries.

- (3) Automation of the process of providing accounting and financial statements in the form of blockchain technology (Melikhov et al. 2018) will significantly reduce the time and cost of agricultural producers to integrate all systems and business processes - the main difficulty of digitalization.
- (4) Development of domestic and foreign markets for eco-goods in Russia. 77% of consumers of organic and environmentally friendly products from the USA,

Germany, France, China, Canada and Italy are ready to pay 30–50% more for them than inorganic ones, and in Russia 200–300% (premium to the price of “ordinary” Product) (Gorodishcheva 2019). At the beginning of 2019, there were 28 million hectares of land in the Russian Federation (arable land ready for organic production, not used and not subjected to chemical treatment for a long time), suitable for growing “clean” products. The law on environmentally friendly products should be launched from January 1, 2021 and regulate the use of the eco mark, create a Russian brand of green products, which would become a business card and a synonym for high quality products not only for foreign but also for domestic consumers.

- (5) Agroformations that produce environmentally friendly products must position themselves along the entire value chain, especially to the end user. At the same time, it is necessary to engage in marketing to increase profitability and sales, rebrand, deliver products to retail chains in order to withstand competition in low inflation.

So, the rise of smart agriculture is impossible without a competent partnership between the state and business. Budgetary, extra-budgetary and private investments determine the pace of development of agricultural production, they are a powerful incentive for the development of scientific and technological progress and guarantee the sustainable development of the agricultural sector.

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The Transformation of Agriculture in the Context of the Economy Digitalization in Order Ensure the Competitiveness of Modern Russia

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Abstract. The aim of the article is to consider the main directions and problems of agriculture digitalization and suggest possible solutions.

Results. Digitalization is the trend of the modern economic development. Aware of the potential and necessity of this vector, special attention is paid to the implementation of the departmental project “Digital Agriculture”, its main components are presented. The newly established Analytical Center for the Ministry of Agriculture of Russia has been highlighted as a key conductor for consolidating the available statistics on the agro-industrial complex. The article describes some information systems that are implemented and used in the industry. The main problems of the transformation of agriculture in the context of digitalization of the economy based on SWOT analysis are disclosed; Strengths and weaknesses, opportunities and emerging threats are identified. The results of the SWOT analysis made it possible to determine the directions for solving the problems of agricultural transformation in the context of digitalization. The result of the study was the conclusion about the strengthening of the role of the state in digital processes.

Conclusion. Digital technologies will affect the agricultural production process itself, will contribute to the growth of agricultural production aimed at import substitution and export demand, which in turn will guarantee the food security and independence of modern Russia and increase its competitiveness

Keywords: Digital technologies · Digital agriculture · Digital platforms · Digital solutions · Government

JEL Classification: J 43 · Q 18 · Q 19

1 Materials

Информационно-эмпирическую базу исследования составили официальные материалы Министерства сельского хозяйства Российской Федерации, Аналитического Центра Министерства сельского хозяйства Российской Федерации; обзорные разработки исследователей, опубликованные в периодической печати и сети Интернет. Особенности и возможности перехода к цифровой экономике представлены в трудах Волковой А.А., Мехренцева А.В., Мезенцевой Е.С.

Плотникова В.А., Старикова Е.Н., Стрелковой И.А., Рукинова М.В. (Volkova et al. 2019; Mehrentsev et al. 2018). Вклад ученых является базисом для проведения дальнейших исследований в контексте трансформация сельского хозяйства в условиях цифровизации экономики. The information and empirical base of the study were official materials of the Ministry of Agriculture of the Russian Federation, the Analytical Center for the Ministry of Agriculture of the Russian Federation; survey developments of researchers published in periodicals and on the Internet. Features and possibilities of the transition to a digital economy are presented in the works of (Volkova et al. 2019; Mehrentsev et al. 2018). The contribution of scientists is the basis for further research in the context of the transformation of agriculture in a digitalized economy.

2 Methods

This study is based on the research and synthesis of theoretical and factual materials on digital agriculture using various methods: systemic, comparative, as well as tabular and graphical methods.

3 Introduction

national goals and strategic objectives of the development of the Russian Federation through 2024 included “speeding up the introduction of digital technologies in the economy and the social sphere” (Decree of the 2018). The Executive Order of May 7, 2018 No. 204 defines the national program “Digital Economy of the Russian Federation” (Mehrentsev et al. 2018).

Initially, when the Federal Program for the Digital Economy was developed, agriculture was not included in the list of priority sectors. The increased attention of the federal executive bodies to the development of digitalization in all sectors of the economy predetermined the urgency of developing the departmental project “Digital Agriculture”, the purpose of which is the digital transformation of agriculture through the “introduction of digital technologies and platform solutions to ensure a technological breakthrough in the agricultural sector and achieve growth productivity at “digital” agricultural enterprises in 2 times by 2024” (Departmental project 2019).

4 Results

4.1 Review and Opportunities of Key Areas of Agricultural Digitalization

The digitalization of agriculture is represented by two components: the digitalization of public administration (state support) processes in agriculture and the digitalization of

agricultural production itself (Departmental project “Digital Agriculture” 2019; Explanatory note 2019). The Ministry of Agriculture of the Russian Federation proposes a departmental project “Digital Agriculture”, in which digital transformation of agriculture will be carried out through the introduction of digital technologies and platform solutions and will be built on the following paths (Fig. 1):

<i>national level</i>	functioning of digital platforms of the Ministry of Agriculture of Russia, predictive analytics based on big data, with tools of a distributed registry, artificial intelligence
<i>regional level</i>	smart industry planning, smart contracts
<i>agribusiness level</i>	mass implementation of integrated digital agro-solutions, mass production of digital competencies by specialists of agricultural enterprises

Fig. 1. Ways of digital transformation of the industry

So, the structure of the Ministry of Agriculture of Russia is supplemented by the Analytical Center, the main purpose of which is to consolidate the available statistics on the agricultural sector. One of the key tasks of the center is to ensure the availability of industry information and coordination between the Ministry of Agriculture of Russia, regional governing bodies of the agro-industrial complex, industrial unions, agricultural organizations, cooperatives and farms.

The departmental project “Digital Agriculture” is represented by the components:

1. “Effective hectare”. The Ministry of Agriculture of Russia launched the Unified Federal Information System on Agricultural Lands, which includes reliable information on agricultural lands, soil condition, and the state of agricultural vegetation in real time. This will facilitate the implementation of sectoral intellectual planning in 85 constituent entities of the Russian Federation based on the principle of growing the most profitable crops (Digital Transformation of Agriculture 2019).
2. “Smart contracts”, that is the creation of personal subsidy offices. It will be possible to automate the provision of subsidies and other types of state support (subsidy/credit/insurance) based on that. Interaction with the Federal Service for Hydrometeorology and Environmental Monitoring and the Ministry of Emergencies will make it possible to adjust the issue of subsidies regarding the introduction of emergency situations in the regions. By 2021, 100% of contracts with recipients of subsidies will be concluded in this mode.
3. Agroexport “From the field to the port”, that is the modeling of export flows of agricultural raw materials. Interaction with the Federal Service for Hydrometeorology and Environmental Monitoring will contribute to an accurate forecast of the crop and harvest time. By 2021, escorting 100% of agricultural products export-oriented will be accompanied by a paperless “field to port” system.

4. “Agro-solutions for agribusiness” includes the creation and scaling of domestic integrated digital agro-solutions: “Smart Farm”, “Smart Field”, “Smart Herd”, “Smart Greenhouse”, “Smart Processing”, “Smart Warehouse”, “Smart Agrooffice” (<https://www.mcxac.ru/>).
5. “Land of Knowledge” involves the creation of Russia’s first industrial quasicorporate electronic educational system. It is planned to train 55,000 specialists of agricultural enterprises for 3 years in the digital economy.

The departmental project involves the implementation of the “Information System of Digital Services of the AIC” of the Ministry of Agriculture of the Russian Federation. This will eliminate the need for agricultural producers to conduct personal visits to regional and municipal agro-industrial complex authorities for government support measures (Departmental project “Digital Agriculture” 2019). Such an innovation is aimed at the formation of a single digital space that ensures the implementation of the tasks of digital transformation of agriculture. This will ensure the speed and interactivity of the provision of state support measures to economic entities in the agricultural sector.

An important point in digitalization will be the lack of the need to submit large sets of documents for applications, the provision of reporting forms in various information systems. The implementation of the electronic reporting process by agricultural producers through a personal account in a super service will facilitate the automatic verification of data between reporting forms, filling out reporting forms provided by the Ministry of Agriculture of Russia in one interface, reducing the length of the preparation and delivery of reports and operating costs and the duration of the acceptance process reporting, as well as improve the quality of information in reporting (the introduction of automated monitoring during reporting by agricultural producers).

To obtain state support measures, agricultural producers will have to provide accounting and financial statements (for example, as part of the provision of tax reporting to the Federal Tax Service). Automating the process of presenting these reports will significantly reduce the time and costs of entities involved in this process and receive up-to-date information by state authorities responsible for providing state support measures about financial and accounting reporting more quickly (Departmental project “Digital Agriculture” 2019).

An important digital tool is the *Central Information and Analytical System of the Ministry of Agriculture of Russia*. The system was developed to form a single analytical base for monitoring the state of the agro-industrial complex and support management decisions by the Ministry.

Attaching importance to subsidies, the Ministry of Agriculture introduced the *Automated Information System “Subsidies for Agriculture”*, the main functions of which are to distribute subsidies, inform the Russian Federation on subsidies, monitor the subsidies, monitor the quarterly reporting on subsidies, and select investment projects.

5 Current State of Digital Agriculture and the Needs of the Industry in Digital Technologies

The introduction of digital technologies will contribute to the total increase in agricultural production, which will amount to 361.4 billion rubles. In 2017, the actual volume of crop production amounted to 3033.2 billion rubles. The volume of crop production using digital technologies is 3227.1 billion rubles. The expected increase in crop production due to the introduction of digital technologies is 193.9 billion rubles. Elements of the Internet of Things (IoT) are already used by up to 0.05–5% of agricultural producers in Russia (Agrophysical Research Institute). For comparison, in the USA it is up to 60%, in the EU – up to 80% (Truflak 2018).

Precision farming related solutions are used by about 10% of Russian agricultural enterprises, holdings and farms (Truflak 2018). According to the results of the study in 85 constituent entities of the Russian Federation, 20% of them demonstrate a high level of development of information technology and the introduction of technological solutions in the agricultural sector, and an average indicator is recorded in 29% of the regions (Official website Analytical 2019).

Among the leaders in the pace of implementation of digital approaches in agriculture: Altai Region, Krasnodar Region, Kursk Region, Lipetsk Region, Samara Region, Republic of Bashkiria, Republic of Tatarstan. The level of agro-industrialization digitalization in the regions was assessed by such indicators as testing pilot solutions and their replication, full-featured use of e-Government and new digital technologies, amending regulations that ensure the implementation of the departmental project “Digital Agriculture”, unification and application of centralized solutions, and also the ability to connect existing regional systems with a high level of development of information technology.

Studies of industry needs for digital technology have shown the following results. For half of large and medium enterprises in the agricultural sector and about one third of small businesses there are no barriers to the introduction of digital technologies. Costs for one third of such entities are the main factor hindering their implementation. For small and medium enterprises there are no digital applications that meet their needs (demand). (Results of research 2019) (Fig. 2).

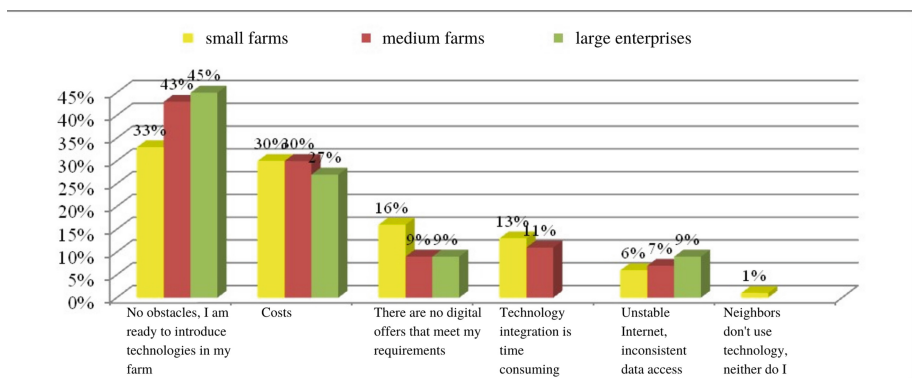


Fig. 2. Digital dissemination problems

Effective implementation of digital technologies is provided not only by financial support, but also by supporting infrastructure (Fig. 3).

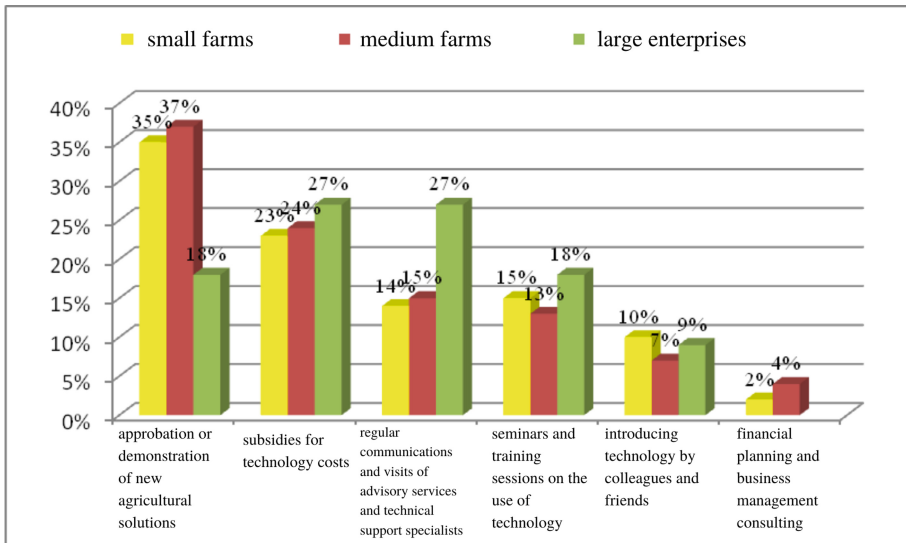


Fig. 3. Digital distribution solutions

According to business entities of the industry, financial investments are needed in training programs, experience exchange programs, etc.

6 The Main Problems of Agricultural Transformation in the Context of Economy Digitalization

Based on the traditional methodology for conducting SWOT analysis, we will identify positive and negative trends in the digital transformation of agriculture, which serve as the basis for the formation of strategic growth points that contribute to the full introduction of digital technologies in the industry (Table 1).

Table 1. General matrix of the SWOT analysis of agricultural transformation in digitalization

Benefits (Strengths) (S)	Disadvantages (weaknesses) (W)
Increasing industry profitability	Lack of trained IT specialists in the industry
Increased food consumption, improved product quality	Imperfection of legal regulation of the development of information technology in the industry
Conditions to reduce the cost of agricultural raw materials	A low level of staffing in the context of information security
Reduction in the cost of agricultural products for the population	Lack of full digital infrastructure in rural areas
Increase in export earnings, modeling of export flows of agricultural raw materials	Insufficient level of knowledge on the creation and use of information and communication technologies
Improving the financial support process for agricultural producers (changing the procedure for providing accounting and financial statements, simplifying loan approval procedures and obtaining subsidies)	Insufficient or complete lack of financial resources for majority of agricultural producers for the introduction of technologies
Formation of an effective sales chain from producer to consumer	Low awareness of digital technology
Integration into related industries of the digital economy	
Worldwide availability and promotion of goods	
Opportunities (O)	Threats (T)
Expansion of geographical and economic markets	Minimization of human participation in agricultural activities (rising unemployment)
The relationship of agricultural producers and consumers	High import dependence (lack of production of the required amount of Internet of things of Russian production)
Creation of conditions for increasing transparency of agricultural markets for households and consumers	Digital fraud, increasing cybercrime, expanding “opportunities” for illegal financial activities
Providing farmers with new IT - opportunities to increase added value	Disappearance of professions (transformation of professions)
Creation of databases on the preferences of consumers of agricultural products and the possibilities of their producers	Ethical issues
Agricultural producer income growth	
Increasing the attractiveness of the industry as a type of labor activity	
Reduction of negative environmental impact	

A significant factor in the context of the digital transformation of the industry remains the lack of qualified IT specialists. In the Russian Federation, 112.9 thousand IT specialists in the agricultural sector, or 2.4% of the total population employed in agriculture (see Fig. 4).

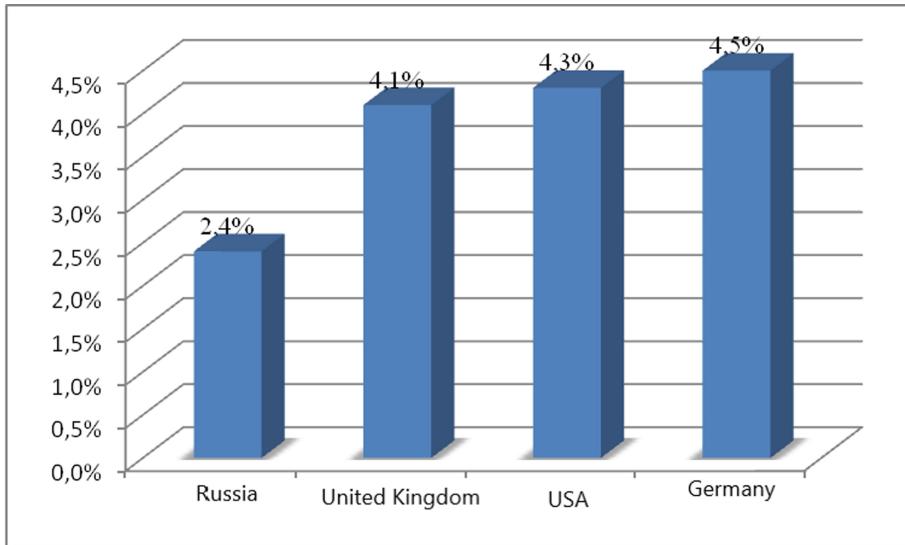


Fig. 4. The share of IT professionals in agriculture of the total number of agricultural workers

So, according to the Analytical Center for the Ministry of Agriculture in Russia, there is 1 IT specialist per 1000 people employed in agriculture. The size of investments in ITC in 2017 amounted to 3.6 billion rubles, or 0.5% of the total investment in fixed assets. This is the lowest indicator in the industry, which indicates the low digitalization of the domestic agricultural sector and the competitive advantage of foreign producers. To achieve the indicator as the leading countries (USA, Germany, Great Britain), Russia and another 90 thousand IT specialists in agriculture are needed.

7 Conclusion

Based on the results of the study, we will offer the following directions for solving the problems of agricultural transformation in the context of digitalization. Thus, the development of the personnel potential of the industry requires appropriate training of specialists who are able to service equipment and cyberphysical devices. The centers of competence for digitalization of agriculture created in the regions (for example, the Kemerovo Region, Oryol Region, Altai Territory, etc.) can become a platform for organizing a system of continuous training of specialists in order to build competence in the field of digital transformation of agriculture.

A significant barrier in the implementation of modern ICT is the insufficiently high level of solvency of agricultural producers. It is advisable to continue to improve the subsidy system in the context of program-targeted methods of agricultural support (subsidizing Russian organizations developing and introducing digital platforms and software products at industry enterprises) and expand the scope of grant financing. The instability of budget financing is predetermined by the need to attract private investment in order to introduce and maintain technological equipment for digital agriculture.

The state should create conditions for motivating private entities in solving this problem (tax benefits, provision of guarantees, loans, grants, etc.). So, in the UK, after the adoption of the law “On the Digital Economy” in 2010, a digital economy strategy was developed aimed at solving the problems of digital transformation of the national economy (Strelkova 2018). R&D financing and tax credits are the main tools in the development of the US digital economy. In Australia, the role of the state in the process of digitalization of the economy is represented by providing the legal framework, increasing the scale of investments in public broadband access to the Internet, science and research.

The identified shortcomings during the SWOT analysis emphasized the feasibility of the legislative regulation of digital agriculture, as the current regulatory legal acts slow down the digitalization of agriculture (imperfection of the norms obliging to provide information on the state and use of agricultural land, etc.)

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Transformation of Population Finances in Russia and Abroad in the Era of Digitalization and Industry 4.0

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Abstract. Purpose: The purpose of the article is to reveal the main manifestations of population finances transformation occurring under the digitalization influence and the Industry 4.0 onset.

Design/Methodology/Approach: The authors, relying on the essential characteristics of population finances identified earlier in their studies at three levels of the domestic economic system (nano-, micro- and macro- ones), determined and examined three main areas of population finances transformation in Russia. The methods applied involve historical and logical analytical methods, systems analysis, synthesis, induction, and deduction. The authors used the method of sociological surveys and expert opinion to study the digital and financial literacy level of Russians.

Findings: The first area of population finances transformation includes changes in the forms and sources of active and passive income. The second one is transformation of level and forms of financial products and services consumption by the population. The third one is actualization of society needs in improving digital and financial literacy. Under the digital technologies and Industry 4.0 influence, the economy and finances are changing at both the national and global levels. Active income of the population is changing due to labor market transformation and demand for professions, as well as the rapid growth of Internet entrepreneurship forms in the scientific and technological revolution fourth wave. Passive income of Russians does not change its form, but it acquires digital ones.

Originality/Value: The authors argue for the need to improve both financial and digital literacy of Russians as the electronic (digital) forms of consumption, savings, and investment are gaining more weight in the population finances, the possibility of overcoming country territorial borders for the personal investment of Russians is increasing, the digital financial fraud risks are growing, and the area and instruments of state control over the population cash flow are expanding.

Keywords: Household finances · Personal finances · Population finances · Digital economy · Transformation · Technological change · Financial service

JEL Code: G 510 · G 530 · G 200 · O 033

1 Introduction

There should be made an important digression: the population finance (personal finance, household finance) theory and methodology is currently underdeveloped both in Russia and abroad (Campbell 2006) as an independent branch of scientific knowledge. There is a terminological confusion and a lack of understanding of the nature, forms, elements, functions, and implementation of population finances. The authors voiced their position on the content of population finances, their functions, elemental composition, characteristics, measurement, and manifestation features at nano-, micro- and macro- levels of the domestic economic system, and other key methodological issues in their previous studies (Mytareva et al. 2014).

The Industry 4.0 digitalization and technologies are changing external and internal economic development factors, market entities functioning, and, of course, it changes the financial system worldwide, as well as its individual links: states, companies, financial organizations, the population itself.

It is generally recognized that the global and national financial systems have been rapidly changing since the end of the last century moving to an unlimited financial system under technology and innovation influence (unfettered financial system (Hendershott and Villani 1981)). Over time, differences between specialized financial intermediaries smooth out and disappear (banks, pawnshops, commissions, and others), new financial institutions and products emerge and develop, and the forms of financial products provision and consumption change (Internet banking, remote banking, electronic insurance policies, etc.). Moreover, physical accessibility of financial services and products for consumers is becoming less important in terms of the economy and finance digitalization, all participants' transaction costs in the financial system are being reduced, all transactions speed and operations transparency in the economy is increasing many times. The possibilities for controlling and monitoring each monetary unit and its owner develop, new financial digital fraud forms appear, as well as the technological tools for combating them and providing security of settlements, operations, transactions, information about them and all persons involved.

Understanding how digitalization affects the economy does not require a fundamentally new economic theory but requires a different emphasis, namely, which transaction costs are reduced and how much it happens (Goldfarb and Tucker 2017).

The authors highlighted three aspects illustrating the ongoing transformations in the population finances occurring under the influence of digitalization and the Industry 4.0 technological era advent. These aspects analysis also allows identifying future changes areas in the population finances, both positive and negative.

2 Materials and Methods

The research materials were analytical reports of the World Bank, NAFI, ExpertRA, Bank of Russia, PJSC Sberbank of Russia, OECD, and McKinsey.

The research methodology is presented by historical and logical analytical methods, systems analysis, synthesis, induction, and deduction. The authors used the method of

sociological surveys and expert opinion to study the digital and financial literacy level of Russians.

3 Results

3.1 Transformation of Income Forms and Sources

Active forms of population income are known to consist of employees' remuneration and business entrepreneurs income. The scientific and industrial revolution transforms the labor market, as demand and enquiry for specialities and professions changes significantly (former professions disappear new ones appear). The McKinsey Global Institute (MGI) estimates that by 2040, up to 50% of all jobs in the world will be robotic and automated (Aptekman et al. 2017). However, new technologies replacing a person in routine processes open up new employment opportunities, as well as training and improving the efficiency of public services (World Development Report 2019). Maintaining the human capital leading role in economic development in the context of Industry 4.0 is possible in the form of social entrepreneurship universally supported by national governments as an attempt to counter the threats of Industry 4.0 commercialization (Deloitte 2018).

Globally, now 34% of the employed population work in their own business, 11% are engaged in family business, 52% are employees, 3% are employers (Earth Population 2019). According to 2014 data, 93% are employees, 1.3% are employers, and 5.4% are self-employed (private entrepreneurship) in Russia (Volovskaya and Plyusina 2016).

In the context of digitalization, traditional labor recruitment begins to compete with the remote Internet work possibilities: the number of freelancers and people working remotely has been growing. Since 2019 Russia has introduced an income tax on self-employed as an experiment.

Population entrepreneurial incomes are also being transformed. Electronic business is gaining more and more popularity: electronic commerce, Internet services, and so on. The volume of electronic commerce in Russia in 2018 reached 1,150 billion rubles (Online Commerce in Russia 2018), which exacerbated the problem of tax and state financial control over participants in e-business and consumer protection. The so-called "e-commerce tax" is widely introduced throughout the world (and in Russia in terms of VAT taxation).

Passive forms of household income include pensions, allowances, scholarships, investment income, bank interest on deposits, rental property income (most often real estate). Their receipt accepts a remote electronic format. So, at the beginning of 2019, more than 94% of accounts opened at credit organizations by individuals have remote access (Bank of Russia 2019). More than 40 million Russians use the State Services (Gosuslugi.ru) electronic service intended for state and municipal services consumption.

3.2 Transformation of Forms of Financial Products and Services Provision and Consumption

Under the influence of digitalization, new ways of providing and consuming financial services and products are emerging. They leads to even greater asymmetries between financially untutored and sophisticated households (naive and sophisticated households in Campbell terminology (Campbell 2006). Low education and income level of naive households makes all possible financial services and products unavailable for them (as a rule, they consume the simplest financial products such as bank deposits, consumer loans, and risky insurance products). Sophisticated households have financial ability to consume more complex financial products with greater benefits (securities investments in domestic and foreign markets in mutual investment funds, bank-managed mutual fund, ETF funds, derivative securities, cryptocurrency, real estate, startups, etc.). In fact, we are talking about the fact that low-educated and low-income groups of population (naive households) in financial relations often lose or receive fewer benefits and incomes, while highly educated and high-income groups (sophisticated households) benefit, because the loss of one is the gain of the other in a closed financial system. The Industry 4.0 digitalization and technologies strengthen the asymmetry between naive and financially sophisticated households, because they require not only high digital and financial literacy but also a high level of technological support (high-speed secure Internet, modern computer equipment and support, etc.).

Modern banks, insurance companies, managers, depositories, actuaries, pension investment funds, brokers, traders, exchanges, and other financial market participants are actively introducing Industry 4.0 technologies: artificial intelligence, blockchain, big data, etc. Most often, artificial intelligence is used by banks in credit scoring, in the field of debt collection, in marketing while creating individual offers to customers, less often in call centers (work automation through chat bots) and information protection services. Artificial intelligence is also effective in detecting fraudulent transactions. Less often Russian banks are counting on a significant result from the use of artificial intelligence in personnel management, monitoring the background information regarding the bank, and customers' remote identification.

Many world and domestic financial organizations see the wave of technological progress as an accelerator of their development and even a platform for significant diversification of their business in terms of going beyond the limits of production and selling only core products - to the production and sale of new technologies. In Russia PJSC Sberbank is "the regulated technology company" in Expert RA terminology (Artificial Intelligence in the Banking Sector 2018) positioning itself as a "technology company with a banking license" with the corresponding ecosystem (Artificial Intelligence in Banks 2018; Sberbank 2019). The experience of General Electric Company and large digital companies based on traditional corporations as Samsung, LG, Toyota, Sony, Toshiba, SoftBank, Alibaba, Huawei (Aptekman et al. 2017) is also noteworthy.

The introduction of Industry 4.0 technologies in the activities of financial organizations significantly reduces their costs that makes financial products and services more affordable for consumers. Savings in "processing counter transactions, product structuring, account management, auditing and financial control" can be up to 60–75% and 50% for the bank operating activities. According to the experts, it can be increased up

to 80% (due to reduction in staff involved in document management and payment processing) (Blockchain 2017). Nearly 29% of financial companies in the world are estimated to use robotic automation of processes (25% use technology for risk management, 21% for generating risk reports, 20% for regulatory reporting), 40% use big data and cognitive analytics, 25% use machine learning (Artificial Intelligence in Banks 2019). However, there is a risk of inefficient use of technology (Gorshkova et al. 2019).

The authors predict the financial activity boundaries erosion and its fusion with other areas and industries.

3.3 Actualization of Society Demand in Improving the Population Financial and Digital Literacy

The economy and finance digitalization raises the issue of compliance with personal financial security requirements. The increase in number and forms of digital fraud in the financial sector makes increasing the digital and financial literacy of Russians highly demanded.

The current level of financial literacy in Russia is average: according to OECD estimates, its index is 12.12 out of 21 (the 11th place). For comparison, it is 11 points in Italy, 9.6 points in Saudi Arabia, 14.9 points in France, 14.6 points in Canada (OECD 2017).

In 2017, every second inhabitant of the Earth was connected to the Internet. Russia ranks first in Europe and sixth in the world in the number of Internet users (Aptekman et al. 2017; And if without the Internet? 2017). In 2017, 75% of Russians used web Internet and 75% used mobile Internet (And if without the Internet 2017). Digital literacy of Russians as a set of knowledge and skills that are necessary for the safe and effective use of digital technologies and Internet resources, which includes digital consumption, competencies and security (Digital Literacy 2019), is measured by the regional public organization “Internet Technologies Center”. In 2018, its index amounted to 4.52 compared to 5.99 in 2017 (it decreased by almost 15%). According to the results of the 2018 digital literacy study of Russians conducted by NAFI Research Centre, Russians have low digital literacy (52 percentage points out of 100 possible), and only 26% of Russians have a high level of digital literacy. It is noteworthy that 55% do not consider it necessary to protect their personal data, 38% do not use updated antivirus software, 51% do not compare information from different sources, 36% of Russians tend to keep abreast of technological innovations, 58% are sure that modern technologies make life easier. However, 53% of Russians experience difficulties in mastering technological innovations (NAFI 2019).

4 Conclusion

Digital technologies and Industry 4.0 are transforming familiar way of life in economy and finance at the national and global level requiring all subjects of economic relations to actively adapt to new conditions of interaction. The study examined three main areas of population finance transformation under the Industry 4.0 influence. Analysis of changes in the active income of Russians revealed a high risk of labor income loss for

at least 40% of working Russians due to production and leading areas of intellectual work automation and robotization. Instead, there are growing opportunities for self-employed and freelance Russians in areas where interaction with consumers and employers occurs remotely using digital technology and the Internet. In terms of entrepreneurial income of Russians, the authors identified two aspects that actualize their influence in conditions of scientific and technological progress. On one hand, there is widespread replacement of traditional business with electronic forms (electronic commerce and digital entrepreneurship). Electronic entrepreneurship in digital sphere is becoming widely demanded due to lower transaction costs in comparison with traditional forms of entrepreneurship. On the other hand, special constructs of taxes and taxation are introduced in relation to electronic and digital entrepreneurship. It leads to an increase in the tax burden of electronic business owners. Passive income of Russians do not change their nature under the influence of Industry 4.0 and the digitalization of the economy. However, they acquire digital forms and they are based on the remote consumption of state and municipal services in electronic forms. At the same time, new opportunities for using and investing financial resources of Russians in the national and/or foreign economies are associated with an increased digital financial fraud risk. The problem of protection against digital financial fraud increase the relevance of digital and financial literacy high level of Russians in line with the problem of finding the most effective tools for retirement and insurance.

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Financial Behavior as a Component of Nanoeconomics

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Abstract. Modern economic research is constantly expanding with new approaches and concepts. Nanoeconomics is a relatively new section of economic theory, which is at the development stage, however, certain foundations of theory and methodology have already been laid. Nano-economics allows you to consider the behavioral aspects of an individual that affect his economic activity. In the framework of this approach, the study of the individual's financial behavior, which directly affects the development of the financial system and increase the competitiveness of the country, becomes particularly relevant. The aim of the article is to study financial behavior as a component of nanoeconomics. The application of the institutional approach allowed us to expand the classification of strategies for financial behavior, supplementing it with new behavior - tax, which is defined as the behavior of the individual (incentive, adaptive, protest) associated with the obligation to pay taxes and fees, as well as the right to use tax deductions (property, social, investment). The analysis of the financial services market, the performance of financial institutions, as well as tax payments and deductions, showed that citizens think about their financial well-being and depending on various factors (psychological, economic, political) their financial behavior changes, which is confirmed by the analysis of statistical indicators.

Keywords: Nanoeconomics · Financial behavior · Tax behavior · Personal finances · Saving

JEL Code: G400 · G410

1 Methodology

The general scientific methods of cognition were used in the research: observation, analysis, synthesis, generalization, induction, deduction, analogy, comparison; and private scientific methods: expert assessment method, correlation analysis. The work used data from the Federal State Statistics Service (Russian Statistics Committee), the Federal Tax Service, the Central Bank of the Russian Federation, Deposit Insurance Agency (DIA), Public Opinion Fund, and "Expert RA" Rating Agency.

Modern economic science permanently expands the fundamental concepts and ideas corresponding to the current development of the economic and economic life of society. The tiered approach in economic research and the processes of globalization

and informatization of the economy have supplemented economic theory with a new concept, and the global economic system with a new level called “nanoeconomics”, which exists along with macro-, mega, mesoeconomics.

Turning to research in the scientific literature, one can come across various interpretations of this concept. The first studies of nanoeconomics in Russian economic science belong to G. Kleiner, who initially defined it as “the economy of individuals”, and later expanded causal relationships based on the individual’s behavioral moods. Subsequently, fundamental studies of the development of the theory and methodology of nanoeconomics belong to O. Inshakov, who determined its understanding in the following trends: utilitarian, behaviorist, institutional and ecogenetic (evolutionist).

In our opinion, it is the second line of research in nanoeconomics that is multidisciplinary in nature and allows us to study the behavior of individuals (individuals, citizens) through the study of financial and economic relations and relationships. In addition, it allows you to explore the institutional basis of state influence on the distribution of resources, on consumption, savings and investment of the population, development of individual entrepreneurship.

It should be agreed with I. Grishin, who believes that the development of the theory of nanoeconomics will occur through the construction of a multidimensional model, the center of which is the individual. He explores the surrounding reality and realizes the laws of its development, thus defining his economic activity, the result of which will be his own satisfaction.

One of the main determinants of individual economic activity is financial behavior (Table 1).

Table 1. Author’s approaches to define financial behavior

I. Aliyeva	“... household activities regarding the mobilization and use of funds. A special kind of economic behavior associated with the behavior of the population in the market of financial products and services and involving the mobilization, redistribution and investment of available monetary resources ...”
E. Galishnikova	“... the behavior of households and individuals related to the receipt and expenditure of cash ...”
N. Gondik	“... the behavior of the population, which is directly related to the redistribution and investment of financial resources ...”
A. Peteneva	“... financial behavior is based on a rational choice from existing options for managing financial resources in order to minimize losses and maximize benefits, it appears among the population as an economic mechanism to adapt to a changing economic situation ...”
A. Fatikhov	“... the activities of individuals, social groups and communities, to achieve common and personal goals aimed at meeting their own needs through the use of financial resources in the interaction between themselves and financial institutions ...”

The combination of factors affecting financial behavior is unlimited. These include, in particular: psychological, social, economic, political, infrastructural, institutional, demographic, ethno-cultural, etc. The influence of the commonality of these factors is reduced to a rational, irrational, or irrational model of financial behavior, and the change in consumption and savings of citizens can be considered as indicators characterizing the socio-economic processes in the state and the quality of life of citizens.

We believe that the financial behavior of an individual involves the attraction and disposal (redistribution) of available financial resources, due to his subjective internal perception of economic reality and other factors, in order to expand consumption, improve the quality of life and generate additional income.

Modern studies on the study of financial behavior, consider individual strategies that are focused on the market conditions of the proposed financial services: consumer (using available financial resources for current needs); savings (the withdrawal of part of the financial resources from its financial turnover and their preservation); accumulative investment (investing accumulated or temporarily free financial resources in order to obtain profit or income from their use); credit (use of credit products for expanded consumption of goods); insurance (risk reduction by transferring them to the insurer on the basis of an insurance contract in order to protect against possible negative factors); pension (providing more decent conditions and quality of life after retirement through the formation of financial resources in accounts in pension funds). Insurance and pension behavior are least developed and accessible to a more limited circle of individuals, since it involves certain costs due to the investment of free resources, which not everyone has available, and the risk of not achieving the expected result.

These financial behavior strategies cover only relations with financial institutions: commercial banks, credit organizations, investment companies and funds, pawnshops, insurance organizations, pension funds, etc. And do not affect formal financial relations.

Based on available studies of personal finances and financial behavior of citizens, we consider it necessary to expand it with the concept of “tax behavior” (Fig. 1).

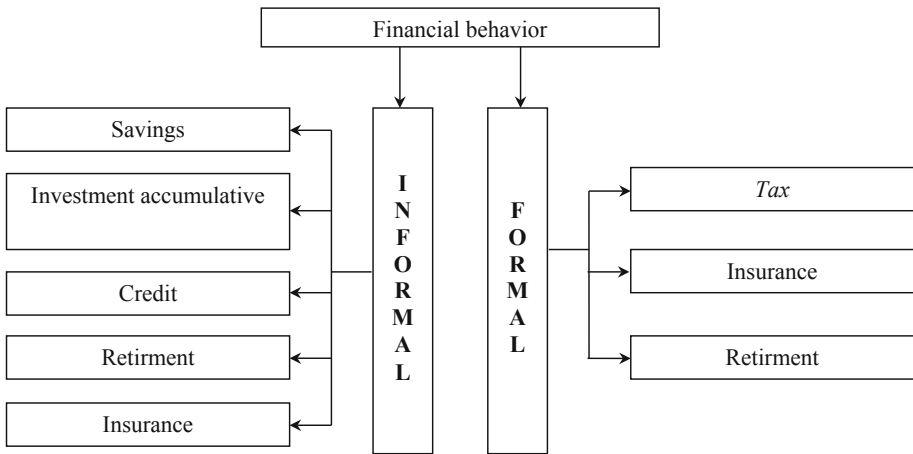


Fig. 1. Strategies for financial behavior as part of an institutional approach

Such behavior can be either direct or derived from existing strategies of financial behavior. Direct tax behavior proceeds from the very essence of tax and obliges an individual to pay legally established taxes and fees. Moreover, if a citizen is dishonest, he will try to evade the payment of tax by hiding his income, which may be associated with his entrepreneurial activity, or by renting out property. Avoiding tax payments, an individual reduces the receipt of taxes and fees in the budget system, is exposed to the risk of tax arrears, and as a result, administrative and criminal liability, which is especially important for assessing his tax behavior.

Derived tax behavior is performed as follows. For example, in deciding to take out a loan (to purchase the house), participate in pension schemes, and invest free cash resources, a citizen has the right to receive:

- (1) property tax deduction in the amount of actual costs to repay interest on target loans (credits) spent on new construction or acquisition of residential houses, apartments, rooms or shares in them;
- (2) social tax deduction: in the amount of paid pension contributions under non-state pension schemes concluded with a non-state pension fund, insurance contributions under a voluntary pension insurance agreement, insurance contributions under a voluntary life insurance agreement concluded with an insurance company, in their favor or in favor family members; in the amount of paid additional insurance contributions for funded pension;
- (3) investment tax deduction in the amount of a positive financial result obtained from the sale (redemption) of securities; in the amount of money deposited in an individual investment account; in the amount of a positive financial result obtained from operations on an individual investment account.

From the point of view of psychology, any savings, accumulations, payments on loans to citizens are considered as expenses. Thus, providing tax deductions, the state, on the one hand, stimulates the financial activity of the population, on the other hand, it allows to reduce expenses on credit, investment, and pension programs.

Besides, tax behavior can be classified in the following areas:

- incentive (the individual accepts the payment of tax or duty as a necessity, and understands his obligation to pay it);
- protest (the individual categorically disagrees with the obligation to pay taxes and fees and ignores attempts by tax administrators to pay it);
- adaptive (the individual unconditionally assumes the obligation of paying him a tax or a charge and uses the right to apply tax deductions as they arise).

Next, we analyze the financial behavior of citizens. According to a survey conducted by the Public Opinion Foundation on the financial situation of the population, 8% of the survey participants reported improvements in the financial situation of the family in recent months, 24% - deterioration, 67% reported no changes. It is believed that in the coming year, the material situation will improve 22% of respondents, suggest a deterioration of 18%, 39% do not expect changes, and do not know at all that there will be 21%. At the same time, to the question: "Which statement most accurately describes the financial situation of your family?" The following answers were given. In recent years, the number of answers "enough to buy car" has noticeably increased and

the number of those who “have enough for clothes but not for large household appliances” has decreased (Table 2).

Table 2. The results of a survey of the population: “Which statement best describes the financial situation of your family?”

Answer/Period	2010	2011	2012	2013	2014	2015	2016	2017	2018
Not enough money to buy food	14	15	13	10	9	11	13	12	12
Enough for food, no for clothes	29	27	26	24	23	27	28	27	25
Enough for clothes, but not for large household appliances	39	39	40	42	44	41	36	35	34
There is enough for household appliances, but not for car	13	15	16	18	19	16	16	17	18
Enough to buy a car	4	4	5	5	5	5	8	9	10

According to Russian Statistics Committee, in 2018, compared to 2017, the real disposable cash income of the population of the Russian Federation (income minus obligatory payments adjusted for the consumer price index) increased by 0.3% and amounted to 32,635 rubles per capita per month. At the same time, the share of labor remuneration (including hidden wages) increased in the structure of cash incomes of the population in 2018 compared with the corresponding period of 2017, while the share of social payments, income from property, and income from entrepreneurial activity decreased (Table 3).

Table 3. The structure of the cash income of the population in the Russian Federation, 2010–2018

Indicator/Period (year)	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total cash income, billion rubles, including (%)	32498,3	35648,7	39903,7	44650,4	47920,6	43525,9	53991,0	55272,1	57456,5
Remuneration, including hidden salary	65,2	65,6	65,1	65,3	65,8	65,6	64,7	65,3	66,2
Business income	8,9	8,9	9,4	8,6	8,4	7,9	7,8	7,7	7,5
Social payments	17,7	18,3	18,4	18,6	18,0	18,3	19,0	19,6	19,4
Property income	6,2	5,2	5,1	5,5	5,8	6,2	6,5	5,4	4,9
Other income	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0	2,0

Moreover, in structure of the cash income of the population in the Russian Federation, there is an increase in expenses for the purchase of goods and payment for services (1.2%), obligatory payments and various contributions (1.1%), and savings decreased by 2.5% (Table 4)

Table 4. The structure of the use of cash incomes of the population in the Russian Federation in 2010–2018.

Indicator/Period (year)	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total cash expenses, billion rubles	н/д	н/д	н/д	42329,5	46023,1	48336,3	49566,2	52125,8	56011,3
Total cash income (%)	100	100	1000	100	100	100	100	100	100
Purchase of goods and payment for services	69,6	73,5	74,2	73,6	75,3	71,0	73,1	75,8	77,0
Mandatory payments and various fees	9,7	10,3	11,1	11,7	11,8	10,9	11,2	11,1	12,2
Saving	14,8	10,4	9,9	9,8	6,9	14,3	11,1	8,1	5,6
Currency purchase	3,6	4,2	4,8	4,2	5,8	4,2	4,0	3,7	3,7
The increase (decrease) in the hands of the population	2,3	1,6	0,0	0,7	0,2	-0,4	0,6	1,3	1,5

A survey of the population on measuring inflation expectations and consumer sentiment, conducted by the Bank of Russia, showed: more than half of the respondents believe that it is necessary to save free money; about 30% believe that it is necessary to buy large, expensive goods, while about 40% believe that it is better to store savings in bank accounts or in cash (Figs. 2 and 3).

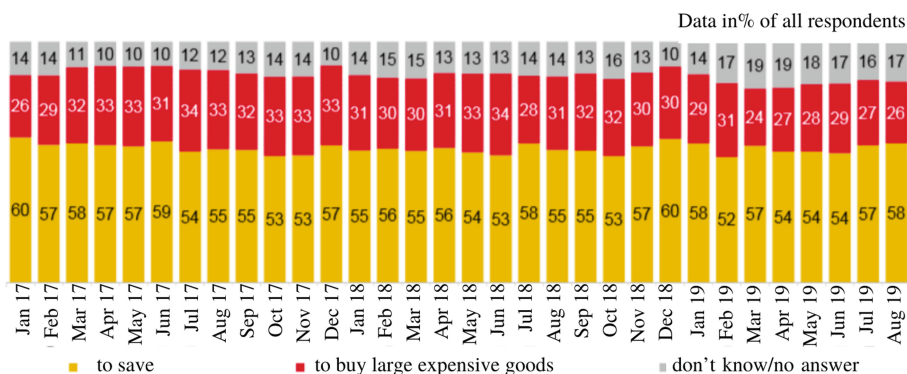


Fig. 2. Respondents to the question: “What is the best way to manage free money?”

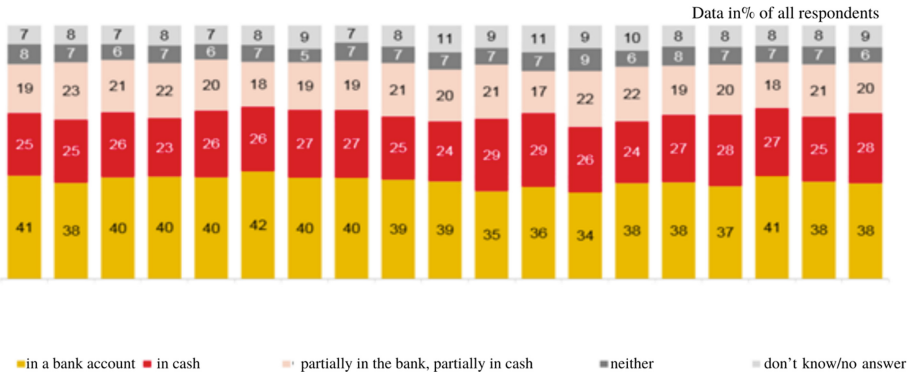


Fig. 3. Preferred form of savings

Changes in financial behavior are pronounced during periods of crisis and after. So, 2014 was characterized by a decrease in retail lending (mortgage and consumer). Owing to their personal perception of the economic situation, citizens try to save and accumulate more (Table 5).

Table 5. The structure and dynamics of population savings in the Russian Federation in 2010–2018.

Indicator/Period (year)	2013	2014	2015	2016	2017	2018
Increase (decrease) in savings in deposits of banks of residents and non-residents billion rubles %	2 632,4 6,0	-129 -0,3	3 058,6 5,8	2 271,5 4,2	2 305,5 4,1	1 818,8 3,1
Acquisition of government and other securities billion rubles %	223 0,5	250 0,5	272 0,1	34 0,1	38 0,1	-82 -0,1
Increase (decrease) in funds in the accounts of individual entrepreneurs billion rubles %	20 0,0	44 0,1	30 0,1	63 0,1	128 0,2	138 0,2
The increase (decrease) in cash in the population in foreign currency billion rubles %	254 0,6	1 130,5 2,4	-530 -1,0	1 126,2 2,1	1 237,7 2,2	1 391,1 2,4
Property purchase costs billion rubles %	929 2,1	1 052,8 2,2	891 1,7	1 117,0 2,1	1 119,1 2,0	1 166,0 2,0
Purchase of livestock and poultry by the population and farms billion rubles %	105 0,2	110 0,2	121 0,2	124 0,2	128 0,2	159 0,3
Increase (decrease) in loan debt billion rubles %	2 289,5 5,2	1 229,9 2,6	-902 -1,7	95 0,2	1 356,7 2,4	2 725,9 4,7
Other savings billion rubles %	25 0,1	57 0,1	69 0,1	118 0,2	211 0,4	286 0,5
Total increase in population savings billion rubles	1 901,2 4,3	1 286,1 2,7	4 816,8 9,1	4 759,1 8,7	3 812,5 6,8	2 151,1 3,7

According to the “Expert RA” Rating Agency, in 2018, mortgage issuance grew by 49% and reached a record volume of 3 trillion. rubles. Mortgage portfolio rose to 6.4 trillion. rubles (24%), ahead of other segments of retail lending in terms of growth. Contributed to such indicators: deferred demand for housing; low interest rates on mortgages; relatively stable real estate prices. Demand for mortgage loans was generated in the segment of loans with an initial payment of less than 20% (in 2018 their share was 45% (increased by 7%). The decrease in the down payment amount and relatively low interest rates contributed to the growth of the average size of the mortgage loan. However, the loan terms in 2018 increased - up to 16.7 years (an average of more than a year).

According to the Agency for Deposit Insurance, investment and savings activity of the population showed positive results: the growth of household deposits in banks in 2018 amounted to 6.5% (in 2017 - 10.7%), an increase of 2,473 billion rubles. up to 28,460 billion rubles. A large increase in household deposits falls at the end of the year, which is traditionally associated with the payment of bonuses and other additional fees in connection with the upcoming New Year holidays.

Large deposits in 2018 grew more actively. Deposits from 1.4 million to 3 million rubles increased by 17.8% in terms of total and 18.2% in terms of number of accounts. (At the same time, their share increased from 9.7% (in 2017) to 10.3%), by 15.1% in total and by 17.6% in the number of accounts - deposits of more than 3 million rubles. (The share of such deposits increased from 31.5% (in 2017) to 32.6%).

Deposits increased by 8.5% and 2.4% in terms of the number of accounts to 100 thousand. They grew by 6.2% and 11.1% in terms of the amount of deposits from 100 thousand to 1 million rubles, and 5.3% in total and 11.0% in the number of accounts - deposits from 1 million to 1.4 million rubles. Shares of deposits up to 100 thousand rubles. and from 1 million to 1.4 million rubles. Almost unchanged. The share of deposits is from 100 thousand to 1 million rubles. Decreased from 37.8 to 36.2%.

The average size of a deposit in the banking system (excluding accounts less than 1 thousand rubles) amounted to 166.0 thousand rubles.

At the end of 2018, the share of deposits in foreign currency as a result of changes in the ruble exchange rate increased slightly (from 20.6 to 21.5%).

In 2018, the share of short-term (up to 1 year) deposits decreased from 37.8 to 36.9%, long-term (over 1 year) deposits - from 41.2 to 39.5%. The share of demand deposits increased from 21.0 to 23.6%.

If we evaluate the investment-saving behavior of the population according to the available data, then it shows a positive trend, and, based on the fact that large deposits are actively increasing, we can conclude that people with incomes above the average invest.

As for the results of insurance behavior of citizens, according to the Bank of Russia, the growth of the insurance market is provided mainly by personal insurance, as a result, its share amounted to more than half (54%) of the premiums. Of the 201 billion rubles in premium growth, 121 billion are in life insurance, 48.3 billion in accident insurance, 11.8 billion in voluntary health insurance. As regards the growth rate of premiums in 2018, it amounted to 15.7%, and excluding life insurance - 8.4%. However, the share of insurance premiums in GDP did not change significantly: 1.42% compared to 1.39% in 2017. Growth driver was retail sales through banks. Banking

sales channel crowds out the rest; it accounts for more than half of intermediary sales. The volume of premiums received with the help of credit organizations increased by 156.5 billion rubles, with a total increase in sales through intermediaries of 135 billion rubles. The Internet channel is developing mainly thanks to e-compulsory motor TPL insurance, but in retail its potential implies a multiple growth rate in the next 2–3 years. The traditional agent channel lost 37.5 billion premiums in 2018, and this trend will continue. The market structure has changed in the context of both sales channels and types of insurance.

In 2018, the number of participants in the voluntary pension system increased by 2.1%, up to 6.1 million people. The average account size of one insured person in 2018 increased by 5.7% and reached 186.1 thousand rubles.

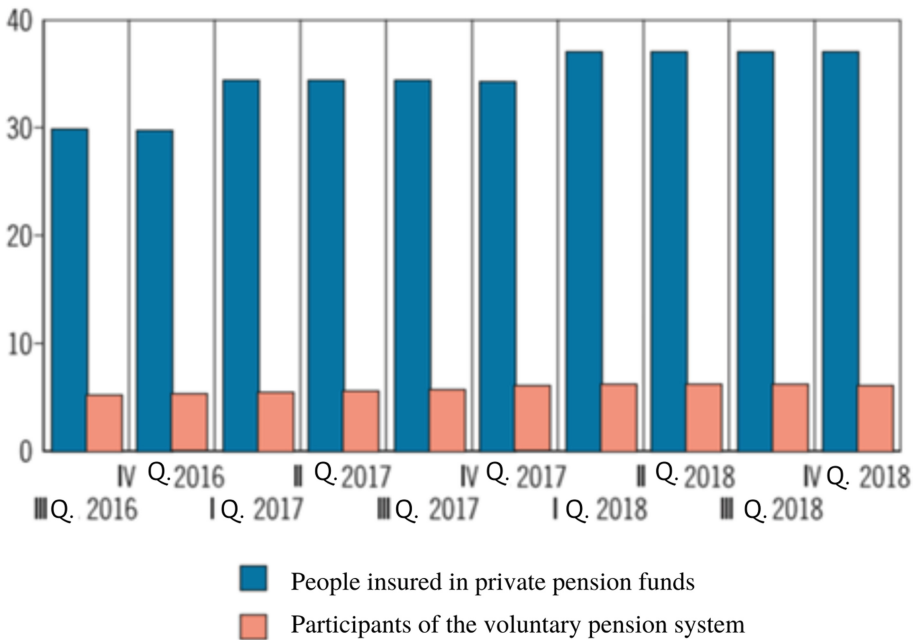
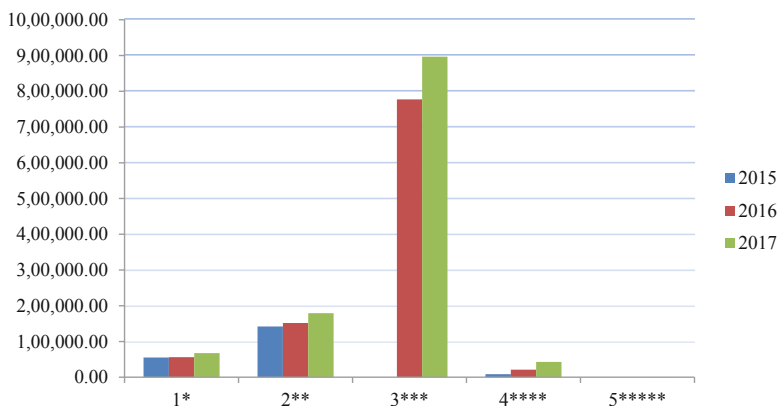


Fig. 4. The number of people insured in private pension funds and participants of the voluntary pension system

An analysis of the data on the use of tax deductions allows us to conclude that the tax behavior of citizens is active, both their number and the amount of tax deductions are growing. For the period 2015–2017 outstripping growth showed investment tax deductions. The number of taxpayers claiming a deduction when using an individual investment account increased 4 times, and the recoverable amount increased 5 times (Figs. 4, 5, Table 6).



* 1 - "the number of taxpayers who are granted social tax deductions on the amount of insurance premiums paid under voluntary personal insurance contracts, as well as under voluntary insurance contracts of the spouse, parents and (or) their children under the age of 18" (units);

** 2 - "the number of taxpayers who are granted social tax deductions for pension and insurance contributions paid under non-state pension schemes, voluntary pension insurance and voluntary life insurance, additional insurance contributions for funded pension" (units);

*** 3 - "the number of taxpayers who are granted property tax deductions for the payment of interest on loans (credits) aimed at the acquisition of real estate" (units);

**** 4 - "the number of taxpayers who are granted investment tax deductions in the amount of money contributed by the taxpayer in the tax period to the individual investment account" (units);

***** 5 - The number of taxpayers who are granted investment tax deductions taken to reduce the positive financial result (units).

Fig. 5. The number of citizens (taxpayers) applying tax deductions in 2015–2017

Table 6. Amounts of tax deductions granted in 2015–2017

	2015	2016	2017
The total amount of social tax deductions provided for insurance premiums paid under voluntary personal insurance contracts, as well as under voluntary insurance contracts of the spouse, parents and (or) their children under the age of 18	1 391 795	1 773 026	2 733 374
The amount of property tax deductions granted on interest payments on loans (credits) aimed at the acquisition of real estate	2 678 244	3 533 682	5 435 333
The amount of property tax deductions granted on interest payments on loans (credits) aimed at the acquisition of real estate	н/д	167 311 880	203 297 825
The total amount of investment tax deductions granted in the amount of money contributed by the taxpayer in the tax period to the individual investment account	2 530 946	6 623 637	14 039 187
The total amount of investment tax deductions granted, taken to reduce the positive financial result	н/д	н/д	291 758

Thus, nanoeconomics is a well-formed area of economic research. At the center of her study is the behavior of the individual, which forms a sense of reality, defines tasks, incentives and motivation, sources of information - the basis of his economic activity. Financial behavior is determined by sources (financial resources), factors (internal and external, objective and subjective), market conditions (financial institutions) and institutional constraints (mandatory norms). The study of the totality of these conditions made it possible to formulate a new strategy (model, type) of behavior - tax, existing along with savings, investment and accumulation, credit, insurance and pension strategies. An analysis of the structure of incomes and expenses of citizens, their expectations and assumptions, as well as indicators of the banking, insurance, pension and tax systems that reflect the fact of citizen participation, showed active financial behavior that quickly responded to changes in macroeconomic conditions, geopolitical conditions, and the exchange rate of the national currency.

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Environmental and Economic Security as the Condition of the Regions' Competitiveness

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Abstract. Purpose: The research goal is to elaborate the methodological toolset for monitoring the regions' environmental and economic situation in order to assess the regional environmental policy.

Design/methodology/approach: A region is considered to be competitive, in case there are favourable conditions for the city dwellers as well as the business community. Such understanding of competitiveness leads to achieving higher living standards, the conditions for which are provided by the region's environmental and economic security. In this regard, the investigation of the regions' environmental and economic situation and security assessment indicators, based on analyzing the decoupling effect, is highly topical.

Findings: The authors suggest an extended decoupling analysis methodology, provide the characteristics of the regions' various environmental and economic conditions and present the calculation of the regions' "environmental and economic risk" level. As a result, the article shows the approbation of the suggested methodology by the examples of 80 Russian regions. The article additionally gives the results of ranging and grouping the regions by the environmental and economic risk level and underlines the need to control the regions' competitiveness through the regional ecological policy both on the federal and regional levels.

Originality/value: A promising method for assessing the ecological and economic situation of regions is the use of the decoupling analysis method. The method proposed in this paper makes it possible to draw adequate conclusions about the interdependence of the economic development of regions and territories and the growth (or decrease) of environmental threats, as well as to evaluate the environmental and economic risks of the regions.

Keywords: "green" economy · Sustainable development · Regional economy · Ecological and economic effect · The decoupling effect

JEL Code: Q 51 · R 11

1 Introduction

In modern Economics the competitiveness of a region is characterized with the ability of local authorities to provide the population with high quality living conditions and sustainable economic development. It is doubtless that ecological problems deserve

special attention, because the quality of environment defines the population's quality of living (Strategy of Ecological Security 2017).

The regions' competitiveness monitoring and assessment are essential parts of the region's strategic planning. Across the globe, various indicator systems are used to assess the regions' competitiveness. Thus, the European Commission calculates the following ones:

- Regional Authority Index (RAI) calculated in ten dimensions (ten dimensions of authority for regional government) (Final report 2018): institutional depth, policy scope, fiscal autonomy, borrowing autonomy, representation, law making, executive control, fiscal control, borrowing control, constitutional reform;
- Regional Competitiveness Index (RCI) (The EU regional competitiveness 2017). The RCI is based on the World Economic Forum's Global Competitiveness Index's approach (GCI-WEF) (The Global Competitiveness Report 2018). The RCI comprises 11 subgroups, describing various aspects of competitiveness. These subgroups are divided into three groups. Which are:
 - (1) basic: institutions; macroeconomic stability; infrastructure; health; and basic education;
 - (2) effective: higher education, training and lifelong learning; labour market efficiency; and market size;
 - (3) innovative: technological readiness; business sophistication; and innovation.

Russian researchers, studying regions' competitiveness, primarily distinguish the following indicator groups: economic, social and administrative. Among the Russian studies, the authors point out the works (Danilov 2007; Inshakov 2003; Chainikova 2008; Savelyev 2010). The indicators, characterizing the regions' ecological security, are not directly included into the calculation of indexes, being analyzed. However, the authors consider that the environment's situation influences such indicators as healthy life expectancy, cancer disease death rate, heart disease death rate and the social group's indicators. Some scholars (Chibilev et al. 2018) use the following indicator groups to assess a region's environmental and economic situation: the economic potential, the environmental situation, the population's health level as well as the economic, ecological, production, scientific and technical, investment, financial and social spheres indicators. In turn, the economic and anthropogenic burden indicators are calculated basing on the aforementioned indicators.

However, the above-mentioned indexes and indicators do not take into account a very important aspect, such as the assessment of the regions' eco environmental and economic development balance. The article authors assume that of the conditions to providing a region's high competitiveness in terms of transferring to a "green" economy will be the region's ability to grow economically while ensuring ecological

security. The decoupling analysis allows concluding on the interdependence between the regions' economic development and growing ecological threats and it enables assessing the regions' environmental and economic risks. This approach helps assessing the regional economic and ecological policies' effectiveness and can be useful for the local authorities and communities as a tool for assessing the regions' efforts and effectiveness in terms of "green" development, which implies economic development and declining negative environmental impact. Moreover, the decoupling analysis can be interesting for the investors, implementing regional ecological projects, as it is necessary for them to know how the economic effectiveness correlates with the region's ecological burden.

2 Materials and Methods

The article's methodology is based on theoretical and applied works of modern researchers, studying the regions' competitiveness, environmental and economic security, sustainable development and "green" economy. In the research course the authors have studied the following materials: Final report on updating the Regional Authority Index (RAI) for forty-five countries (2010–2016) (2018), The EU Regional Competitiveness Index 2017, The Global Competitiveness Report 2017–2018 (2018). The works (Belik 2018; Bobylev et al. 2012; Inshakov 2003; Danilov 2007; Chainikova 2008; Chibilev 2018 and others) shaped the scientific framework of the study.

The research authors have used extended decoupling analysis methodology:

1. Calculation of the corrected decoupling analysis index (1):

$$DI' = T_R' - T_Y', \quad (1)$$

where: DI' – is the corrected decoupling index, reflected in relative units,

T_R' – is the coefficient of the consumed resource increase or pollution emission over a certain period (in relative units),

T_Y' – is the coefficient of the result indicator increase over the same period (in relative units),

2. The below mentioned model helps defining the six sectors, characterizing the various extents of the region's environmental and economic situation's effectiveness (Table 1).

Table 1. The sectoral characteristics of the regions’ environmental and economic situation

Sector	Situation	Characteristics
Sector I	TR’(-; 0.0) < TY’(+; 0.0)	«Absolute decoupling». The “absolute decoupling” effect reflects the most favourable condition for a region. It is characterized with the declining ecological pressure with simultaneous economic growth and sustainable development
Sector II	TR’(+; 0.0) < TY’(+; 0.0)	«Relative decoupling». A “normal” variant of a region’s environmental and economic development is followed by the growing environmental stress, although the decoupling effect remains what indicates a region’s sustainable development
Sector III	TR’(-; 0.0) > TY’(-; 0.0)	«Relative decoupling». Faster ecological stress decline with simultaneous GRP decrease. Such situation is possible when a production is being restructured and transferred to a more innovative process
Sector IV	TR’(+; 0.0) > TY’(+; 0.0)	«Brown» economic growth. Extensive ecological stress in a region. It is necessary to pay more attention to “green” technologies
Sector V	TR’(-; 0.0) < TY’(-; 0.0)	Declining ecological stress with significant deterioration of the regional economy’s effectiveness indicators
Sector VI	TR’(+; 0.0) > TY’(-; 0.0)	The worst type of situation, which is characterized with the growing ecological stress and worsening economic situation of a region

Source: authors’ model.

3. Basing on the updated decoupling index, the authors suggest rating the level of the regions’ environmental and economic risk by the following formula:

$$Reer = \sum r_i * f_i / \sum f_i \tag{2}$$

where: Reer – a region’s environmental and economic risk rating; Reer = [1 ÷ 6]; (Table 2)

- r_i – decoupling analysis sector, r_i = [1, 2, ...6];
- f_i – the number of period being analyzed, f_i = [1, 2, ...n];
- n – the number of analyzed periods.

Table 2. The rating scale of the regions’ environmental and economic risk

Reer value	Risk level	Characteristics
[1÷2]	A+	Low risk level. A region is characterized with a high economic development potential and declining environmental stress
[2÷3]	A	Satisfactory risk level. A region is characterized with economic development and moderate environmental stress
[3÷4]	B+	Acceptable ecological risk level. A region is characterized with decreasing economic development, but the anthropogenic pressure decreases as well
[4÷5]	B	High risk level. No economic development and declining environmental stress
[5÷6]	C	Extremely high risk level. Declining economic potential is followed by the increase of environmental stress in a region

Source: composed by authors.

3 Results

The research authors have inspected 80 Russian regions and rated them according to their “environmental and economic risk” level. The data from the Russian Federal State Statistics Service’s Unified Interdepartmental Statistical Information System (UISIS) over the 2010–2016 years (UISIS 2019) has been used as the regional statistical data source. The following data have been selected: emissions from stationary pollution sources (in thousands of tons); volume indices of per capita GRP; population (in thousands of people). The results are given below in Tables 3 and 4. In Table 3 the regions are rated from low to high risk level. Thus, Lipetsk Oblast has shown the lowest risk level (1,14), whereas Kemerovo Oblast has shown the highest – (4,71).

The study has discovered that almost a half of Russian regions got the B+ (46,24%) rate what speaks of the acceptable ecological risk level. Only 11,25% of Russian regions have the low risk level, while 31,25% of Russian regions have the satisfactory risk level and 11,25% of Russian regions have the high risk level. None of the regions fell into the category with an extremely high risk level. If speaking about the regions with a low environmental and economic risk level (A+), it is worth mentioning that out of 9 regions only 8 can be classified as industrial and 1 region (Kursk Oblast) is classified as agro-industrial. Out of 9 high risk level regions 7 regions are agro-industrial and 2 are industrial (Primorsky Krai and Kemerovo Oblast). Considering such regions distribution, it is worth saying that agriculture also largely influences the

Table 3. The ranking of regions on the environmental and economic risk level

Risk level	Regions
A+	Lipetsk Oblast, Tula Oblast, Arkhangelsk Oblast, Belgorod Oblast, Vologda Oblast, Irkutsk Oblast, Kursk Oblast, Novgorod Oblast, Sverdlovsk Oblast
A	Ulyanovsk Region, Chelyabinsk Oblast, the Republic of Sakha (Yakutia), the Republic of Mordovia, Murmansk Oblast, Krasnoyarsk Krai, the Udmurt Republic, Saratov Oblast, the Tyva Republic, Khabarovsk Krai, Vladimir Oblast, the Chechen Republic, Rostov Oblast, the Chuvash Republic - Chuvashia, Voronezh Oblast, Moscow Oblast, Bryansk Oblast, Yaroslavl Oblast, the Mari El Republic, Leningrad Oblast, Sakhalin Oblast, the Republic of Kalmykia, Oryol Oblast, Tver Oblast, Novosibirsk Oblast
B+	Kostroma Oblast, Moscow City, the Republic of Tatarstan, Pskov Oblast, Samara Oblast, Tomsk Oblast, Magadan Oblast, Ivanovo Oblast Kaliningrad Oblast, the Republic of Khakassia, the Karachay-Cherkess Republic, Kamchatka Krai, Astrakhan Oblast, Kurgan Oblast, the Republic of Karelia, the Komi Republic, Nizhny Novgorod Oblast, the Republic of Bashkortostan, Tambov Oblast, Omsk Oblast, Perm Oblast, the Republic of North Ossetia-Alania, the Altai Republic, Chukotka Autonomous Okrug, Kaluga Oblast, Kirov Oblast, the Kabardino-Balkarian Republic, Volgograd Oblast, Smolensk Oblast, City of St. Petersburg, Zabaikalskii Krai, the Republic of Buryatia, the Republic of Dagestan, Stavropol Krai, Tyumen Oblast, Amur Region, Ryazan Oblast
B	The Republic of Adygea, Altai Krai, Primorsky Krai, the Republic of Ingushetia, Krasnodar Krai, Penza Oblast, Orenburg Oblast, Jewish Autonomous Oblast, Kemerovo Oblast

Resource: authors’ calculations.

Table 4. The decoupling effect characteristics

Year	2010	2011	2012	2013	2014	2015	2016
Lipetsk Oblast, Reea = 1.14							
R (thousand tons)	367.630	344.910	338.750	346.680	330.000	327.690	320.360
R per capita (tons per person)	0.312	0.294	0.291	0.298	0.284	0.283	0.277
ΔR (relative units)	–	–0.058	–0.013	0.027	–0.046	–0.005	–0.021
TY (relative units)	1.044	1.053	1.022	1.037	1.053	1.012	1.017
ΔTY (relative units)	–	0.053	0.022	0.037	0.053	0.012	0.017
Sector	–	1	1	2	1	1	1
Kemerovo Oblast, Reea = 4.71							
R (thousand tons)	1410.650	1390.030	1360.360	1356.300	1331.690	1344.460	1349.480
R per capita (tons per person)	0.509	0.503	0.494	0.495	0.487	0.493	0.496
ΔR (relative units)	–	–0.010	–0.018	0.000	–0.015	0.013	0.006
TY (relative units)	1.030	1.027	0.961	0.963	1.024	0.993	0.973
ΔTY (relative units)	–	0.027	–0.039	–0.037	0.024	–0.007	–0.027
Sector	–	1	5	6	1	6	6

Note: R is emissions from stationary pollution sources (in thousands of tons); R per capita is emissions from stationary pollution sources per capita (tons per person); ΔR is the growth rate of R per capita (in relative units); TY is the index of physical volume of per capita GRP (in relative units); ΔTY is the growth rate of physical volume of per capita GRP (in relative units); Sector – characterizes the decoupling effect according to the decoupling analysis model; Reer is a region's environmental and economic risk rating.

Source: calculations according to the statistical data (UISIS 2019, Unified Interdepartmental Statistical Information System).

environment: “more than 75% of still water is used for agricultural needs, including cattle breeding, around 25% of land is used as pastures and since 1970 the production of plant crops has risen by 300%” (Rozhdestvenskay 2019). The work by Bobylev and others has been used as a source for classifying the regions into export oriented, industrial and agro-industrial (Bobylev et al. 2012, p. 34–35).

The rating leader turned out to be Lipetsk Oblast, whereas Kemerovo oblast was an outsider. The comparison of these regions is given above in Table 4. The decoupling analysis of Lipetsk Oblast has revealed that, over the period being reviewed, in 83,33% of observations shows the decline in stationary pollution sources emissions per capita and the increase of the GRP per capita. This proves the absolute decoupling effect in this region. Such a situation is the most favourable for the region's environmental and economic situation and it is characterized with the decreasing ecological stress, despite the economic growth. In contrast to Lipetsk Oblast, in Kemerovo Oblast around 50% of observations have shown the increase of stationary pollution sources emissions per capita and the decrease of the GRP per capita in 66,67% of observations. The decoupling analysis has proven that Kemerovo Oblast is in the worst sector in the half of the review period. This means that the ecological stress in this region grows and the economic situation deteriorates.

4 Conclusion

Modern global and Russian practice represents separate indicators and systems of indicators, describing the regions' competitiveness, regions' security various environmental and economic aspects, including the assessment of human influence on the environment and regions' sustainable development aspects. The indicators and indexes are calculated, basing both on the statistical data and on expert review. There regular assessments by Russian regions and other countries what allows comparing and assessing foreign global economic problems treatment practice. It is worth mentioning that the process of calculating necessary indicators is rather complicated.

Various Russian researchers have investigated the regions' environmental and economic situation. For example, this article refers to the investigations of the environmental and economic situation in Sverdlovsk Oblast (Belik 2018), Russia's steppe zone regions (Rostov, Orenburg and Saratov Oblasts) (Chibilev et al. 2018). Special attention has been paid to the adjusted net savings rate. As a result, Russian researchers (Bobilev et al. 2012) have suggested the "Russian regions environmental and economic index". This indicator was elaborated for Russian regions in 2012, what helped analyze interregional data and define regional specificity, however the absence of calculations in dynamics has not allowed assessing the effectiveness of regional authority bodies' decisions.

All indicators and systems of indicators under study do not allow making univocal conclusions on the interdependence between the regions' economic development and the increase (or decrease) of ecological threats and making the regions' environmental and economic risks assessment. The article authors have suggested the methodology of the extended decoupling analysis, which allows assessing the regions' environmental and economic situation in order to solve the aforementioned problems. The proposed methodology has been tested in 80 Russian regions, what enabled rating them on the environmental and economic risk level.

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Improvement of the System of Specially Protected Natural Territories as a Source of Competitive Advantages of the Volgograd Region

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Abstract. Purpose: The article was prepared for a scientific substantiation of the possibility of creation of competitive advantage due to the unique resource base of specially protected natural territories of a large industrial region.

Design/Methodology/Approach: When looking for internal reserves of competitiveness growth, the regional executive authorities have the ability of forming a common regional trend in the determination of competitive advantages of the socio-economic development of administrative and territorial units. In the regions with a high level of urbanization, industrialization, pollution and degradation of natural components, the emphasis in choosing the competitive advantages should gradually shift towards the sources that ensure the reproduction of social parameters of the population's life, and in particular, a favorable environment.

Findings: In the Volgograd region over the past five years, a relatively stable structural and functional system of specially protected natural territories has been developed, the elements of which mostly belong to the regional level of administration. Their condition and development dynamics depend on the category, area, location, and the intended purpose. In dependence on the spatial distribution, the levels of vulnerability and the threat of human factors influencing the individual elements of protected territories are not the same, and their competitive potential also varies.

Originality/Value: The authors justify the need to improve the system of management of specially protected natural territories as a source of competitive advantages of the Volgograd region in a long term.

Keywords: Region · Specially protected natural territories · Resource potential · Competitive advantage

JEL Code: Q20 · Q38 · R11

1 Introduction

In order to justify the conditions under which the system of specially protected natural territories (SPNTs) of the Volgograd region can become a source of competitive advantages, a number of objective trends reflected in recent theoretical studies should be taken into account.

Firstly, not all endogenous advantages of a region (favorable geographical position and climatic conditions, rich natural resource potential etc.) have a constant competitive character. Such a factor as natural resources due to such a factor as the limited character, and non-renewability is not resistant to external and internal influence (Sycheva et al. 2017). An excessive exploitation of natural resources turns them from a source of competitive advantages into an object of protection and restoration.

Secondly, the resource component influenced the methodology of territorial nature conservation in Russia (Tishkov 2017). The dynamics and spatial direction of global commodity markets, changes in human motivation concerning the scale of natural resources consumption and use have influenced the frequency of creation and asymmetry of the geographical distribution of SPNTs, determining their special place in the territorial structure of the country's regions.

Thirdly, the management of natural resources should be reanalyzed within the spatial model of a competitive economy. The ecological approach implies the conservation in the economy of a dynamic equilibrium between social and natural systems, taking into account the external and internal effects in their interaction (Inshakov and Frolov 2005).

Fourthly, the provision of a sustainable, secure and competitive development of the Russian regions economy determines the necessity of the clarification and unification of conceptual approaches used during the planning of spatial development (Inshakov 2018). The competitive advantages can be formed independently, developed and improved (Porter 2002). In this case, the region does not have to possess rich natural resources or excessively involve resources into the economic turnover, but it is enough to ensure the regulation of their rational use (Granberg 2006).

The analysis of the SPNTs organization programs in recent decades has revealed their relatively low effectiveness. One of the reasons explaining this conclusion is a violation of the usual vertical interaction of the state and regional authorities as a result of the decentralization of relations regarding the SPNTs organization, the protection and use of their resource potential.

2 Materials and Method

The issues of the SPNTs system regulation in the Volgograd region as a source of competitive advantages for the region are analyzed on the basis of the study of various materials. The analysis of the location, the ratio of the number and area of the protected territories of the region was carried out by the authors according to the territorial planning schemes of the region, municipal districts, and master plans of the rural settlements.

The data on the administrative-territorial structure, population, and economic structure were obtained from the official electronic sources of executive authorities and state statistics service of the Volgograd region. The cadastral documents of the SPNTs of the region, reports of authorized executive authorities in the field of ecology and natural resources of different years became the source of information on the availability and condition of natural resources. The theoretical framework of the article is based on the research works of foreign and Russian scientists (M. Porter, B. Taşeli, A. Granberg,

I. Sycheva, A. Tishkov, A. Chibilev, E. Kolbovsky, I. Volkova, T. Shaplygina, A. Zaitsev).

When developing the content of the article, the authors relied on the foundations of the methodology of the territories nature conservation and the theory of competitive advantages. The general scientific methods of research were used i.e. the dialectic method, generalization, induction and deduction, analysis and synthesis, empirical description, classification. The study also used methods of special sciences i.e. structural and functional method, statistical method, cartographic analysis, etc.

3 Results

The structure of the system of protected territories of the Volgograd region is dominated by various categories of SPNTs of regional importance. As of the end of 2018, regional SPNTs shared 89.66% of the territories of three levels of subordination. The total area of all SPNTs is 999.4 thousand hectares, which amounted to 8.85% of the area of the Volgograd region (11290 thousand hectares). Among them the share of regional SPNTs is 99.74% (996850.1 ha). Taking into account the predominant number of regional specifically protected natural territories, we will analyze their structure, location and conditions of functioning. The total number of SPNTs of regional subordination in 2018 amounted to 52; the total area is 996.85 thousand hectares. The weight of the territories of seven natural parks amounted to 71.42%; the proportion of the territories of eight nature reserves is 25.64%; the most numerous categories are especially valuable territories (18 units) and natural monuments (18 units) which have shares of 2.66 and 0.27%, respectively; the area of the only natural landscape does not exceed 0.01% of the total area of regional SPNTs. (Report “On the state of the environment, 2019).”

Over the past five years, the structure of regional SPNTs is seen as stable one. As for the spatial position of the protected territories, the cartographic analysis showed their scattered, uneven distribution in twenty-five municipal districts and two cities of regional significance. The levels of vulnerability and the threat of the impact of human factors on the individual elements of SPNTs vary and do not depend on spatial location. That is why an important condition in the development of the SPNTs system is the territorial neighborhood of its elements.

The largest elements of the region’s system of SPNTs are the nature parks. Their organization is determined by the necessity for a legal protection of unique natural, historical and cultural resources exposed to such an impact, and the consequences of which cannot be ignored any longer. The natural parks have a high resource potential (Table 1). The information provided in the table is not exhaustive, as it is subject to a regular adjustment through the methodology developed by the Volgograd scientists (e.g. Sagalaev and Bochkin 2002), and the SPNTs status monitoring.

Unfortunately, the status of a protected area does not guarantee a full protection of the territory of the parks from the anthropogenic pressure. The threats and negative impact factors are associated with the location of natural parks, the specifics and intensity of economic development of the neighboring territories.

Thus, the reduction in area and productivity of forests, meadows, and wetlands in the Volgo-Akhtubinskaya floodplain is affected by the hydro regime transformation after the construction of the Volga Hydroelectric Power Station, intensive agricultural development, forest cutting, road construction, hydraulic structures, mass unorganized tourism and recreation.

Table 1. Resources of natural parks of the Volgograd region

Type of resource	Natural parks						
	Volgo-Akhtubinskaya floodplain	Donskoy	Eltonskiy	Nizhnekhoperskiy (Lower Khoper)	Tsimlyanskie peski	Scherbakovskiy	Ust-Medveditskiy
Types of biological resources	Number of biological resources						
Birds	230	100	85	164	140	182	130
Mammals	30	80	32	30	50	50	50
Insects	1400	300	3000	500	600	1800	900
Fishes	52	50	12	52	50	50	25
Plants	800	700	562	1500	400	600	638
Reptiles	5	10	8	30	10	11	8
Other	8	74	3	34	4	4	4
Number of types of biological resources included into the Red Book of Endangered Species of the Volgograd region							
Flora	19	37	24	88	19	46	28
Fauna	62	43	47	37	35	57	35
Types of hydrological resources							
Rivers and brooks, number/length, kilometers	3/165	4/92	7/95	22/1253	1/62	12/46	3/133
Lakes, number/surface, km ²	2827/104	9/32.3	1/17480.3	958/48.3	4/53	12/4.58	2/0.3
Shallow rivers, number/surface, km ²	178/53	–	–	–	–	–	–
Ponds, number/surface, ha	–	2/2.7	5/145	28/1.8	–	–	–
Water reservoirs, number/surface, ha	–	–	–	–	1/2700	–	–
Marshes, number/surface, km ²	2/2.06	–	–	1/10.2	–	–	–
Springs, number/capture, litres per second	–	7/0.3-1	6/0.1-1.6	20/0.8-1.6	–	13/0.1-3.7	4/0.3-0.3
Forest resources, surface, hectares							
Forests, windbreaks, shrubs	41852.9	9608.7	89.2	69808.3	23529.9	10424.2	23403.6

The floodplain as a whole suffers from an increase in traffic load on the bridge across the river Volga, air pollution, soil, emissions from mobile sources, biological pollution during the operation of the storage ponds of Big Liman, fires, burns, and loss of fishery significance by many floodplain reservoirs. The poaching leads to a decrease in the population of certain types of biological resources. The high level of anthropogenic influence is explained by the border location of the Volgo-Akhtubinskaya floodplain with the territory of the Volgograd-Volga agglomeration where about 40% of the territory is destroyed due to anthropogenic landscapes. Some scientists (Brylev and Ovcharova 2016) consider the Volgo-Akhtubinskaya floodplain as an object of

evolution of a technogenic and natural system, the vital activity of which depends on human control.

The “Ust-Medveditskiy” Natural Park is located in the central part of the Serafimovich district along the Don and Medveditsa rivers and a significant part of the park is occupied by forests. The main sources of air pollution are: road transport, agricultural machinery, heating boilers, service plants and facilities and civil buildings. An unsatisfactory condition of water resources is determined by a discharge into the water of untreated sewage from settlements, production sites and personal plots, pollution of the riverbanks, especially in places of spontaneous public recreation, and solid household waste.

A particular environmental importance was assigned to the Natural Park “Don-skoj” due to its location in an area with a low population and weak economic development. The landscapes and natural ecosystems of the park are well preserved and serve as a biological reserve for the flora and fauna included in the Red List of Threatened Species. A relative purity of water bodies is observed. The threats of a negative impact are associated with unorganized activities of residents of several rural settlements and rural areas including the Ilovlya settlement for cattle grazing, waste disposal in residential and recreational areas, harvesting and deforestation, the use of technologies that reduce the soil fertility.

The list of threats mentioned above is also typical of other natural parks, adjusted for the types of threats typical of specific kinds of resources that are not reflected in Table 1. For example, in the “Tsimlyanski Peski” natural park, the greatest threat is the violation of hunting and fishing rules, as the numerous reservoirs of the park serve as the habitats for waterfowls and spawning grounds for valuable fish species.

The “Nizhnehoperskiy” Natural Park has deposits of sample and rare soils, so an unauthorized plowing of land by local residents threatens with the loss of unique elements of the ecosystem.

The environmental objective of the “Shcherbakovski” natural park is to prevent the degradation of rare natural complexes representing a combination of various landforms with plant groups. The anthropogenic threats are associated with a violation of the sanitary condition in places of recreation of the population, in highway rest stops, viewing platforms, of fishing and bivouac places. The destruction also occurs under the influence of climatic factors.

The features of the “Eltonski” Natural Park are its location in the semi-desert zone, contrasting landscapes, which have no analogues within the region (desert steppes, grass-wormwood semi-deserts, salt-dome landscapes, and silted estuaries). There is the lake Elton with deposits of mud and salt brine that are unique in composition and balneological properties. This park also has river systems belonging to the Elton basin. The negative factors of influence in this natural park are land reclamation systems, arable land, soil cover deflation, dirt and unauthorized collection of healing mud from the Lake Elton; unauthorized development of clay and sand, steppe fires; spring and autumn hunting, poaching; uncontrolled recreation.

The target functions of SPNTs of small and medium size depend on the established profile. On a total area of about 25.26 thousand hectares, 37 objects of territorial protection are located. The natural monuments are divided into several groups: (1) integrated areas for protecting artificially created forest massifs and places of high

concentration of species that are included into the Red List of Threatened Species; (2) geological areas for protecting geological exposure with outcrops of Neogene and Paleogene rocks, landscapes with species of Cretaceous flora, objects of quartz sandstone with imprints of ancient flora; (3) paleontological areas for protecting places of accumulation of the remains of ancient animals; (4) biological and (5) botanical areas for protecting the habitats of species included into the Red List of Threatened Species, natural massifs of rare and endangered tree species, communities of floodplain meadows and forests, areas of virgin steppes.

Especially valuable territories and protected landscapes provide the natural living conditions for animals and plant communities in systems of lakes, floodplain forests and meadows, estuaries, in natural and artificially created forests, steppe, sand massifs, isolated terrain features and oak forests. Seven from all state nature reserves have a hunting specialization and are intended for the conservation, reproduction and rational use of hunting resources. The faunal area “Drophiny” was created in order to preserve bustards, their habitat and migration routes.

The largest part of small and medium-sized SPNTs is located within the boundaries of municipal territories with the agricultural specialization. The main threats for them are illegal fishing, hunting, cattle grazing, building of bonfires, plowing, deforestation and hay-mowing. The anthropogenic influence of ecosystem communities in these territories can be qualified as weak or moderate. The hunting reserve “Razdorsky”, the natural monuments “Chernichkin Garden” and “Iris Garden”, the “Green Ring” area of Volgograd, which are located near urban settlements, in addition to the listed threats, are used intensively for recreational purposes.

4 Conclusion

As the analysis has shown, a relatively stable structural and functional system of SPNTs of regional subordination has been developed in the Volgograd region. The strengths of the system are represented by the following factors: a high concentration of biological resources, including those which are listed in the national and regional list of rare and threatened species; the presence of relatively clean hydrological reserves (rivers, streams, lakes, shallow channels, ponds, reservoirs, swamps, springs); combination on the relatively small areas of a number of elements of the system of intact diverse landscapes and ecological communities (Mitrofanova et al. 2016); the uniqueness of the elements of the system, within the boundaries of which there are territories that do not have analogues in the nearest geographical areas (geological, geomorphological, balneological, architectural, archaeological, memorial complexes, monuments of civil and religious architecture, reference and rare soils, hunting and fishing reserves, spawning grounds of valuable fish species, etc.); the international recognition of key ornithological territories located in natural parks; a high ecological and stabilizing significance of natural parks as the most integral natural-territorial entities with multifunctional targets. In the absence of SPNTs of a higher level of administrative subordination in the region, the natural parks fulfill the goals of scientific research, environmental education, monitoring, and provision of conditions for a regulated recreation and tourism.

The transformation of these factors into the sources of competitive advantages for the regional development depends on the ability of regional governments to create favorable conditions for this process.

In case of an effective spatial organization of the SPNTs system, its resources can become the providers of competitive advantages in the development of administrative and territorial units also in a number of industries: tourism, recreation, accommodation, catering, museum affairs, culture and education, rural entrepreneurship, souvenir production, etc. This will require the following measures: coordination of planning processes for territorial development and modeling of the ecological network of the region, taking into account the integral nature of the natural resources of SPNTs and their social and economic importance; determination of an optimal share of SPNTs and the numerical efficiency of the development of the system under condition of provision of a “geographical diversity”; creation of a favorable environment for urban areas in which the SPNTs are the basic objects of ecosystem services.

The presence of the deep theoretical research does not reduce the acuteness of the issues in the implementation of the proposed measures. One should take into account the qualitative assessment of the territories under protection, the specificity of anthropogenic threats, the natural and climatic features, and the prevailing ratio of transformed and natural territories of the region.

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



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Formation of a System of Environmental Indicators for the Russian Nanoindustry

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Abstract. Purpose: The article outlines the main development trends of the Russian nanoindustry involving its environmental impact evaluation.

Design/methodology/approach: In view of the diverse effects of nanotechnology progress on the economic, societal and natural ecosystems, the study proves the dialectical interrelation of the nanoindustry and the environment and the need for building a system of environmental indicators that characterize the current state and dynamic parameters of the nanoindustry expansion at all levels of the global economic system.

Findings: The formation principles and a system of environmental indicators of the nanoindustry development are determined and a methodology for their calculation and regulatory values setting is proposed basing on the works of domestic and foreign authors, as well as the provisions of regulatory legal acts. The authors suggest a classification of the sustainability levels of the nanoindustry enterprises environmental system depending on the scale of the deviations of the indicators actual values from the normative.

Originality/value: The article presents the advantages of the proposed indicators system and the potential for their application in solving environmental and economic problems of the nanoindustry development.

Keywords: Nanoindustry · Levels of the global economic system · Environmental indicators · Levels of environmental system sustainability

JEL Classification: Q53 · O39

1 Introduction

Currently, the effective use of factors and resources of scientific and technical progress determines the modern socio-economic development of advanced economies. At the same time, they are characterized by the 70% to 90% share of technological innovations in the GDP. Today, much attention is paid to the nanotechnology development and industrial application directions in various sectors (e.g. Nanotechnology in Environmental Science 2018; Fraceto et al. 2018; Inshakov and Fesyun 2014). Nanotechnologies can make a powerful revolution in the development of Russia, which explains the article's relevance.

However, despite the fact that the nanoindustry is of great importance to the development of the economy, due attention is not paid to the factors and indicators characterizing the current state and dynamic parameters of the nanoindustry development. The environmental factors are of particular importance in modern conditions. All of the above-mentioned facts necessitate the objective need to develop a set of environmental indicators of the nanoindustry functioning and to determine the methodology for their calculation and standard values setting.

2 Methodology

The article uses general scientific methods and methods of statistical analysis, primarily the approaches and methods of systems analysis and the general theory of systems, analysis and synthesis, as well as comparisons and generalizations. The use of the presented methods allowed developing a system of environmental indicators for the Russian nanoindustry, a methodology for calculating these indicators and establishing regulatory values for them.

3 Results

The development of modern global economic system (GES) is characterized by the completion of the fifth Kondratieff wave and entering the sixth technological order, the dominant industry and the intersectoral foundation of which, according to leading Russian scientists, will be the nanoindustry interpreted as the institutionally specified, large-scale mass production of standardized goods and services with nano-attributes in almost all areas of human life (Inshakov and Fesyun 2014).

The promise and the priority of the nanoindustry development that can affect the efficiency of the economy and create clusters of new industries can be observed among the key strategic national priorities. Back in 1995, the regulation of science-intensive technologies, including nanotechnologies, was identified as one of the top priority national tasks. Since 2007, the development of the nanoindustry infrastructure in the Russian Federation has become the core to federal and regional target programs.

Along with the powerful state financial support, the institutionalization of the nanoindustry has led to the rapid development of the production of nanoindustry products in the Russian Federation (Table 1).

Table 1. Dynamics of the number of enterprises and the volume of shipped nanoindustry products in 2011–2017, billion rubles at actual prices.

Indicator	Absolute deviation, ±						Growth rate, %
	2017/ 2011	2017/ 2012	2017/ 2013	2017/ 2014	2017/ 2015	2017/ 2016	
Number of nanoindustry enterprises	292	176	42	–16	–7	13	208.96
Volume of goods, work, services of nanoindustry enterprises, billion rubles	4760.7	4445.2	3068.3	2275.3	877.4	932.4	1008.18
Volume of shipped nanoindustry products - total including by categories	1086.6	1027.1	831.2	490.4	228.2	11.1	776.17
Category «A»	114.3	109.8	104	–11.3	–57.4	–47.9	1120.54
Category «B»	321.9	285.9	236.3	186.8	150.9	81.8	1725.76
Category «C»	650.6	632	491.4	316.1	136.1	–22	606.3
Category «D»	–0.5	–0.5	–0.5	–1.3	–1.4	–0.8	66.67

Source: compiled by the authors on the basis of (The Nanoindustry of Russia 2018)

Thus, according to the Federal State Statistics Service, the total volume of shipped nanoindustry products in 2017 was 1247.3 billion rubles in selling prices of enterprises, i.e. 228.2 billion rubles more than in 2015 and by 831.2 billion rubles more than in 2013. In general, during the period being under review, the volume of the nanoindustry products at actual producer prices grew almost 8 times; the volume of goods, work, services of the nanoindustry enterprises - 10 times, from 524.2 billion rubles in 2011 up to 5284.9 billion rubles in 2017. The growth trend of the domestic market of nanoindustry products is also observed in the analysis of the number of nanoindustry enterprises.

The ongoing nanoindustrialization is designed to ensure sustainable quality growth of the national economy and the entire GES and full-scale expanded reproduction based on the use of innovative factors: rational environmental management, waste-free processing of renewable bioresources, widespread use and development of the innovative potential, new information technologies, new materials that allow making the anthropogenic cycle of substances as closed as possible, thereby bringing it ideally closer to the natural cycle in societies.

In addition, the significant progress of nanotechnology generates rapid changes in the content and forms, level and lifestyle of people at all levels of GES, from the mega

economy to the nano economy level (the level of an individual worker) (Inshakov 2004), moreover it creates a system of diverse effects on human health and the environment (Stander and Theodore 2011; Nanotechnology in Environmental Science 2018). At the same time, one can note the dialectical interrelation between the nanoindustry expanding and the environment: on the one hand, such JSC “Rusnano” technological clusters as renewable energy, nanocoatings and surface modifications, developments in the field of new materials act as a driver of environmental innovations and the energy-efficient technologies development, and on the other hand, industry production and operation of nano-products has an undeniable impact on the environment.

The aggravation of environmental problems explains the need to determine the total of environmental indicators in statistical accounting characterizing the environmental impact from the production, use and operation of products manufactured using nanotechnologies and/or nanomaterials; and to develop an effective system of environmental indicators that can describe the current state and dynamic parameters of the nanoindustry at all levels of GES: mega-, macro-, meso-, micro- and nano- levels (Inshakov 2004) (see Fig. 1).

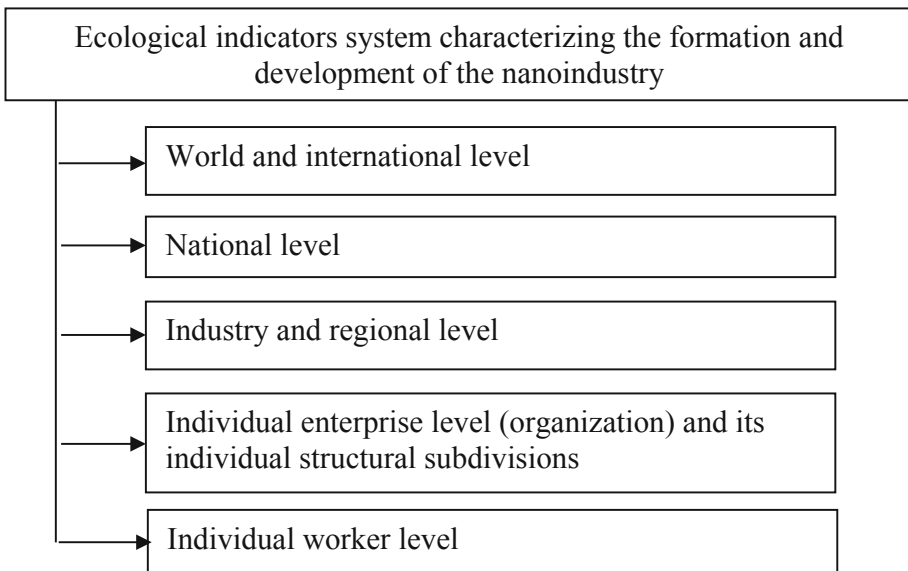


Fig. 1. The system of nanoindustry’s environmental indicators. *Source* compiled by the authors

In this case, the greatest importance should be paid to the quantitative assessment of the nanoindustry products environmental safety indicators, which are among the main properties that affect the level of product quality.

Both foreign and domestic researchers (e.g. Zelezny and Schultz 2000; Tilikidou and Zotos 1999; Dunlap 2000; Sánchez 2010; Borlakova 2014; Dorogovtseva, 2014;

and Zagainy (2014) dealt with the issues of determining the set of indicators of the products' environmental friendliness, calculating and establishing its standard values.

Environmental performance indicators that are aimed at describing environmental management on the organization level and demonstrating the effectiveness of various environmental actions are proposed by Borlakova (2014). In the dissertation research A. Dorogovtseva (Dorogovtseva, 2014) substantiates the need to use several groups of indicators. While Zagainy developed a set of indicators of the technical and organizational production activity levels with a focus on priority environmental activity areas (Zagainy 2014).

Despite a significant number of scientific works, the field of interests of the above-mentioned researchers is mainly limited to the development of environmental indicators for the micro level of the economic system (individual enterprise). In addition to it, their studies did not find the proper reflection of the problem of forming a set of environmental indicators for specific nanoindustry products.

As a result, the following conditions underlying the formation of a system of the nanoindustry environmental indicators were determined:

1. Availability and ease of use. This condition implies that the indicators have a physical meaning and are expressed in a quantitative form. Besides, the indicators have a logical content and can be represented through a qualitative characteristic.
2. A high utility indicator degree. Indicators should bring a much greater amount of the positive effect than the amount of resources spent on their calculation and/or monitoring.
3. The presence of an information base for calculating indicators. Calculation of quantitative indicators is based on fixed forms of accounting, statistical and other types of reporting, internal management and accounting data, available external information.
4. The selection of indicators for assessing the environmental safety of the nanoindustry is carried out taking into account the industrial production specificity of the nanotechnology products, works, and services, as well as company features.

In this connection, the authors have developed a system of the Russian nanoindustry environmental indicators as a tool for unifying the process of ensuring environmental and economic balance at all levels of GES, which allows taking into account the nanoindustry production specifics and to minimize the probability of an event having adverse effects on the environment caused by the negative impact of economic and other activities, or natural and man-made disasters (Fig. 2).

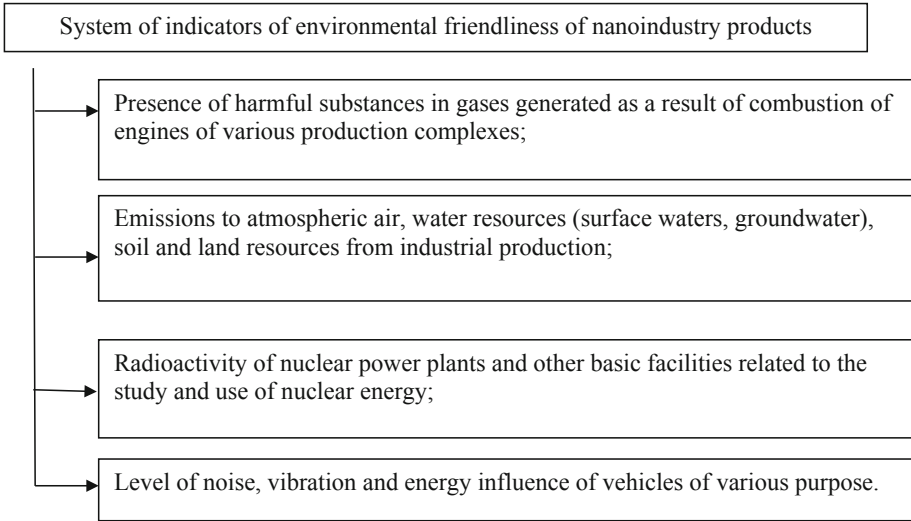


Fig. 2. System of indicators of environmental friendliness of nanoindustry products. *Source* compiled by authors

Besides, the article gives the formulas for each indicator calculation and indicates their standard values that allow assessing the environmental safety of the nanoindustry by correlating actual indicators with their standard values (Table 2).

Table 2. The set of environmental indicators of the nanoindustry development, the methodology for their calculation, and standard values

Indicator	Calculation	Maximum permissible value
Harmful substances presence (M_j)	$M_j = c_j * V_{dg} * B_c * k_r,$ c_j – mass concentration of contaminating component j in dry flue gases; V_{dg} – Value of dry flue gases, which results from total combustion of 1 kg; B_c – calculated fuel consumption; k_r – recalculation coefficient.	Maximum single limit concentration mg/m^3 : Nitrogen dioxide NO_2 – 0,085; Nitrogen oxide NO – 0,25;
Maximum permissible emissions (MPE) to atmospheric air, water resources (surface waters, groundwater), soil and land resources	$MPE = (MPC - C_b) * H^2 / (A - F * m * n * \eta') * \sqrt[3]{W_i} * \Delta T$ where: MPC – maximum permissible pollutant concentration, mg/m^3 ; C_b – background concentration of harmful substance, mg/m^3 ; H – height of emission source, m; W_i – gas-air mixture flow rate, m^3/s ; The index ΔT is formed as a result of temperature difference of the emitted gas-air flow (T_g) and the ambient air (T_v), $^{\circ}C$; A – is the stratification factor, which takes into account vertical movements of the air depending on the degree of decoupling of the relief;	Sulphur dioxide SO_2 – 0,5; Sulfuric anhydrite SO_3 – 0,3; Carbon oxide CO – 5,0; Hydrogen sulfide H_2S – 0,008; Coal ashe – 0,05

(continued)

Table 2. (continued)

Indicator	Calculation	Maximum permissible value
	F – is a dimensionless coefficient, taking into account the rate of sedimentation of harmful substances; m, n and η – coefficients taking into account the conditions of exit of the gas-air mixture from the source mouth.	
Radioactivity of nuclear power plants and other fixed assets (R)	Defined by the radiometer	1 m ^S v per year on average for any consecutive 5 years, but not more than 5 m ³ per year
Sound/vibration pressure level (L), dB	$L = 20 \lg P/P_0$, P – sound pressure, Pa; P ₀ – reference sound pressure, Pa.	From 50 dB

Source: compiled by authors

Depending on the scale of the revealed deviations of the actual values of the indicators from the normative, it becomes possible to distinguish levels reflecting the degree of sustainability of the environmental system in which the nanoindustry enterprise operates (Table 3).

Table 3. The sustainability levels of the environmental system of the nanoindustry enterprises

Sustainability levels	Characteristics
Natural level	There is a background anthropogenic impact on the ecological system. At this level, the biomass gets its maximum value
Balance level	At this level, the recovery processes occur at a speed equal to the rate of violation of the ecological system. The biomass value is gradually decreasing
Crisis level	The degree of disturbances caused by anthropogenic influences is ahead of recovery processes, however, the natural character of the ecological system is preserved. The biomass value is significantly reduced
Extreme level	At this level, there is a significant deterioration in the state of the ecological system (a productive system becomes unproductive) under the influence of anthropogenic disturbances. The biomass value is small and continues to decline
Catastrophe level	The process of consolidating an unproductive ecological system is becoming almost irreversible. At this level, the importance of the biomass and biological productivity are minimal
Collapse level	The anthropogenic impact leads to the inevitable loss of biological productivity. The biomass value is close to or equal to the value

Source: compiled by authors

The proposed system of environmental indicators for the Russian nanoindustry has a number of distinct advantages:

1. Its implementation at domestic nanoindustry enterprises does not require attraction of significant financial resources and adaptation to national conditions, since the basis for determining the composition of indicators, the methods for their calculation and establishing normative values are the requirements of the Russian state standards and the standards agreed with the international ones.
2. It allows creating a system of managing the environmental and economic risks in the nanoindustry based on systematic accounting, assessment, analysis and control of the levels of environmental indicators in dynamics and in comparison with the standards.

Through the implementation of a regular and high-quality economic analysis of the nanoindustry environmental indicators, the following tasks can be solved: conducting financial and economic analysis to determine the environmental performance of nanoindustry enterprises; implementation of information support; identification of environmental risk and assessment of the quality of management decisions that are related to the environmental management processes, as well as the waste management and recycling; assessment of the effectiveness of environmental taxation; modeling the environmental and economic processes.

It is necessary to pay attention to the fact that management based on the proposed nanoindustry environmental indicators will allow to influence certain factors: emissions of industrial, transport, domestic water from nanoindustry entities into the environment may be limited; biological resources can be conserved and rationally used; the abilities of preserving the flora and fauna will increase.

The practical implementation of the developed system of the nanoindustry environmental indicators as a tool for unifying the process of ensuring the environmental and economic balance on all levels of GES will enable the environmental management of nanoindustry enterprises to systematically and effectively manage ecologically oriented risks and costs, and to constantly monitor the volume of emissions and discharges into the environment.

4 Conclusion

Currently, there is a tendency of rapid growth of the nanoindustry. The ongoing nanoindustrialization is to ensure sustainable qualitative growth of the national economy and the entire GES based on the development of the innovative potential in dialectical interconnection with the rational nature management. In order to take into account, evaluate, analyze and control the degree of the nanoindustry influence on the environment as a result of production, use and operation of products manufactured using nanotechnologies and/or nanomaterial, the authors have developed an environmental product friendliness system of indicators, a methodology for their calculation and standard values setting. The developed set of indicators will be formed at the global and international, national, sectoral and regional levels, as well as at the level of an individual enterprise and an individual worker.

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Developing the Spatial Integration of Regional Economies: Opportunities and Barriers

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Abstract. Purpose: The article emphasizes the need for developing the spatial integration of the regional economy as a systemic characteristic of the main modern trends in the country's socio-economic development. The author highlights the tasks of developing the spatial integration of the regional economy, among which the socio-economic development of the territories is considered to be the strategic one.

Design/methodology/approach: Basing on the model of the economic mechanism of O.V Inshakov, the author presents the mechanism of developing the spatial integration of the regional economy schematically. This mechanism is presented as a system for leveling the internal and external constraints to the regional integration development.

Findings: In the article it is proved that the spatial integration is the key factor in developing regional economic systems, resulting in both negative and positive consequences. The result of the spatial integration is the formation of global-scale structures, socio-economic systems, which increasingly determine the nature of changes in the modern national economy, the emerging infrastructure of which is characterized by the scale of new structures and functionally specialized subsystems, their complexity and socio-economic alternativeness. It is proved that the spatial integration of the economy at the regional level contributes to developing less developed economic entities in order to strengthen integration ties, to obtain the greatest benefits from trade and economic cooperation, as well as to converge and to strengthen interethnic cultures.

Originality/value: Using the example of the Southern Federal District, the author has performed the general evaluation of the opportunities realization and overcoming barriers to developing the spatial integration of the regional economies, which revealed the most important aspects necessary for understanding the problems and prospects of modernizing the Southern Federal District. They have formulated five main priorities for developing the spatial integration of the regions' economies of the Southern Federal District, which are aimed at intensifying the economic activity in the territories and at increasing their competitiveness by means of mobilizing the existing potential and taking into account mutual interests.

Keywords: Spatial integration · Economy · Region · Development · Mechanism · Barrier

JEL Code: H70 · O10 · R12

1 Introduction

The transformation of spatial science into the integrated scientific knowledge makes the development of spatial integration of regional economies very urgent. The transition to a new level of spatial integration of the regional economy results from the deepening specialization of the territories and the intensive involvement of business entities into the system of interregional relations. For the system of public management of developing the territory, the problem of the economy ability of a regional (mesoscale) level to respond to the challenges of progress and to use all the opportunities to achieve the strategic goals of developing the territory and long-term competitive advantages in priority areas, sectors, types of economic activity is extremely urgent.

The policy of public authorities in the field of spatial development is based on the approach involving the spatial integration of networks and trade in order to accelerate economic growth.

The regions' difference in terms of socio-economic development and potential opportunities for improving the situation is not a barrier to implementing their integration interaction, because resource-oriented realization of certain territories' potential guarantees additional effect and, as a result, it affects regional growth processes.

In terms of modern conditions, the economic space of the Russian Federation regions as a complex, dynamic, transparent system acts as the basis for implementing the processes of interregional interaction and integration. Therefore, the study of spatial changes and transformations must be carried out, taking into account the integration processes intensification and the formation of a single socio-economic space.

2 Materials and Method

The author has used publicly available materials for research. The scientific basis of the paper was research papers about developing the spatial integration of the territories' economy, which are written by home and foreign authors (Abalkin L.I., Buchwald E. M., Fujita M., Inshakov O.V., Isaev A.D., Kolomak E.A., Kryukov V.A., Lebedeva N. N., Marcuse J., Melnikova L.V., Ovchinnikov V.N., Thissc J.-F., Wall N., Zubarevich N.V.). Statistical data have also been used for the socio-economic characteristics of the regions of the Southern Federal District. As for regulatory documents, the author has studied the order of the Russian Federation Government dated February 13, 2019 No. 207-r "About the approval of the Spatial Development Strategy of the Russian Federation for the period until 2025".

In the paper the author has used general scientific research methods of induction and deduction, analysis and synthesis, dialectics, comparative analysis and systematization. The use of the logical method and graphic was of great importance for ensuring the detailed studying the scientific problem of the article.

3 Results

3.1 Tasks for Developing the Spatial Integration of Regional Economies

The term “integration” is interpreted in economics and management as:

- integration of parts (elements, economic entities) into the integral whole (Abalkin 1999; Wall et al. 1999);
- intensification of cooperation (interaction) and development (strengthening) of interconnections between management subjects (components of the management system) (Azrilan 1999; Lensky 2001), etc.

In spatial integration, one has distinguished two aspects: a dynamic one, which involves the formation of integrated entities, and a static one, consisting in these entities functioning. Undoubtedly, the result of integration processes is the coordination, coherence and interconnectedness of the independent parts and functions of the system into the integral whole. However, spatial integration as a whole has several types and levels. The author considers it possible to distinguish 4 main levels of integration. They are mega, macro, micro, mini levels. As the spatial integration of each level is the result of the interaction of combining external and internal socio-economic factors, all the levels of this integration are interdependent.

The studies held in 2017–2018 and devoted to studying the development of the spatial integration of regional economies (Buchwald 2019; Isaev 2019; Kolomak et al. 2018; Zubarevich 2017) revealed its main tasks (Fig. 1), the strategic one of which is the socio-economic development of territories.

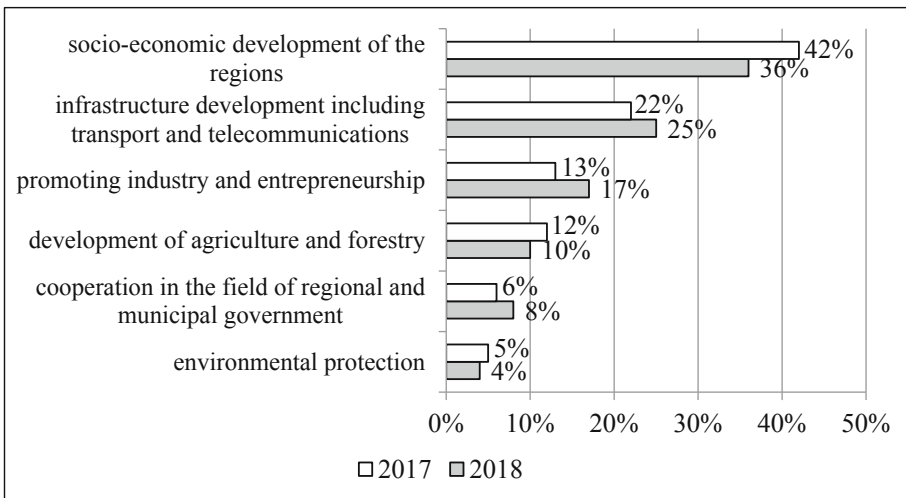


Fig. 1. The main tasks for developing the spatial integration of regional economies. Source: compiled by the author based on (Buchwald 2019; Isaev 2019; Kolomaket al. 2018; Zubarevich 2017).

One of the functional areas of the spatial integration of regional economies is the forecast evaluation of the possible economic, social, and political effect due to integrating the regions into an integration system within the framework of the territory's spatial development (Fujita and Thisse 2002). At the same time, the factors determining the level of regional cooperation within the spatial integration of their economies are: the phase of economic development and differentiation in the structure of economic potential, the credit and financial system, and the social situation of the regions' population; the depth and intensity of communications between the regions and their national center; the development of land transport routes at the borders.

3.2 The Mechanism of Developing the Spatial Integration of Regional Economies

Having taken the model of the economic mechanism by Inshakov (Inshakov 1995, 2003) as a basis, the author of the paper considers it appropriate to depict the development mechanism of the spatial integration of the regional economy in simplified form. This mechanism is described using the transformation system to obtain an updated spatial integration system that would have the necessary set of methods, tools and forms of activity for implementing short-term and long-term goals of integrated socio-economic processes.

According to the model of the economic mechanism by O.V. Inshakov, the author presents the mechanism for developing the spatial integration of the regional economy as a system for leveling the internal and external constraining barriers to developing regional integration (Fig. 2).

In order to realize the process of developing the spatial integration of the regional economy, it is necessary: to formulate the development goals of spatial integration of the regional economy (P), strategy (S), criteria (K_0) defined by the system of indicators, and also to determine the methods (M), tools (I) and forms (F) of achieving the stated goals. Diagnostics and monitoring (D) of the current state of developing the spatial integration of the regional economies is carried out through a qualitative and quantitative evaluation of the results of foreign economic activity and the export potential of enterprises formed by the macro-level regions through the existing database (B).

So, we have studied the internal and external constraining barriers of developing regional integration and forecasting the prospects of the socio-economic situation (H), which have been determined as a result of diagnostics. This study has allowed us to develop scenarios for correcting the development of the spatial integration of regional economies (K_1), to evaluate its status using the criteria specified by the system of indicators (K_0) and bring it to a new level of development (Int_1) in the context of the given mechanism.

The functioning of the presented mechanism of developing the spatial integration of regional economy consists in achieving new state (Int_1) by transforming the initial state (Int_0) in order to mobilize socio-economic potential (Azmina 2013) and to ensure competitive, sustainable and balanced spatial development of the economy of both individual regions and the macro-region and the country as a whole.

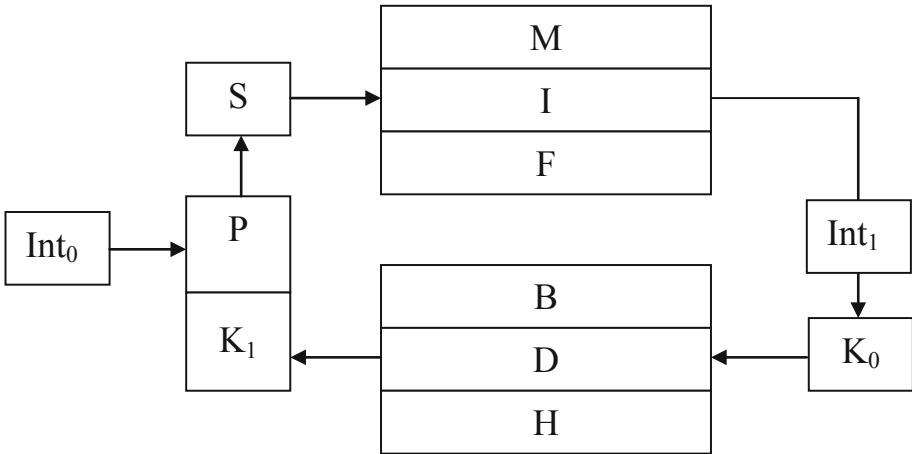


Fig. 2. The mechanism of developing the spatial integration of the regional economy. Source: compiled by the author based on (Inshakov 1995, 2003).

The conceptual approach to the implementation of developing the spatial integration of regional economy should be updated through the intensification and strengthening the interregional ties and should be based on ensuring the rational use of the regional resource base using innovative technologies that are in line with modern trends of transforming the world community.

3.3 Opportunities and Barriers to Developing the Spatial Integration of Regional Economies (on the Example of the Southern Federal District)

The Southern Federal District (SFD) was founded by the Decree of the President of Russia V.V. Putin dated May 13, 2000 No. 849 (Decree 2000). In 2010, according to the Decree of the President of Russia D. Medvedev dated January 19, 2010 No. 82, the Republic of Crimea and the city of Sevastopol (Decree 2010) became members of the Southern Federal District.

The SFD is an important strategic center that defends the country’s geopolitical position in the Eurasian hub of the intertwining of the indigenous national-state interests of many countries that influence the course of world politics (Ovchinnikov 2003). The SFD is distinguished by its favorable transport and geographical location, significant natural resources, favorable climatic conditions that contribute to developing resort areas, human resources, and diversification of industries and agriculture (Inshakov and Lebedeva 2004). Each region of the SFD has its own transport infrastructure, which is actively involved in modern transport systems of federal and world significance.

The heterogeneity of the socio-economic state of the regions of the SFD (Fig. 3) lies in the fact that along with economically developed regions (Volgograd region, Rostov region, Krasnodar Krai) there are economically and financially insolvent regions (the Republic of Adygea, the Republic of Kalmykia, the Republic of Crimea,

and the town of Sevastopol) with the low degree of industry diversification and underdeveloped infrastructure. Nevertheless, the favorable geographical location of the SFD at the intersection of the two main Euro-Asian transport directions (East – West and North – South) determines the prospects for developing its socio-economic space and makes it possible to form the Euro-Asian transport corridor.

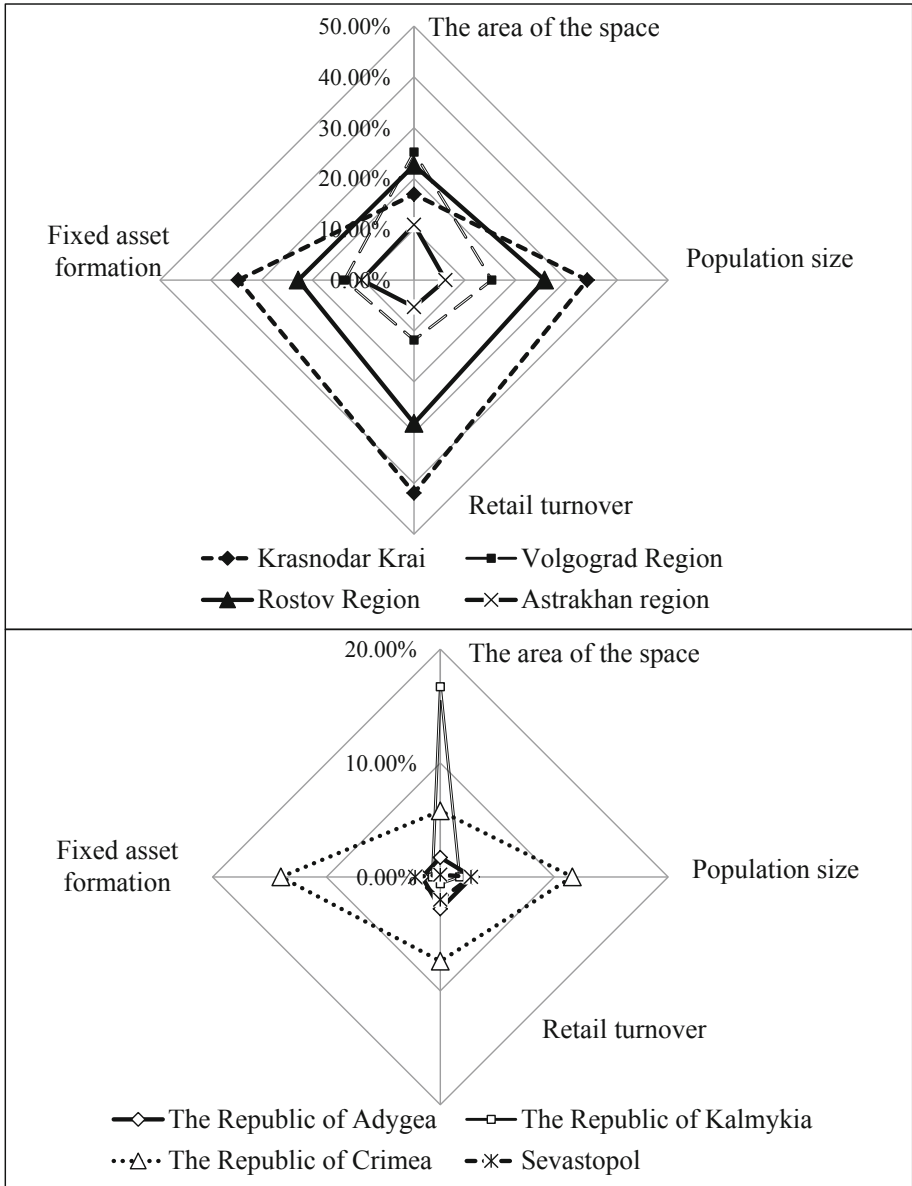


Fig. 3. Socio-economic characteristics of the regions of the Southern Federal District, 2017 (in % of the SFD). Source: compiled by the author based on Regions of Russia 2018.

The SFD possesses the characteristic of high spatial polarization. Agricultural specialization determines the level of socio-economic development of the Southern Federal District. Its industrial potential is concentrated mainly in the Krasnodar Krai, Volgograd, Rostov and Astrakhan regions. The significant disadvantages (constraining development factors) of the socio-economic situation of the regions of the SFD can be: differentiation of the area and population of the territories; high level of interregional socio-economic inequality; high social instability and conflict (due to social differentiation); heterogeneous development of the economic space; uneven distribution of productive forces; spontaneous migration flows; high level of depreciation of enterprises' fixed assets.

According to the approved strategy of the Russian Federation spatial development for the period until 2025, the spatial organization of the economy of the Russian Federation since the 1990s is being transformed under the influence of changing factors in the economy location, the conditions of international trade and scientific and technological development (Decree 2019). Determining the basic factors of spatial development of the SFD economy is an integral part of developing the spatial integration of the SFD regional economy. The performed evaluation of implementing opportunities and overcoming barriers to developing the spatial integration of the SFD regional economy (Fig. 4) indicates the presence of positive trends in this process. The elimination of these constraining barriers will improve the socio-economic situation, investment and innovative potential of the SFD.

Basing on the made study, five main priorities for developing the spatial integration of the economies of the SFD regions have been formulated. And they are aimed at suggesting the intensification of economic activity in the territories and increasing their competitiveness by mobilizing the existing potential and mutual consideration of interests:

1. The growth of population mobility to increase the stability of the resettlement system through the socio-economic development of cities and rural territories.
2. Support for the less developed regions of the SFD, as well as encouraging the regions to increase their own development resources.
3. Providing conditions for developing the production of goods and services in the sectors of promising economic specializations of the SFD regions.
4. Expansion of geography and acceleration of economic growth, scientific, technological and innovative development of the SFD due to the socio-economic development of promising centers of economic growth (Volgograd, Krasnodar, Rostov-on-Don, Astrakhan, Maykop, Sevastopol).
5. Development of promising economic specializations of the SFD regions in accordance with the spatial development strategy of the Russian Federation for the period until 2025.

The formulated priorities can serve as the basis for developing the cooperation of territories not only within the SFD, but also at the level of the entire national economy.

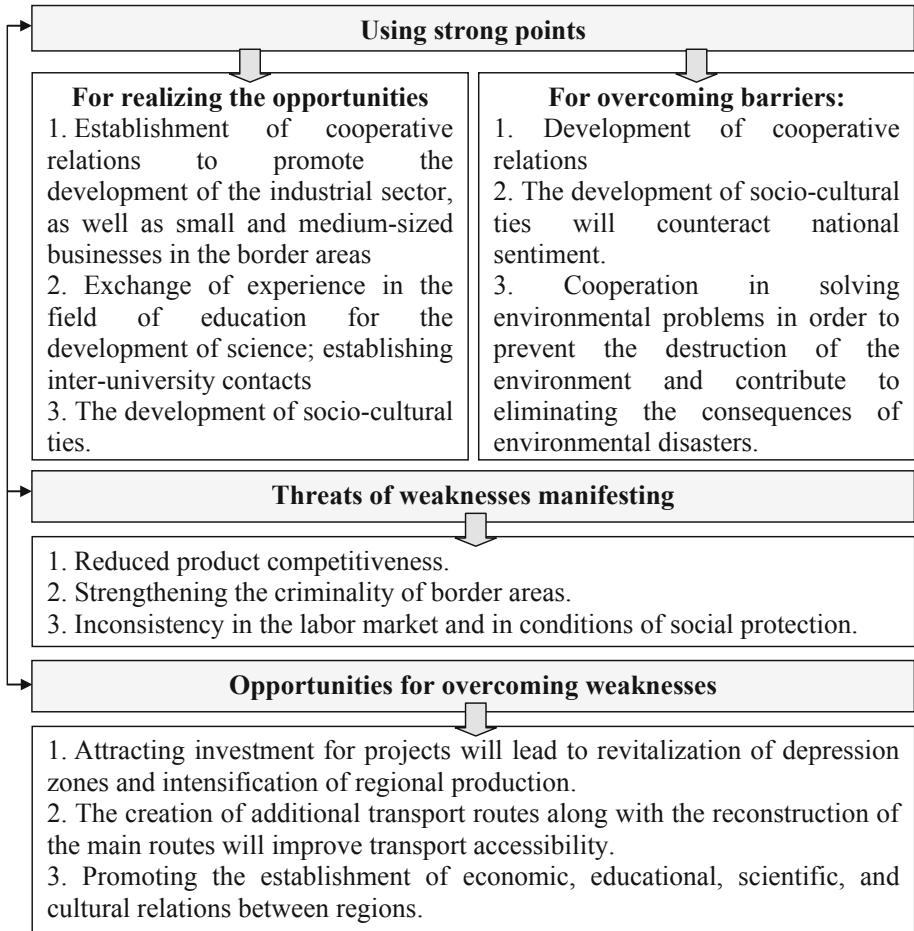


Fig. 4. Evaluation of implementing the opportunities and overcoming barriers to developing the spatial integration of the regional economy of the SFD. Source: developed and compiled by the author.

4 Conclusion

The spatial integration of regional economies is a fundamental factor affecting the socio-economic development and stability of individual constituent entities of the Russian Federation and the country as a whole.

The main objective of developing the spatial integration of the regional economy is to create conditions for achieving stability (security) of the functioning of each entity economy and their economic growth through the joint use of their natural resource potential and competitive advantages. The chosen development strategy, as well as the system of methods, tools and forms of goal implementation are of particular importance for achieving this goal.

The evaluation of realizing the opportunities and overcoming barriers to developing the spatial integration of the regional economy of the SFD has revealed the most important aspects necessary for understanding the problems and prospects of its modernization: the feasibility of establishing and developing cooperative ties; development of socio-cultural ties; cooperation to solve environmental problems; attraction of investments; improved transport accessibility.

In order to intensify economic activity in the territories and to increase their competitiveness by mobilizing the existing potential and taking into account mutual interests, it is necessary to realize the priorities for developing the spatial integration of the regional economy of the SFD: increased population mobility; support for less developed regions; providing conditions for developing the production of goods and services in the sectors of promising economic specializations of the regions; expansion of geography and acceleration of economic growth, scientific, technological and innovative development of the SFD; development of promising economic specializations of the regions.




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EAEU Economies Integration as a Factor of Their Competitiveness: Assessment of Technological Convergence

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Abstract. Purpose: The present study focuses on the characteristics of the integration processes within the Eurasian Economic Union (EAEU), and technological convergence in particular in view of improving the competitiveness of the EAEU member countries.

Design/methodology/approach: The study is based on the analysis of the EAEU countries trade relations, the character and prospects of participation in the integration processes, and offers a methodology approach to their technological convergence assessment.

Findings: The positive effect of the EAEU establishment needs to be strengthened by common industrial and economic policy that should encourage internal trade. The EAEU countries are characterized by a small share of non-resource exports, it means that most preferences of the economic union cannot be implemented (such as market expansion, better terms of trade, advanced technologies dissemination, etc.). The analysis of the technological convergence processes as a competitiveness factor of the EAEU as a whole aims at developing directions of cooperation, mainly in the sphere of high-tech products and industries.

Originality/value: The paper offers a technological convergence index consisting of two subindices: industrial relations index (composed of cooperation index, competitiveness index, and import dependence index) and industrial policy efficiency index (the share of fixed capital investments in the total investment, the share of R&D costs in high-tech industries in the total R&D costs, and the deviation from labour productivity in the EU).

Keywords: Convergence · Divergence · Integration grouping · EAEU · Technological convergence · Technological convergence index

JEL Classification: F420

1 Introduction

Trade globalization as a part of the globalization process has historically been the first sign of globalization but not its trigger.

In recent years, Russian scholars have a particular interest in the analysis of integration processes, which have been intensively developing, with the expansion of the Eurasian Economic Union (EAEU) and accumulation of sufficient data for this type of research.

Almost 30 years ago, inter-country integration started in the Post-Soviet space. Since then, integration groupings have been constantly transforming and evolving in accordance with the new needs of the national economies, new more complex forms and mechanisms of their integration, and transit to a digital economy.

In Russian economics, in the early 2000s first research papers came to light detailing theoretical foundations of integration and disintegration as the types of system transformation of national economies; patterns of mega-regional economic integration; principles of the integration process; conditions, resources, and factors of integration, and integration strategy and its mechanisms (Inshakova 2004; Idrisov and Taganov 2013).

Contemporary studies on inter-country integration mechanisms focus on indicators as the tools for analysis of integration processes efficiency. The studies are based on the assumption that integration is a non-linear process which can manifest itself differently in individual countries. However, the higher the level of integration in the union, the more diverse economic effects for the participating countries are, and, as a result, each country has its own specific effects which can be more or less as compared to the other member states (The System of Indicators, 2009; The System of Indicators 2014; The system of integration indicators 2019).

The assessment of convergence and divergence processes is one of the types of integration grouping efficiency analysis. The β - and σ -convergence concepts and the growth rates convergence are used to investigate quantitative characteristics of the processes. The EAEU countries are characterized by different types of convergence – real, nominal, and institutional –, which have been the subject of a detailed analysis. The types of convergence are classified as follows: club real convergence, general nominal convergence, and general institutional convergence (Libman 2006; Libman and Heifitz 2011; Navoy 2015; Kitrar et al. 2017; Voytekhovich 2018).

The studies which correlate economic convergence processes with the directions, level and rates of technological development of integrating countries are only just appearing in the economic literature. This quite promising direction in the studies on integration processes makes it possible to distinguish leaders and followers in terms of innovation convergence, the rates of technological convergence, its factors and impact on the regional divergence (Smirnov and Stabinskayte 2016; Didenko and Kikkas 2018).

The totality and synergy of these effects allow us to speak about integration development for a union as a whole, and also track and demonstrate the main vectors of integration development of the evolving economies in rapidly developing digital space.

2 Materials and Methods

The given paper is based on the data of the Eurasian Development Bank, the Eurasian Economic Commission, and, in particular, the data provided by the Department of Industry, the Department of Agriculture, the Department of Customs Tariffs and

Non-Tariff Regulation, the Department of Trade Policy, and the statistical data of the Organization for Economic Cooperation and Development.

Trade globalization is characterized in terms of the overall exports share of GDP, the trade turnover share of GDP, the average exports and imports share of GDP, the share of trade balance in goods and services of GDP and the import penetration rate to meet the internal total demand.

The technological convergence index is viewed as an integral indicator which includes all the convergence indicators with different weights.

3 Results

During the analyzed period, Belarus (+2.82%), Kazakhstan (-2.87%) and Russia (-0.55%) demonstrate the highest intensity of trade. The lowest export quota was observed in Armenia (+4.33%) and Kyrgyzstan (-4.33%).

In general, the Eurasian Economic Union saw a slight decrease in the share of exports in GDP by 0.94%. The lowest value was observed in 2016 (20.69%), the highest – in 2014 (23.10%) (Fig. 1). The decline is due to falling exports in Russia and Kazakhstan. In Russia, this was a consequence of the ruble devaluation (the dollar rose to 78 rubles/USD) and the fall in oil prices as a result of the increase in shale oil production in the United States and a decrease in demand from China, despite the increase in exports of oil and petroleum products in real terms (Dolgoplov 2018).

The value of the indicator in the range of 21–22% is typical for most major developed countries where the relative ratio of external markets to domestic demand is lower (Simonova 2010).

World experience shows that the integration of countries with a small territory is higher on average than that of large countries.

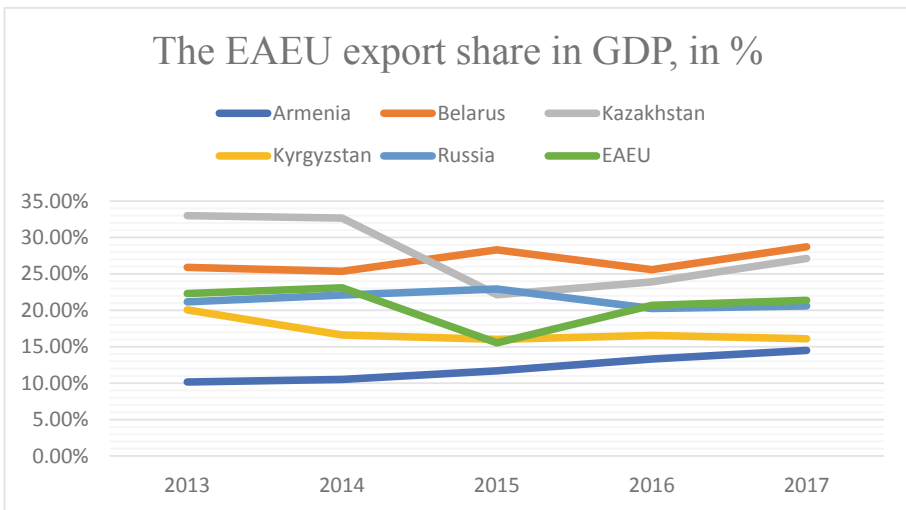


Fig. 1. The EAEU export share in GDP, percentage

According to the World Bank methodology, an economy in which the share of trade turnover is higher than 35% is considered open. The Russian Federation is the least open economy in the EAEU, the indicator is in the range of 34–35%, the Republic of Belarus – the most open with the indicator of 53–55%.

In the EAEU, the lowest value of the indicator was in 2016 (34.19%), the highest – in 2014 (36.31%) (Fig. 2). As in the case of the share of exports, the decline is largely due to the fall in exports in Russia and Kazakhstan.

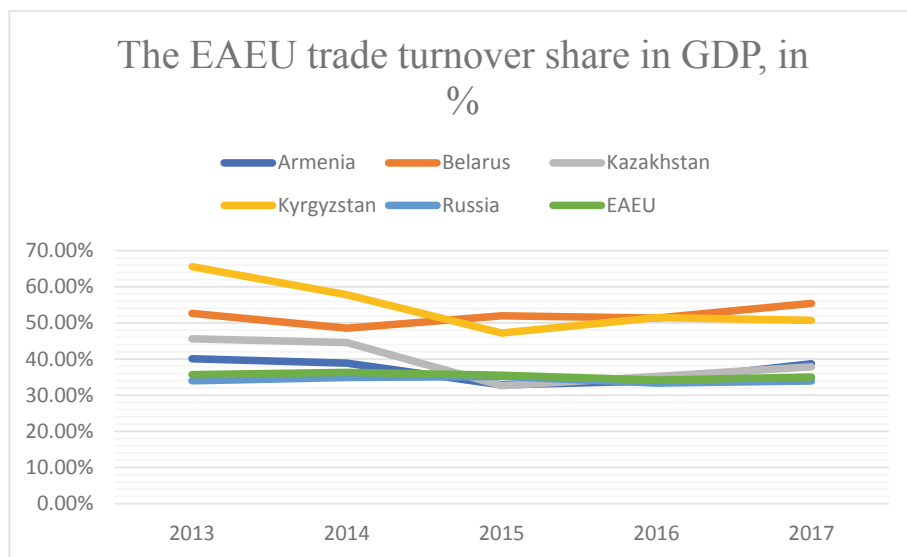


Fig. 2. The EAEU trade turnover share in GDP, percentage

The average volume of exports and imports in GDP shows the weight of total foreign trade in the country's GDP.

As in the case of the country's share of trade turnover in GDP, for large countries with a capacious domestic market, the value of the indicator in the world practice is in the range of up to 20% (for example, for OECD countries).

In the EAEU, the index is in the range of 17–18%, in line with the global trends (Fig. 3).

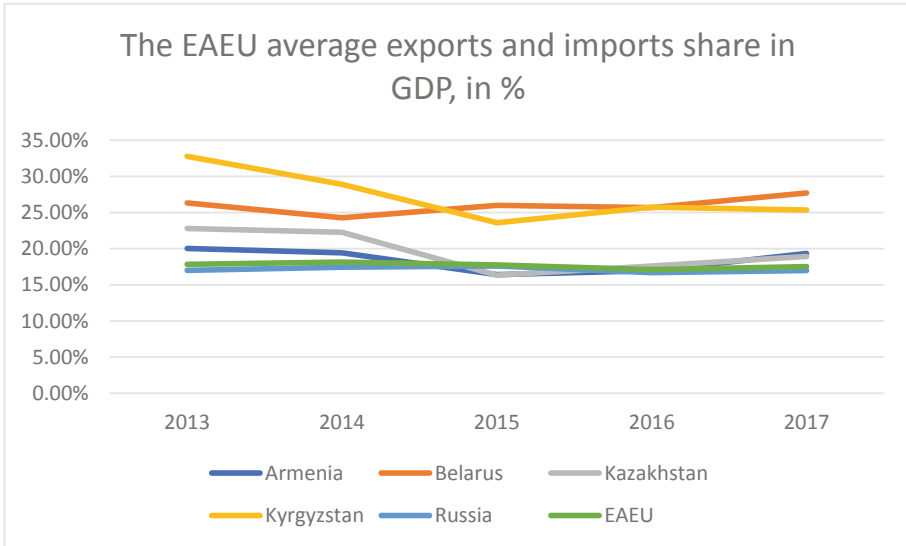


Fig. 3. The EAEU average exports and imports share in GDP, percentage

Figure 4 demonstrates that the negative balance is stable during the period of 2013–2017. It is observed in two EAEU countries – Armenia and Kyrgyzstan. Belarus had such an indicator in 2013, and was on the border in 2016. In Russia and Kazakhstan, as well as in the EAEU as a whole, the trade balance remains positive, mainly due to the structure and volume of exports, which were undoubtedly influenced by the situation on the world commodity markets.

The indicator of normalized trade balance of goods characterizes the country’s trade transactions with foreign partners, adjusted in accordance with its own trade. ‘Propensity’, ‘attraction’ of the country to export brings the value of this indicator to +1, and the predominant tendency to import – to –1 (EEC 2018).

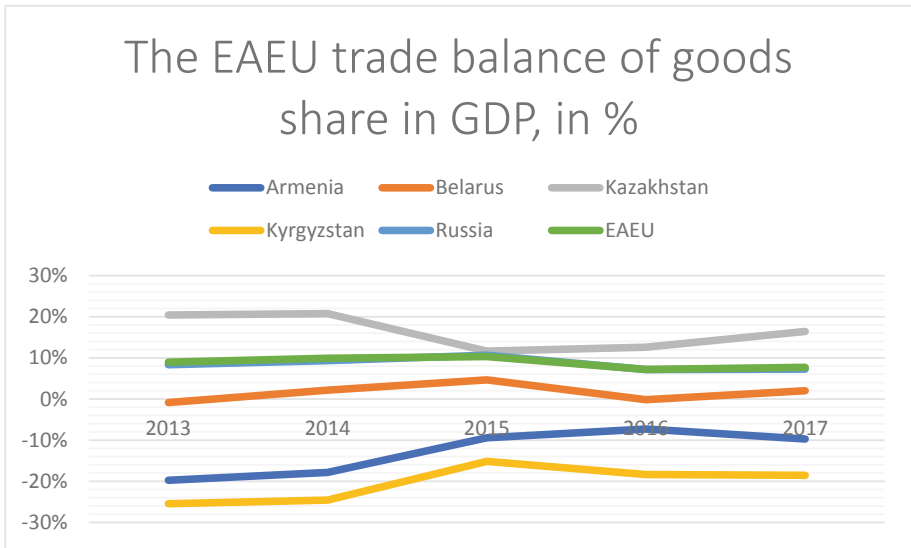


Fig. 4. The EAEU trade balance of goods share in GDP, percentage

Traditional importers to the EAEU include Armenia and Kyrgyzstan, traditional exporters include Russia and Kazakhstan. Belarus has increased exports since 2014, since the initiation of sanctions against the Russian economy, and brought this figure to the level of positive values (with the exception for 2016).

The indicators of the Eurasian Economic Union are in the range of 0.10 (2015) – 0.27 (2014), which corresponds to the level of developed economies (Fig. 5).

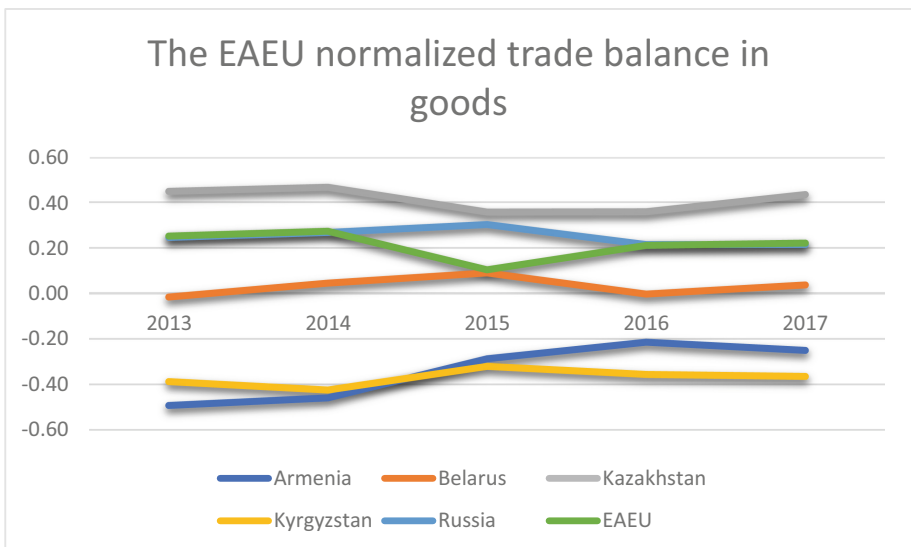


Fig. 5. The EAEU normalized trade balance in goods

As to the calculations, the highest import penetration rate is observed in Kyrgyzstan (up to 36 units of imports per 100 units of domestic final demand in 2013), in Belarus (up to 27 units of imports per 100 units of domestic final demand in 2017), and Armenia (up to 25 units of imports per 100 units of domestic final demand in 2013). However, in Kyrgyzstan and Armenia there is a tendency to reduce dependence on imports; domestic demand begins to be satisfied by national goods.

Russia and Kazakhstan are less dependent on imports of goods, and Kazakhstan is also seeing a gradual decline in the share of imported goods (from 16% in 2013 to 13% in 2017) (Fig. 6).

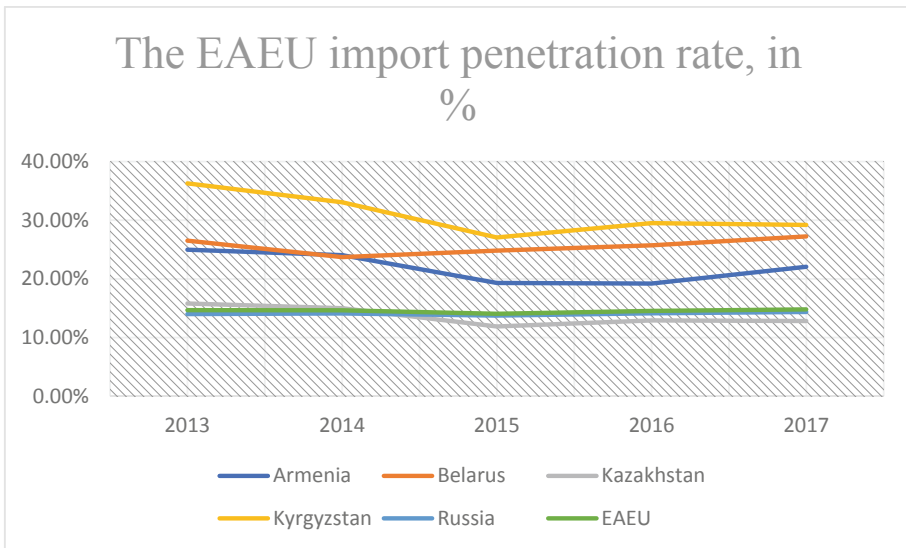


Fig. 6. The EAEU import penetration rate, percentage

In general, the maximum value of the indicator for the EAEU is observed in 2017 (14.8%), the minimum – in 2015 (14.05%), which also corresponds to the level of developed countries.

Therefore, the analysis shows that the positive effect of the EAEU establishment should be strengthened by the common industrial and economic policy, and development of internal trade. Russia is characterized by a small share of non-resource exports it means that most EAEU preferences cannot be fully implemented (such as market expansion, better terms of trade, advanced technologies transfer, etc.).

Recently, the problem of convergence of economic indicators of the EAEU member states has played a key role in assessing the results, and, in this research, the prerequisites for the integration interaction.

This involves the convergence of growth rates and incomes of the member states that shows how integration of the member states helps bring closer their population well-being levels. There is also the issue of the institutional convergence that demonstrates the convergence of economic and political institutions, and ‘the rules of the game’, which exist in the union and determine its participants’ behavior.

For research purposes, we need to distinguish the concepts of technological convergence and convergence of technologies.

Technological convergence refers to the extent of technological cooperation of the member states, which is considered as a qualitative characteristic of the integration system. Technological convergence reflects the results of the EAEU economies integration in this field since establishment of the union until now.

We can identify the following objectives of technological convergence:

1. Technology markets integration, cost reduction for country-to-country technology transfers.
2. Recovery of technological chains, strengthening of production cooperation among the EAEU countries.

The convergence of technologies reveals how countries disseminate and apply new technologies. It largely depends on the inter-country integration of transformational factors of production: human (A), technical-technological (T), and material natural (Rn) factors identified by O. Inshakov. The above-mentioned factors, which are involved in the production processes, transform matter and field, links and relations of the previous economic system for the creation of a new one (Inshakov 2003).

Unlike the technological convergence, the convergence of technologies acts as a process, which is expected, predictable and desired.

The convergence of technologies aims at:

1. Creation and integration of new competitive technologies when two or more promising technologies integrate in a single innovative product. The example is the convergence of information and communication technology, biotechnology, and nanotechnology (NBIC-convergence) when such enabling technologies complement each other and thus generate a strong synergistic effect that promises to transform every aspect of life (Nordmann 2004).
2. Qualitative improvement of cooperation ties in the integration union and its members’ greater engagement in the global value chains.
3. Coordination of policies in the spheres of technology exchange and intellectual property rights.

We can construct the technological convergence index based on the above-mentioned definition of technological convergence.

The integrated character of the index requires the measurement of the resulting integration indicator which is composed of the indices of several integration directions (Table 1).

Table 1. Indicators for calculation of the technological convergence index

Subindex	Indices	Unit	Source of information
Industrial relations subindex	Cooperation index	Percent	EEC statistical data, EEC analytical reports
	Competitiveness index	Percent	EEC statistical data, EEC analytical reports
	Import dependence index	Percent	EEC statistical data, EEC analytical reports
	The share of high-tech products in the total industrial production	Percent	EEC statistical data, EEC analytical reports
Industrial policy efficiency subindex	The share of fixed capital investments in the total investment	Percent	EAEU statistical data
	The share of R&D costs in high-tech industries in the total R&D costs	Percent	EAEU statistical data
	The deviation from labour productivity in the EU	Percent	ILO statistical data

Source: compiled by the authors.

The necessary data for calculating technological convergence index should be taken from the Eurasian Economic Commission (EEC) and the International Labour Organization (ILO) analytical reports (e.g. EEC 2016; ILO 2015).

The technological convergence indicator system is built upon the hierarchy principle: the lower level includes simple technological convergence indices for selected sectors; the subindices of the upper levels are driven from the aggregated simple indices. As a result, the technological convergence composite index is based on the aggregated technological convergence subindices with the weights defined by the experts

$$CI_t = \sum_{i=1}^n a_n \frac{X_{it}}{\sigma_{x_i}}$$

where

- CI_t - technological convergence index
- X_{it} - subindices' components
- σ_{x_i} - weight of the subindex components
- a_n - weight of the subindex defined by the experts

The subindices are aggregated in the technological convergence composite index by means of the scale defined by the experts.

The growth of the value of the technological convergence composite index is viewed as a positive convergence factor, and the increase in the values of the technological convergence subindices reflects better cooperation within common value chains in the EAEU.

The efficiency of common technological processes is a significant positive factor of industrial growth in all the EAEU countries, as well as of the EAEU stability and competitiveness.

4 Conclusion

The analysis of selected foreign trade indices revealed some indices especially important for the assessment of integration prospects and trends. The EAEU is a quite differentiated integration grouping in terms of foreign trade relations. There is a great difference between the Kyrgyzstan-Armenia-Belarus group and the Russia-Kazakhstan group. The analysis confirmed that Russia and Kazakhstan not only remain the drivers of the integration but they also form the core of integration; these countries demonstrate the trends typical of developed economies.

However, the EAEU is a relatively young integration grouping, and the data available are not sufficient to make conclusions about the economic divergence or convergence but we can already speak about different integration of the groups of countries that has a negative impact on the EAEU competitiveness.

The paper offers the technological convergence index used for the analysis of the technological cooperation of the countries; the index is considered as a new tool for diagnosing and monitoring of the integration processes efficiency in order to improve common economic policy.

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Factors of Employment Institution Transformation in Russia

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Abstract. Purpose: The relevance of the study of employment issues in the Russian Federation is connected with the lack of effectiveness of institutions functioning in the labor market. The problems caused by qualitative and quantitative unbalance of labor supply and demand require the in-depth analysis and solution. The state employment service is a significant intermediary between the employee and the employer and provides the functions of development and implementation of comprehensive measures of the economic, social, legal and administrative character of the labor market development. The goal of the research is to identify the factors affecting the transformation of the employment institution in the Russian Federation.

Design/methodology/approach: Currently, a number of problems appeared in the Russian labour market that affect the employment rate and the main of them are: low real disposable incomes, aging population, and difficulty in job finding according to professional training. Based on the use of official statistics, the research materials of domestic and foreign scientists, the article analyzes the employment and identifies the factors that worsen the shortage of personnel in the domestic economy. The authors identify the systemic risks in the labor market associated with the intensification of demographic and migration processes, the expansion of alternative employment, and a decrease in the share of highly qualified jobs in the Russian economy.

Findings: The article suggests a system of measures contributing to an effective development of the labor market as a result of the employment institution transformation.

Keywords: Employment · Unemployment · Institution of employment · Jobs · Labor market · Economically active population

JEL Code: J21 · J23 · J68

1 Introduction

The function of the labor market regulation is legislatively assigned to the state at international and national levels. The Convention of the International Labor Organization (hereinafter ILO) No. 122 (1964) proclaims the goal that the states should strive for a full, productive and freely chosen employment. The labor market is largely determined by the configuration and regulation of institutions. The existing institutions were created in order to minimize the consequences of possible market failures, but they themselves often become the sources of inefficiency and additional barriers (Gimpelson et al. 2018). The state employment service, in its role as the government intermediary in Russia between the job seeker and the employer, is obliged to develop the comprehensive economic, social, legal and administrative measures for the development of the labor market, provision of effective employment of the population, and its balance across the regions.

In the Russian Federation, the unemployment rate from 2014 to 2019 was about 5% per year. The domestic labor market has a number of problems affecting the level of employment:

- reduced labor demand due to technological progress and lower production of costs;
- low wages in the regions in comparison with the average rate in the Russian Federation;
- lack of social and domestic guarantees at work;
- insufficient qualifications of specialists due to the weakening of cooperation between educational institutions and enterprises;
- centrifugal nature of labor mobility of citizens;
- high level of “shadow employment”;
- low educational level of migrants;
- absence in the legislation of the responsibility of the employer for not providing the information to citizens and employment centers about their vacant jobs, and not indicating the true reasons for refusals.

In order to create the legal, economic and institutional conditions contributing to an effective development of the labor market, in 2018 the Government of the Russian Federation amended the State program of the Russian Federation “Promotion of employment”. According to the program, it is planned to develop a standard for the model employment center, which, among other functions, will determine the uniform requirements for premises, equipment of workplaces, regulations for work of employment centers, retraining and motivation programs for the job seekers. In our opinion, it would be advisable to create and develop a unified system aimed at increasing the employment rate on the base of existing employment centers modernization, which will contribute to quicker positive results. It is necessary to develop the guidelines for the formation of an effective regional policy in the field of employment, taking into account the climatic, socio-economic, and ethnic characteristics of territories in order to increase the competitiveness of the constituent entities of the Russian Federation.

2 Materials and Method

The study of employment issues requires the use of a number of methodological approaches, and among them are the methods for official measurement of the indicator of the economically active population, employment, unemployment and underemployment, which were adopted at the 19th International Conference of Labor Statisticians (ILO 2013).

In order to assess the effectiveness of employment institutions in Russia, the existing methods in science and practice, official statistics, and the scientific papers of domestic and foreign scientists were used. Such methodological approaches were used as cross-country comparisons (Clark R., York E., Anker R., Schmidt L., Sevak P.), a community-based approach (Vorobyova O., Grebenyuk A., Gimpelson V., Kape-lyushnikov R., Roshchin S.), analysis and forecast of the estimates of labor market trends (Korovkin A.), a comparative analysis of sample research data on the employment issues (Kossova T., Sheluntsova M.).

The substantiation of the provisions and conclusions for the determination of influence mechanisms of general economic and social factors affecting the institutional conditions for the assistance of population employment was carried out on the basis of a systematic approach, structural and functional, subjective and objective, logical, statistical and comparative, quantitative and qualitative analysis, as well as using the graphic modeling.

3 Results

The employment of the Russian population and its nature are determined by the following factors: the size of real incomes of the population; population-aging trend; difficulty in job finding according to professional training, etc. Over the past five years, in our country the number of people older than the working age population and younger than the working age people has been decreasing, and, consequently, the load on one economically active person has been increasing (Table 1). It should be noted that the factors determining the differentiation of the age structure of the population and its reproduction type lead to specific economic and demographic consequences, including the need to increase the labor productivity. The shifts in mortality, fertility and migration rates cause differences in the ratio of working age to non-working age population. The more is the number of people of non-working age per one person of the working age, the higher the work productivity of the working age population is expected to be (Vorobyova and Grebenyuk 2017).

The processes of economic development are affected by the gender composition of the population. There is the dependence of industries on work of men (for example, mining, metallurgy, etc.) or women (for example, textile, electronics, etc.). The intensity of women's participation in production reflects their maternal responsibilities.

In 2017–2018, the unemployment rate declined insignificantly (Rosstat 2018a). In December 2018, the unemployment rate of people aged 15 years and older amounted to 4.8% of the labor force and decreased by 0.3% points in comparison with December 2017. According to the Ministry of Labor of the Russian Federation, the number of

Table 1. Differentiation of the age structure of the Russian population in 2014–2018 (thousand people)

Indicator	2014	2015	2016	2017	2018
Total population	143667	146267	146545	146804	146880
Population younger than the working age population	24717	25689	26360	26895	27254
Working age population	85162	85415	84199	83224	82264
Population older than the working age population	33788	35163	35986	36685	37362

Source: compiled by the authors based on the data presented in (Russian Statistical Yearbook 2018)

jobs and vacancies declared by employers to employment services increased from 1,468.37 thousand units at the end of March 2018 to 1,536.67 thousand units at the end of March 2019 (by 68.30 thousand units or 4.7%). In recent years, the consequences of migration, which change the composition of the population according to the following criteria, acquire a particular importance: educational potential, professional structure, health status, ratio of income to the expenditures of the population. Thus, Clark (Clark et al. 1999) when making the intercountry comparisons found that the higher is the real income per capita in the country, the lower is the level of economic activity. During the study of regional fluctuations in labor demand, L. Schmidt and P. Sevak, including the unemployment rate, came to the conclusion that an increase in unemployment rate has a negative effect on the level of economic activity (Schmidt and Sevak 2009). Today, the shifting of labor power is connected with the job search process that provides additional social opportunities and their implementation in the near future. The shift takes place in different directions. The social structure of the population changes in time and space. Social and professional shifts in the employment system occur vertically (inter-country and inter-regional shifts, in short time period within the region) and focally (from engineers to workers). The social movements are associated with critical events, changes in social conditions and lifestyle, material environment, income level, housing conditions (including mobility of “white” and “blue” collar workers), and attitude to property.

The report “Emigration from Russia in the late 20th – in the early 21st century” states that more than 30% of emigrants from the Russian Federation had higher education. Among those who had migrated to Australia, 60% had higher and incomplete higher education, and 59% of those who immigrated to Canada had higher or incomplete higher education (Vorobyova and Grebenyuk 2017). According to the sociological survey, 30% of young people dream of going abroad, 5% would like to do this because of the lack of career development (Social Mobility 2017). According to Federal State Statistics Service (Rosstat), the domestic demand for labor is growing in the most capacious sectors, absorbing most of the internal and external labor migration. In addition, the subjective aspects of changes must be taken into account: everyday behavior, cultural skills, identity, social norms, motivation to work, and environment.

The situation in the sector of precariat groups is important today. Among other determinants of the level of economic activity of elderly people, the unemployment rate should be taken into consideration. If we speak about older generations, so when a standard job is lost for various reasons, a situation arises when they cannot find a job, which corresponds to their qualification. The situation is aggravated by the fact that they do not have social protection in the form of social guarantees or pension payments. That is why any job is taken by them and considered as a temporary one, easily abandoned or replaced (Kossova and Sheluntsova 2014).

Another option of employment is an alternative occupation. This situation is quite typical. In his or her spare time, a person earns his living on a rotational basis or doing additional work (the so-called “side work”). The shift gives acceptable working and living conditions, higher than in the native town, but requires a high intensity of work. It is hence a high income, but it is not a permanent job and place of residence. The side work is one of the options to get real money right away, but it has a high degree of risk, and in addition, the employers hire mainly young people.

The self-employment is a new phenomenon that gives a worker independence, a flexible working schedule, and the opportunity to accumulate capital for starting an entrepreneurial activity. However, the unofficial nature increases the difficulty of carrying out the effective economic activities due to the risk of fines from government and other sanctions. However, other trends can be observed in the labor market:

1. The disequilibrium of supply and demand. Only 27.90% of the unemployed use the services of employment centers, and 70.0% turn to friends and relatives for help (Russian Statistical Yearbook 2018). In the manufacturing sector, the workers and engineers lack, and they make up about 54% of open vacant jobs. On the other hand, the market is full with economists, lawyers and other humanitarians. Currently in 2018, the employment structure of the Russian Federation is presented by the following data:
 - number of workers with higher professional education made up 34% of the employed,
 - number of workers with secondary vocational training for mid-level professionals made up 26%,
 - number of people with secondary vocational training programs for workers and employees was 19%,
 - general secondary education had 17% of the employed,
 - without general secondary education were 4% of the employed (Rosstat 2018b).
 The statistics shows that the higher is the level of education, the higher is the rate of employment and lower is the unemployment rate.
2. The growth in demand for specialists of universal workers. According to the analysis of vacant jobs offered by employers in the Worki (Jobs and vacancies) mobile application in September–October 2018, the demand for some universal specialists in working professions has grown several times: 18 times for cashiers-operators, three times for sellers-logisticians, and by 33% for cooks-cashiers (Guzhikov 2018).

3. The growth of the number of the home-based workers. The number of people working remotely over the last year around the world is growing by 24% annually.

An employer who provides such an opportunity to employees receives the following benefits: the most qualified specialists are attracted, and not those who live closer; the money is saved on the rent and equipment; the work of subordinates in terms of quality and volume are objectively evaluated; the staff loyalty is increased.

The estimates of the labor market, which are based on medium-term scenarios of social and economic development of Russia, predict a structural (across certain regions of the Russian Federation and types of economic activity) and absolute labor shortage with a low GDP growth in the country's economy. The sustainable economic growth and increased incomes of the Russian citizens are possible mainly due to the growth of labor productivity. In order to reduce the risk of a forecasted shortage of labor and the need of labor productivity increase, the urgent task is to create highly productive jobs (Korovkin 2018). Today there is no strict definition of the category "highly productive". This fact is connected with the inconsistency of approaches to the definition of "job" (ILO 2013). We support the vision of the Russian researches who suggest calculating the number of highly productive jobs by means of the ratio of the target labor productivity to the basic one in dynamics (Korovkin 2018). However, this approach suggested by scientists is not consistent with the existing Rosstat methodology that is based on the index method, which does not always reflect the existing reality. It is therefore necessary to improve the statistical support of forecasting and the analytical studies in the field of employment.

4 Conclusion

The growing impact of negative processes in the field of employment (e.g. unemployment growth, increase of the burden per economically active person, growth of migration mobility, differentiation of the age structure of the population, reduction of real incomes) generates negative economic and demographic effects. This calls for the expansion of active labour policies, including the reforms of the national employment services due to the following actions:

- the improvement of the effectiveness of analysis in terms of studying the supply and demand for labor, collection, analysis and provision of the information about the employment rate by profession and territory;
- the development of forms and methods of training and retraining of specialists who are universal workers, and professional orientation of the youth;
- the improvement of the informational support for the population, including the provision of the availability of the relevant information about the needs of employers and the availability of vacant jobs and unemployed personnel in the labor market of a constituent entity of the Russian Federation;
- the provision of the financial support for measures to increase the labor productivity, the creation of highly qualified jobs;
- the implementation of mechanisms for the optimization of professional and territorial labor mobility.

The growth of motivation of the regional government authorities at taking measures to achieve regional labor markets development, and increase in the number of jobs according to the natural and climatic characteristics of the economic activity (e.g. through fostering the development of small business entrepreneurship and self-employment, folk arts and crafts) is needed to be ensured.

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Problems and Perspectives of the Youth Labour Market Development Taking into Account the Share Growth of NEET Generation

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Abstract. Purpose: The aim of the article is to detect and to justify perspectives of development of the Russian youth labour market, to improve employment process of graduates of educational institutions of different levels taking into account proportion of NEET generation growth.

Design/Methodology/Approach: Authors analyse graduates' employment using official statistics of the Federal State Statistics Service of the Russian Federation.

Findings: Authors offer a classification of NEET generation in accordance with level of graduates' education; detect reasons of high level of unemployment among young people at age of 15–24 years.

Originality/Value: Authors substantiate the need for development of a complex national project on education, employment assistance and professional adaptation of youth on labour market in order to solve the problem of lost generation.

Keywords: NEET generation · System of education · Quality of education · Demand in graduates on labour market · Marketing approach

JEL Code: I 29

1 Introduction

Modern level of the education system development should be considered as the result of prevailing social, economic, political and cultural conditions. Every new level of society development generates a new task in education system, which requires to review and work out new educational standards and methods of teaching in order to form necessary qualities of graduates at a concrete level of their personal and overall society development. The main task of education system in the 21st century in many countries is to train workforce (young people) that is in demand on the labour market (Inshakov 2009). Young people differ in the level of qualification and wish to work, but they are capable to adapt quickly and effectively to changing requirements of labour

markets, and tendencies of production, science, technique, culture and innovation development processes. This task is the result of one of the main problems of modern youth labour market that is known as professional discrepancy expressed in structural inconsistency between courses and qualifications of graduates' diplomas and employers' requirements. As a result, entrepreneurs have difficulties in selecting personnel with appropriate profile and young people cannot find jobs.

NEET generation (NEET – Not in Education, Employment or Training) includes young people at age of 15–24 years who are the category of economically active population, and they do not study and work anywhere due to different economic, social, political and personal factors. The appearance and popularization of term 'NEET' are connected directly with the rise in youth unemployment rate in different countries all over the world and with the contradictory opportunities of worthy employment paid by employers in accordance with the acquired qualifications and education costs (including temporal).

2 Materials and Methods

Conceptions and hypotheses of Russian and foreign scientists in marketing sphere, modern periodicals describing theory and practice of functioning of educational institutions under market conditions shaped the conceptual framework for the study. The development of practical recommendations is based on general scientific approach (dialectical, historical and logical); within a systems approach methods of comparative and logical analysis are used.

Information and empirical basis of conducted analysis is statistical data on the situation of graduates of educational institutions from 2015 to 2017 in labour market (website of the Federal State Statistics Service): proportion of employed graduates among general number of graduates of educational institutions of higher and secondary vocational education, job conformity of employed graduates to their speciality got in educational institutions of higher and secondary vocational education, organizations' demand in workers.

3 Results

NEET concept reflects potential vulnerability of some strata of youth on labour market because of low or absent motivation, insufficient qualifications, for example, early leaving school and a number of other reasons. In different countries there are various names of this social phenomenon, its criteria differ too, that is why it is difficult to define reasons and system ways of solving this problem. However, NEET generation has already grown in such countries as Great Britain, France, Australia, Canada, Russia, the USA, Japan, Mexico etc. (Pemberton 2008; Axelrad et al. 2018; Ermolaeva 2016).

State costs of solving problem of NEET generation are costs connected with underutilization of human capital and potential of its development, keeping special services of employment, training, payment of unemployment benefits, struggling

against growth of offences and street crime etc. Therefore, employment problems of young people are paid great attention to in the short and long term; there are attempts of working out ways of society and education system development, which will take into account modern situation in different countries and regions. We should take into account that the significant part of young people under 15–24 is not involved into the labour market because of objective reasons: they study at schools, colleges and universities. NEET generation is formed by young people who are on the labour market, but they are not in demand, that is they are officially registered as unemployed. Besides, it is necessary to consider part-time employment of young people and temporary earnings when they are under the necessity not voluntary. In other words, NEET generation is unemployed youth or young people who ought to have a part-time job (part-time employment).

Analyzing the employment problem of NEET generation in Russia it is logic to divide youth in accordance with the level of education (Rosstat 2018e; Rosstat 2019a; Rosstat 2018c; Rosstat 2018a; Rosstat 2018b; Rosstat 2019b; Rosstat 2018d):

- (1) with higher education: bachelors and masters under 20–24 who have difficulties in finding jobs because of lack of experience and practical skills, demand in their qualification;
- (2) with secondary vocational education: qualified workers, employees or mid-level specialists who got access to labour market and right to get a higher education, but they didn't manage or want to find a job and to continue their education;
- (3) with full secondary general education: school graduates under 17–18 who mastered the programme of secondary general education for 11 years, but they didn't continue to study at colleges or universities;
- (4) with basic general education (incomplete secondary education): schoolchildren under 15 who studied for 9 years. As a rule, representatives of this group do not want to study or they cannot do it, and they cannot perform unskilled work, that is why their parents and state have to solve their money problems;
- (5) without basic general education: adolescents under 15–19 who didn't finish school because of poor progress. According to schoolteachers, approximately 15–20% of teenagers in secondary school have low progress and in the ninth form, it is impossible to change the situation.

Thus, it is very complicated to detect origin reasons of NEET generation, because there are no generally accepted terminology and criteria. Therefore, it is necessary to specify system of comparison indicators, peculiarities of economic, political and social situation in a country or region. European researchers detect that chances of young immigrants to join NEET generation are more than 70% (Eurostat 2016). If we consider Russian specific features of NEET, there are the following main reasons of its growth number:

1. Lack of marketing mechanisms of interaction between markets of educational services and labour.

Because of the shift of political system in 90s in the 20th century the existing mechanism of finding jobs for graduates was not substituted by large-scale marketing researches of employers' needs in order to define necessary number of specialists, their

level of qualification, knowledge and skills. Thus, this factor caused serious problems in finding jobs by graduates because of the ruined connections between higher education institutions and labour market that were not substituted by new ones based on market principals of functioning. Educational institutions have to find jobs for their graduates with given knowledge and skills affecting labour market with the help of government and trade unions, so they strive to change labour market and find jobs for their graduates.

2. Quality of education, which young people get at schools, colleges and universities, and its weak orientation to labour market.

According to the results of graduates' employment experts note that a quarter of graduates who got higher and secondary vocational education in 2015 didn't find jobs during 12 months since they graduated from educational institutions; more than a third of graduates found their first jobs, but it was not connected with their speciality (Ponomarev and Marchenko 2017). There are several factors:

- (1) getting a profession ceased to be a guarantee of a secure and successful future, and diploma is not a signal for employers to hire a graduate from college or university;
- (2) activity of the Ministry of Education and Science to close up inefficient universities and their branches is aimed at solving problem of education devaluation and general accessibility; increase of diploma prestige; decrease of diploma job-seekers and diminution of employers' dissatisfaction (but this activity doesn't improve the situation fundamentally);
- (3) researches of graduates' employment show that there is an inapplicability of knowledge and skills in practical activity (Inshakov and Guzev 2005).

3. School profiling. The introduction of General State Examination and Unified State Examination devaluates the institute of career counseling of schoolchildren whose aim is to detect modern tendencies of labour market and to help enrollees to define their labour preferences, to choose educational institution and interesting specialities. The choice of speciality is not connected with the analysis of advantages and disadvantages of different specialities, graduates' abilities; it is based on figures of entrance grades and parents' finance. As a result, graduates with low level of knowledge choose specialities where it is more complicated to study and it is necessary to have deep knowledge. Moreover, future employees begin to understand specific features of profession only by the end of their study. Consequently, there is unwillingness of working among young people, staff shortage at enterprises, high level of unemployment and personnel problems in economic industries in the country.

4. Lack of mechanisms of professional adaptation and mentoring.

Graduates without work experience are in a vulnerable position on labour market because there is a market saturation of competitive adult workforce who has necessary skills and professional experience. New generations of employees should be adapted to real labour activity, they ought to be transferred professional skills and to be provided regular communication connections among personnel. In mixed age personnel groups

the task of personal development and experience transfer is solved: new generation of employees learns to listen, to take into account different points of view, to take decisions and to be responsible for consequences; old generation of employees gets information about new technologies.

5. Individual abilities. Beyond knowledge, professional skills and level of qualification most employers do not like personal qualities, common culture and lack of initiative among young specialists. Infantile young people with low motivation on labour market and in life, with lack of communicative skills and low level of responsibility have more chances to join NEET generation. Representatives of NEET generation do not hasten to leave their parents and live alone, to get married, to give birth to children and build a career. NEET generation has different requirements to work and life guided by free choice and opportunity of doing something, which brings satisfaction, and these requirements shift priority of successful career and material stability. Infatality can be connected with unattractiveness of graduates' speciality according to entrance grades of General State Examination and Unified State Examination or parents' finance. Moreover, employers note that young people have high expectations and needs: interesting salary is not proportionate to performed work and personal contribution to enterprise's welfare.
6. Social and economic situation in the country: problematic low-income families.
7. Globalization and periodical economic crisis (world and regional crisis).
8. Variety, various perspectives and specificity of innovative processes (Inshakov 1998).

There is no consensus about reasons of joining NEET generation among scientists who investigate NEET. Nevertheless, all scientists agree that there is a strategic threat to a country's competitiveness and negative influence on economic growth (Inshakov 2006; Inshakov 2018). Significant percentage of youth having joined NEET generation signals that there is a weak potential return on human capital, and in its turn, this factor has a negative impact on perspectives of economic growth and causes social tension and breach of social and political stability in a country.

4 Conclusion

According to the results of conducted research, we offer the following ways of solving problems of NEET generation:

1. The first task of educational institutions and state is aimed at detection and support of perspective educational programmes, which are in demand on labour market with taking into account temporary lag, social and historical context of society development. This task can be achieved by realizing logic of subjective and objective relations, which concern forming a young specialist demanded on labour market and applying marketing instruments and strategies on educational and labour markets. In this situation, it is expedient to use strategies of integrated growth

connected with expansion of educational institutions with the help of adding new structures:

- strategy of reverse vertical integration oriented to growth due to strengthening interaction of schools, colleges and etc.
- strategy of going forward integration expressed in strengthening interaction of structures between universities and employers.

According to this strategy of solving youth employment problem the role of educational institutions increases as they help in processes of finding jobs, and there is also strengthening of partnership between educational institutions, entrepreneurs and government structures. The main tasks are coordination of labour market subjects, professional orientation and psychological support of young people.

2. One of essential changes in the Russian system of education should touch theories, methods, knowledge of speciality, skills and competences in educational process. Educational training including great classroom loads, well-developed methods and high level of students' control should be supplemented by teaching at functioning workplaces, methods of developing creative abilities and skills of flexible adaptation in different situations by emotional intelligence development. Training ought to prepare for life that is it is necessary to teach knowledge, skills and lifestyle of a certain professional community with professional and social values. Unfortunately, nowadays the connection between graduates and professionals is minimal, and, as a result, future graduates have no idea about their work and become disappointed because of mismatch of their expectations about their first job, that is why they change sphere and refuse to work as doctors, teachers etc.
3. The development of national project on education, employment assistance and professional adaptation on labour market considers opportunities of new employment and further professional education for every person under 15–24 years during a certain period after receiving a diploma or losing a job. This project should provide:
 - opportunity of receiving education by teenagers from the low-income families;
 - selection of talented young people who do not have an opportunity to get qualification themselves;
 - development of retraining and training system as an instrument of bringing to conformity of social order for needed specialities on labour market and number of diploma graduates with necessary qualifications.
 - development of system of additional educational services (for example, teaching foreign languages, accounting, computer programs etc.) which allow young specialists to get additional knowledge and skills in their free time;
 - creation of system of postgraduate maintenance which integrates work of educational institutions and enterprises by joint projects.

Creation of large-scale national project will would permit to solve problems of social and economic development of regions, villages and towns, problem of youth attraction; to decrease social tension among low income population; to solve problem of education and employment of teenagers under 15–19 years.

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The Effectiveness Estimating of Investments in Human Capital of Children (on Example of the Volgograd Region)

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Abstract. Purpose: A sample survey of households in the Volgograd region was conducted to estimate the volume and structure of invested funds in the basic components of the human capital of children aged 0–10 years.

Design/Methodology/Approach: The children belong to generations born consecutively in different years at 5-year intervals: 2014–18, 2009–13, 2004–08, 1999–03 and 1994–98, i.e. for the period of 25 years. If at the survey time children were already over 10 years old, then household spending were accounted only until the children reached 10 years of age. The expectations of parents (and other older relatives), the forms, volumes and terms of the return on investment were also analyzed. Mass questionnaire and in-depth interviews were used as the methods of collecting primary information. In addition, data of official state, regional, sectoral and departmental statistics were collected, processed and analyzed. This is done in relation to other levels of investing in the human capital of children. These levels include all subjects other than the household, from small business to the state. Official statistics, in-depth and expert interviews were used as information sources here.

Findings: Main result is the set of indicators for a complex evaluation of the investment efficiency in the human capital of children.

Originality/Value: Positive and negative values of these indicators were obtained on its basis. It was performed for a specific socio-economic situation: investing in the human capital of children aged 0–10 years in contemporary Russia by the example of its typical region.

Keywords: Human capital · Investing in children · Health · Education · Efficiency evaluation

JEL classification: J11 · J24

1 Methods

Application of the below-mentioned methods allowed obtaining scientific information and calculating the necessary indicators:

- analysis of official state, regional, sectoral and departmental statistics;

- mass sociological surveys of households having children aged 0–10 years in the Volgograd region on a representative sample (if the children grew up already, then household spending was studied until the children reached the age of 10);
- in-depth interviews with members of the studied households;
- expert interviews with businessmen, state and municipal employees, having information about the spending of commercial organizations, as well as the federal, regional and municipal budgets on the formation or maintenance of various elements of the children’s human capital in the region, expected and real results of such investments.
- primary data processing with the use of the “Statistica” program (in the main it was classical correlation, regression and factor analysis).

2 Introduction

In this research, human capital is a wide stock of knowledge, skills, professional experience, physical qualities, etc. A man uses all this in his professional, labor and daily activities to satisfaction of various needs (both his own needs and the employer, state and society ones). The basics of this approach to human capital were popularized by Gary Becker and Theodore Schultz in the middle of the last century. They justified the need for investments in all these human qualities. It initiated the foundation for an economic approach to the formation and development of human innate and acquired qualities. It became clear that all this can and should bring additional income to all subjects of such investments.

The original idea of human capital was related only to education and professional skills. However, by now, this concept rightly includes all expenses for food, clothing, housing, education, healthcare, culture and all other costs for maintaining and improving those human qualities that can be beneficial if it is properly developed. Therefore, it is necessary to begin such investments from the earliest age of a human capital holder. We used the phrase “investing in the human capital of children” to denote total costs, that households, businesses, the state and other subjects have through the birth, development, upbringing and education of children.

The primary data was collected mainly in the Volgograd region, but it is possible to extend the results to many other subjects of the Russian Federation, because the values of most socio-economic and demographic indicators here are equivalent to the all-Russian and averaged ones over the Southern Federal District. Therefore, the Volgograd region can be considered as a typical region of contemporary Russia and the results obtained here in household and expert surveys, which relate to the investment efficiency in the human capital of children can be extended to the Russian Federation as a whole. There are 40–50% of the subjects in the Russian Federation with macroeconomic, demographic and other parameters equivalent to the Volgograd Region. About half of the country population lives there.

For the first time in Russian and foreign scientific research, a comparative statistical analysis of the volume and structure investment dynamics in the human capital of children was used. It was done over the period of 25 years at all levels of such

investments on the one hand, and trends in the main socio-demographic indicators characterizing each successive generation of children, adolescents and youth on the other hand. Completely original questionnaire was developed for this purpose. There were special empirical indicators in it. In the study, they made it possible to calculate the volume and structure of investments in the human capital of children, as well as the expected, possible and real return on this. Before that, in Russian scientific literature there were no works, where it would be studied in detail who, why and how much invests in the basic elements of the children's human capital, what return expects to receive from it and what is return in fact. The study has eliminated this gap and information has received "at first-hand".

3 Results

A number of meaningful results making it possible to answer the research questions were obtained through analysis of the collected data. In particular, the average household of a typical region in contemporary Russia having a child aged 0–10 years spends at least a quarter of its total income on the formation and development of such a key component of the child's human capital as education. The overwhelming majority of parents do not consider such costs excessive. On the contrary, it is acceptable for them to invest even more for these purposes, up to one third of their income. In addition to financial and material investments, households also make significant time investments in children's education. Only half of the parents hope for any economic return on this investment of money, time and efforts that is for getting higher incomes by their already adult children (compared to a lower level of child education). Other parents see only various social advantages of a higher education and intellectual job. However, they find it difficult to answer how this can help financially or do not believe in this possibility. However, even the respondents who expect economic returns on their children's education cannot answer even approximately, when and how such returns can be obtained.

The average Russian family spends about a tenth of its total income on the formation and development such a key component of the child's human capital as health. Most parents do not consider these costs high and they agree to give about 1.5 times more for this purpose. In addition to financial and material investments, families also make time investments in the health of their children. All this indicates the clear intention of modern parents to invest in the health of their children. At the same time, more than 80% of parents consider their children healthy enough (although medical and demographic statistics suggest otherwise). Therefore, parents do not make enough efforts to maintain the health of their children by active methods, which is not only visit to clinics and pharmacies. In addition, half of the respondents do not believe that today's medicine will cure their children if they become ill.

For Russian households, the main (by volume) directions of investment in the human capital of children are following: (1) health and physical development of children, (2) education and intellectual, creative development of children. All other directions of household investment in children, even in total, are significantly smaller than each separate main direction. The volume of household spending on the formation

and development of all elements of the children's human capital has been uniquely increasing in Russia over the past 25 years. The average household income per one member is in the rise too. At the same time, investments in key elements of children's human capital demonstrate different dynamics over this period. The increase of investments in the health and physical development of children is generally equivalent to household income growth. However, the cost volume of education and intellectual development of children is increasing faster than income. As a result, the volume of household investments in the human capital of children aged 0–10 years is almost close to the average household income per one member now.

However, this does not lead to increase the educational level and intellectual development of children, adolescents and youth. It does not help to reduce the sickness rate among the listed population groups. Moreover, the opinions of the experts we interviewed and the statistics show that the knowledge level decreases and the sickness rate increases. These data indicate a low efficiency of investments in the human capital of children, because investment growth does not lead to an improvement in human capital and does not prevent a decrease in its basic characteristics. Most parents do not have an economic interest in spending on the education and health of their children. They consider such spending unavoidable, like paying utility bills. Thus, the investment of Russian households in the human capital of children aged 0–10 years is generally not effective. Moreover, its effectiveness has been decreasing over the past 25 years. This is especially true about the investments in education.

In the Volgograd region, households spend an average of 50 thousand rubles per a year on the physical development and health maintenance of one child aged 0–10 years. For education, similar spending amount to 150 thousand rubles per a year. The number of children aged 0–10 years in the Volgograd region is about 300 thousand. Consequently, the total investments of all parents in the region in children's health are 15 billion rubles per a year and the total investments in education of children are 45 billion rubles per a year. Therefore, the total households' investment in the region in the human capital of children are 60 billion rubles per a year. The annual budget of the Volgograd region in 2018 amounted to about 110 billion rubles that is the total volume of household investments in the human capital of children is comparable to the regional budget.

Volgograd region is a typical subject of the Russian Federation. Therefore, we can use the obtained values of the average household spending on the formation and development of the children's human capital to calculate similar total spending for the whole country. There are about 20 million children aged 0–10 years in contemporary Russia. Therefore, the total investment of households in their health is approximately 1 trillion rubles per a year. Similar investment in the education of children is 3 trillion rubles per a year. Thus, the total investment of parents in the human capital of their children in Russia is approximately 4 trillion rubles per a year.

The expenses of the regional budget on the education of children aged 0–10 in 2018 were 14.4 billion rubles, on their health care, physical culture and sports they were 2.0 billion rubles and on social policy for children they were 4.1 billion rubles. It means that the total budget investments of the region in the human capital of children in 2018 were 20.5 billion rubles. Business investment in children of the region is also about 20 billion rubles per a year. Consequently, the total investment in the main elements of the

human capital of children aged 0–10 years in the Volgograd region is 100 billion rubles per a year. This is a typical volume of investment in children for the average Russian region. For the whole country, this sum must be multiplied by 100 (because there are about 100 regions in contemporary Russia) and as a result, we get about 10 trillion rubles per a year. In the Volgograd region lives 300 thousand children aged 0–10 years. Therefore, the total investment in human capital by all subjects per one child is approximately 330 thousand rubles per a year, or about 28 thousand rubles per a month. It is correctly to accept the same amounts as average Russian ones.

Despite significant investments in the health and education of children, the country's population size continues to decrease, the natural population decline does not stop and children and adolescents, when they grow up, do not have the expected high professional, intellectual or physical qualities. Moreover, according to our expert surveys, the level of knowledge and skills of students in universities and colleges has been constantly decreasing over the past 10–15 years. And when yesterday's students enter the labor market, then employers already say about the decline of intellectual, creative and professional potential of university and college graduates, with rare exceptions. It is despite of numerous developing clubs, sport sections and the like.

This implies that the various supposedly developing institutions and social practices in fact do not contribute to the development of children, but they lead only to excessive spending of time, efforts and health in both children and their parents. For households and the state, all this also means significant material and financial costs without any compensation at least in the distant future. Therefore, this kind of investment in human capital has zero or negative efficiency. For example, the following situation is typical in contemporary Russia: the average schoolchild (and often even a preschool child), starting from the 1st grade, has to engage, in addition to school (kindergarten), in one or more development clubs, in one or more sports sections, etc.

After such active childhood, adolescents and young people often have no the strength, desire and health to strive for achievements and self-realization. The results of our mass and expert surveys, formalized and in-depth interviews also show all this. In addition, medical and demographic statistics indicate a health deterioration of schoolchildren, especially to graduation. In other words, the expenses are higher, but the quantity and quality of new generations' human capital are lower. The multidisciplinary and comprehensive research on this topic for this abnormal situation cardinal change and the negative trends reversal needs to be continued.

4 Conclusion

The following main conclusions were obtained as a result of the research:

1. The state and households are the main subjects of investment in the human capital of children in contemporary Russia, because only they invest in all components of human capital without exception, permanently and in full.
2. Investments in the human capital of children in contemporary Russia are expenses with unproven economic efficiency and unclear aims for all subjects of the investments.

3. There is a stable increase in the real volume of investments in the human capital of children by the main subjects over the past 25 years. At the same time, the statistical indicators characterizing the human capital of new generations steady decrease. In particular, the health of children, adolescents and youth, their knowledge, erudition and cultural level have been constantly declining over this period.

All this shows the inefficiency of investments in the human capital of children in contemporary Russia. Moreover, its effectiveness continues to decrease. Therefore, significant changes in the volume and structure of these investments, as well as aims and expectations from them, are necessary.




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GR Management Actualization in the Context of Achieving the National Development Goals of the Russian Federation for the Long Term

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Abstract. Purpose: The purpose of the article is to provide a scientific basis for the need to increase practical experience of GR management application in organizing the interaction of business structures with public authorities in the conditions of implementation of national development goals of the Russian Federation for a long-term period. To achieve this goal, the authors, developing the content of the article, use a number of general scientific and special methods that provide the necessary depth of study of the scientific problem.

Design/methodology/approach: Business is one of the drivers of modern economic growth. Among the factors that ensure stable and successful development of business structures it is necessary to highlight a quality business environment and the presence of strong business contacts with public authorities that are realized in the context of GR management at the federal, regional and municipal levels. It gives reason to designate such relationships as multi-level. The authors graphically present a conceptual model of the interaction between business structures and public authorities in the framework of GR management which substantively determines the basic conditions, methods and results of this process.

Findings: The previous research proves that the priority of GR management is to support and ensure the implementation of strategic goals and objectives of the business structure by building an open and mutually beneficial dialogue with public authorities, as well as participating in the work carried out by public authorities to develop and implement State (municipal) policy in various fields.

Originality/value: The survey of heads of 20 business structures of the Volgograd region which the authors conducted to identify GR needs revealed their willingness to implement GR management tools and confirmed the feasibility of the ongoing transformation processes in organizing the interaction of business structures with public authorities. The main priorities of the transformation of GR management are determined in the context of achieving the national goals of the development of the Russian Federation for the long-term period, which involve the elimination of problem zones in 3 directions. In general, the authors came to the conclusion that in order to realize the business structure potential for GR interaction with public authorities, it is necessary that the relevant work be systemic.

Keywords: GR management · Business structure · Public authorities · Interaction · Development · Partnership

JEL Code: H79 · M10 · R58

1 Introduction

Successful functioning of entrepreneurship is a condition for renewal and sustainable development of the country's economy, generation of new jobs and solving the problem of employment. At the same time, the functioning and positive dynamism of entrepreneurship in many respects depends on the effectiveness of its support by the government. In the current crisis conditions paramount importance is attached to the efficiency and stability of competitive positions of business entities, the formation of new economic ties with their participation, the intensification of production and innovation activities.

Thus, Decree of the President of RF of 07.05.2018 No.204 «On national goals and strategic objectives of the development of the Russian Federation for the period until 2024» stated 12 key priority areas for breakthrough scientific, technological and socio-economic development of the Russian Federation, one of which is small and medium-sized entrepreneurship and support for individual entrepreneurial initiative. 481.5 billion rubles were allocated for the national project in this area (Passport 2018).

Today more than 19 million people are registered as representatives of small and medium-sized businesses. By 2024, the goal has been set to increase the number of people employed in this sphere to 25 million people (including individual entrepreneurs) and to increase the contribution of small and medium-sized enterprises to the country's GDP (Decree 2018).

The main priority of business entities is to make a profit, which is affected by various circumstances (Inshakov 2007), first of all, by the nature of the attitude of public authorities towards these business entities. It forces business structures to seek means and ways of influence on the government (Plotnikova 2014).

The increasing importance and relevance of interaction between business structures and public authorities occur during periods of radical social and economic changes (Perepelitsa 2006; Maximov and Tolpegin 2009). Therefore, in modern Russia, the rationalization of partnership between business structures and public authorities is possible only through the joint development and implementation of an effective interaction strategy that takes into account the interests and requirements of the country's socio-economic modernization in the context of achieving the established national development goals for the long term.

This fact actualizes the necessity for intensification of Russia's Government Relations management (GR management) as a branch of communicative management, whose aim is to establish and maintain structured partnership relations, coordinate the interests of business structures with the interests of public authorities at various levels in order to influence the decisions of public authorities, reduce potential risks and threats, strengthen the market position and ensure sustainable development of entrepreneurial activity.

2 Materials and Method

The problems of fulfilling the identified economic tasks and the further development of business structures as one of the national development goals of the Russian Federation in the context of GR management implementation are solved in this article on the basis of a set of sources. As for normative documents the authors examined Decree of the President of the Russian Federation of 07.05.2018 No. 204 «On national goals and strategic objectives of the development of the Russian Federation for the period until 2024» and the Passport of the national project «Small and medium enterprises and support of individual entrepreneurship initiatives», approved 24.12.2018. The scientific basis of this article is research of foreign (Coen D., Gadzekpo L., Grant W., Mack C., Wilson G.) and Russian (Achkasova V., Inshakov O., Inshakova E., Kail Ya., Klochko E., Lozhevsky I., Mayboroda M., Markovskaya E., Morozov O., Mulyar S., Mukhaev R., Nikitin A., Perepelitsa G., Plotnikova N., Prokhorova V., Tolstykh P., Shatilov A.) scholars on the problems of establishing partnership between business structures and public authorities within the framework of GR management.

Scientific development of the content of the article is carried out on the basis of general scientific methods: comparative and system analysis, generalization, induction and deduction, analysis and synthesis, empirical description, classification. The research uses a logical approach, graphic simulation and questionnaires, which provide the necessary depth of study of the scientific problem.

3 Results

Conceptual Model of Interaction Between Business Structures and Public Authorities within the Framework of GR Management

In foreign countries the study of GR management problems is usually carried out in the framework of the more general field of PA (Public Affairs) (Mack 1997; Wilson 2003; Coen and Grant 2006). One of the reasons of GR management actualization in Russia is transition to a qualitatively new format of relations between business and government as a result of increasing government role in the economy (Corporate relations, 2018).

Based on the analysis of several scientific papers on the interaction between business and government (Achkasova 2015; Gadzekpo 2017; Kayl et al 2016; Klochko and Prokhorova 2015; Lozhevsky and Mayboroda 2017; Markovskaya 2018; Morozov 2015; Mukhaev 2019; Nikitin et al. 2015; Tolstykh 2007) the authors have developed a conceptual model of interaction between business structures and public authorities in the framework of GR management (Fig. 1), which substantively determines the basic conditions, methods and results of this process.

As you can see in Fig. 1, GR management as an activity of building relations between business structures and public authorities includes:

1. Monitoring, i.e. tracking, collecting and processing of information on the activities of relevant public authorities that allows a business structure to identify and systematize all the government officials who make decisions which are important for its activities.

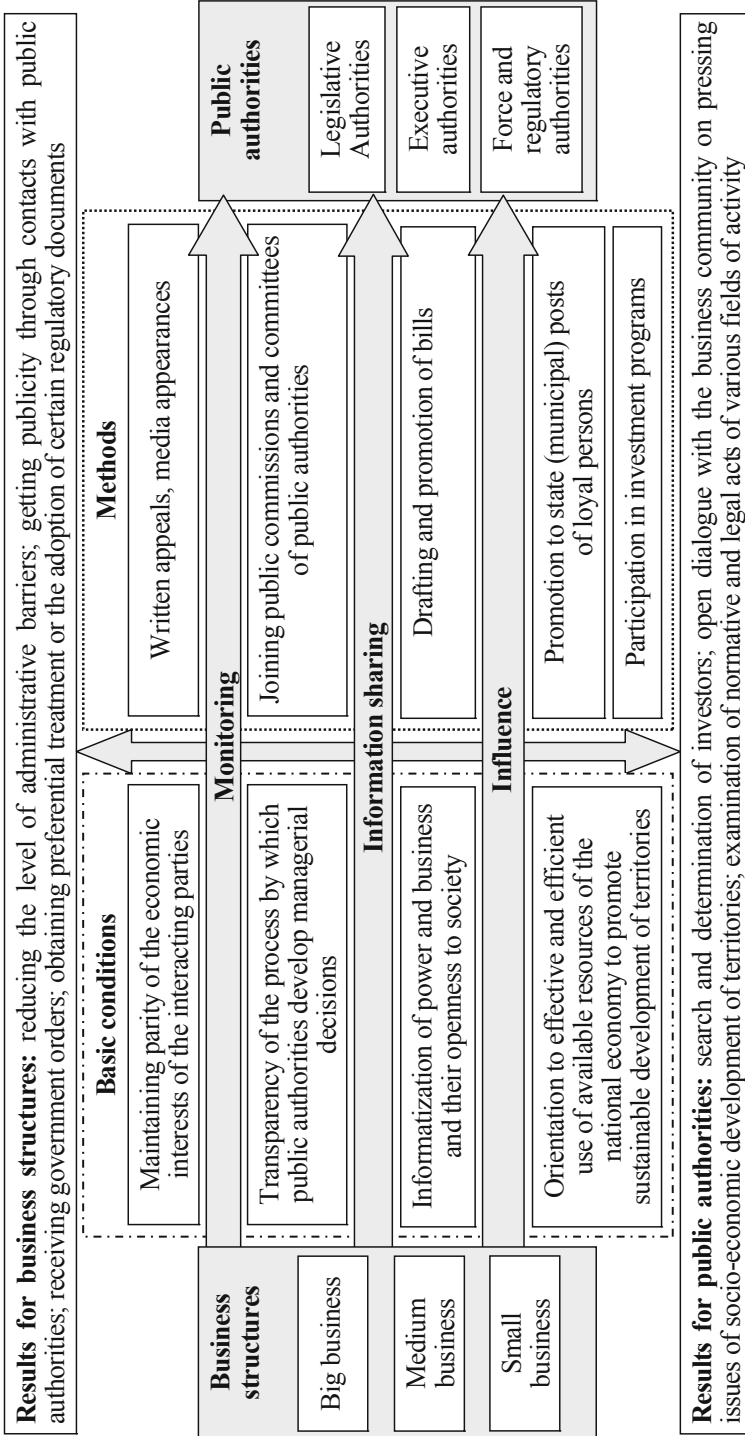


Fig. 1. Conceptual model of interaction between business structures and public authorities within the framework of GR management Source: compiled by the authors.

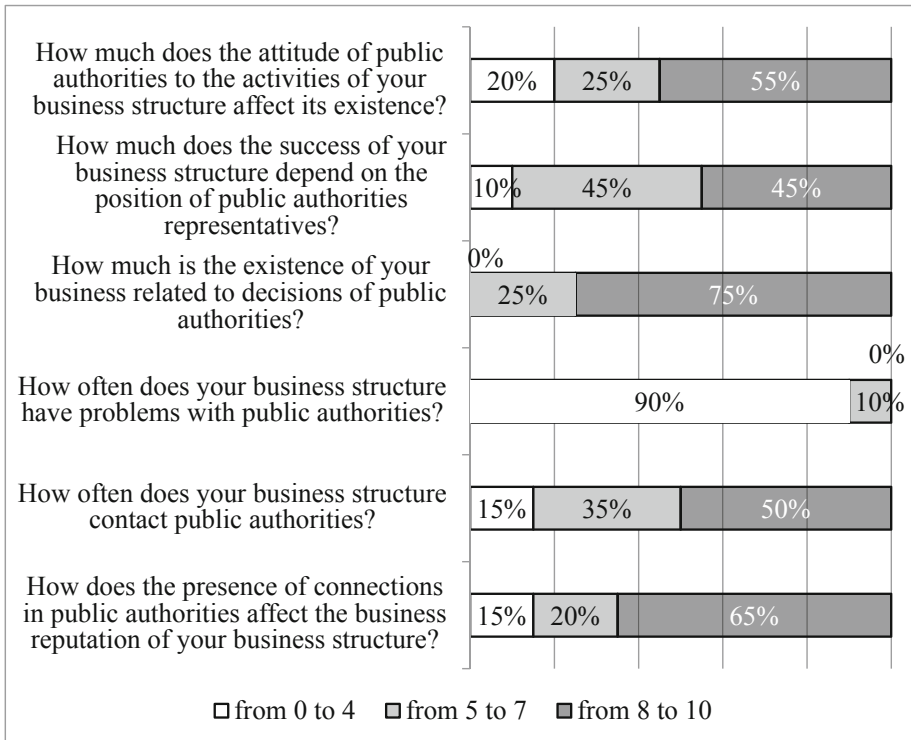


Fig. 2. Results of the survey of business leaders of the Volgograd region on the first block of questions «Determining the need of GR management for the business structure» Source: compiled by the authors based on the survey results.

2. Information sharing, i.e. reporting of the prepared information to the profile, key official/deputy in order to take into account the positions of the business structure in the document being prepared or in the development of state (municipal) decisions.
3. Influence, i.e. adjusting the position of the relevant public authorities for the benefit of the business structure.

It should be noted that today there is a great variety of partnerships between business structures and public authorities as well as various GR activities of the business structure. Effectiveness and adequacy of using this or that method of GR management depends on the professionalism of a GR specialist.

Determining GR Needs of Business Structures

As a rule, the awareness of the need to introduce the GR department into the organizational structure or to hire an outside GR manager on a contractual basis occurs only after facing barriers and restrictions for business development or complicating internal structuring. Specificity of establishing and institutionalizing of the GR department in the business structure is determined by the stage of its life cycle, as well as the size, industry, available financial resources, strategic goals and objectives. Thus, large business structures due to their size, assets and number of employees are usually integrated into

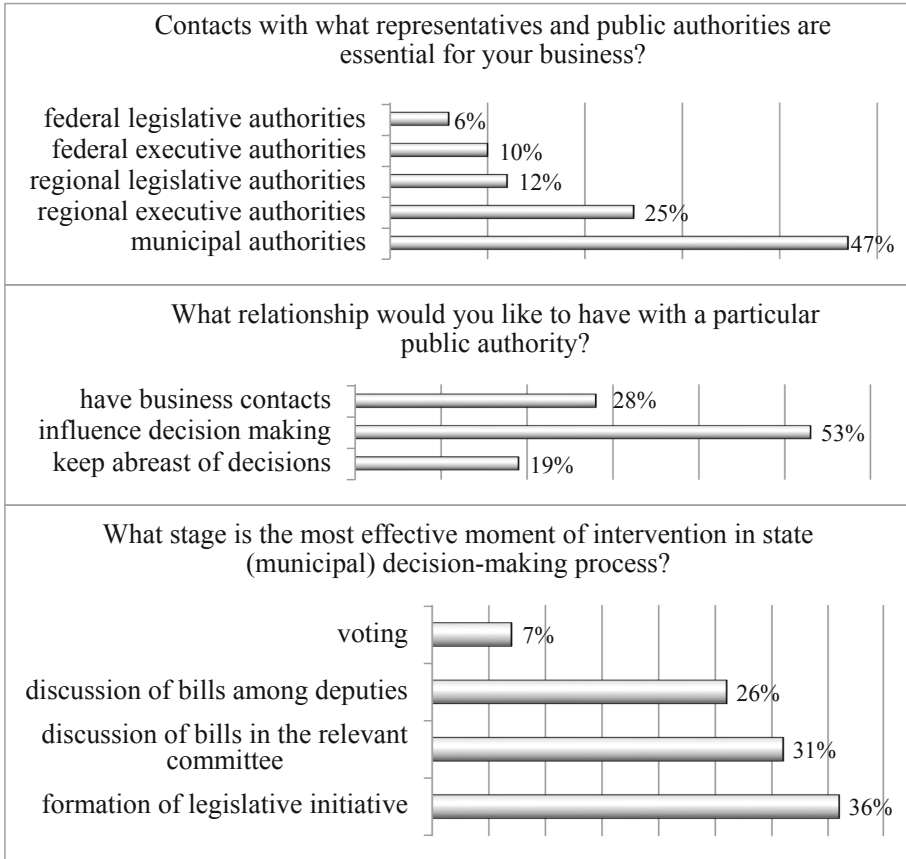


Fig. 3. Results of the survey of business leaders of the Volgograd region on the second block of questions «Determining the desired level of GR contacts with public authorities» Source: compiled by the authors based on the survey results.

the structure of state (municipal) decision-making and have a successfully functioning GR department. However, representatives of small and medium-sized businesses are also trying to defend their interests at the federal, regional and local levels.

Thus, in August 2019, the authors conducted a survey of business leaders of 20 business structures of the Volgograd region in order to identify their GR-needs, i.e. to determine the need to expand partnership of these business structures with public authorities within the framework of GR management. Respondents were asked to answer a number of questions grouped into 3 blocks. For each question of the questionnaire it was offered to give an assessment from 0 to 10 points.

The survey results on the first block of questions (Fig. 2) confirm the postulates of modern business philosophy, according to which public authorities are one of the stakeholders of any business structure and, consequently, the relationship with the government becomes part of strategic business planning.

The survey results on the second set of questions (Fig. 3) showed that the overwhelming majority of business leaders hold the view that the successful business development in the environment with a strong government presence is largely determined by the level of professional organization of interaction with public authorities of different levels, and first of all with the municipality. In this case GR management is not limited to collecting information on the activities of relevant public authorities and forming stable business contacts with public authorities for the systematic solution of business development issues. Business structures set more global tasks connected to the influence on the adoption of state (municipal) decisions, for example, through active work on the development of draft laws and regulations as part of working groups.

Results of the survey of business leaders of the Volgograd region on the third block of questions «Determining the specificity of implementation of GR management as a business process» showed that 55% of business executives consider it necessary to employ an outside specialist in GR management, and only 23% prefer to have their own GR manager as a staff member (including GR managers as part of the corresponding business units).

The conducted research revealed a high willingness of participating in the survey business executives to implement GR management tools in their activities and demonstrated the feasibility of transformation processes occurring in organizing interaction between business structures and public authorities.

The Main Priorities of GR Management Transformation in the Context of Achieving the National Development Goals of the Russian Federation for the Long Term

In our opinion, the main priorities of GR management transformation in the context of achieving the national development goals of the Russian Federation for the long term should be the following:

1. Approval of measures that block the use of monopoly advantages of specific organizations by influencing the development and adoption of state (municipal) management decisions:
 - enactment of legislation on lobbying with the obligation to publicly declare the existence of private interests;
 - reduction in the tax burden, the use of tax holidays for small businesses created in socially significant areas of economic activity.
2. Improving the interaction between business and government in the modern economy in the framework of state support of business:
 - formation of an effective system of information communications;
 - increase of labor productivity due to technological modernization and digitalization of economic processes.
3. Development of feedback mechanisms and public monitoring of state (municipal) management decisions in the field of business development:
 - regular review and discussion of business development initiatives;
 - development of regulatory impact assessment as a tool to ensure the collective work of entrepreneurs to improve business conditions.

Results

The formation of open, positive and reliable partnerships using a large number of tools is the direct purpose of GR management. The use of GR management can increase the efficiency of the business structure and eliminate barriers to business development, which is one of the national development goals of the Russian Federation for the long term.

The effective influence of business structures on the process of making state (municipal) management decisions is the result of a combination of objective necessity and subjective capabilities of these participants. At the same time, the influence of business structures on the adoption of managerial decisions by public authorities is a necessary condition for the realization of their own economic interests.

4 Conclusion

Development of entrepreneurship and support of individual entrepreneurial initiative is one of the established national development goals of the Russian Federation for the long term. The success of a business structure depends on the effectiveness in managing the process of interaction with public authorities in the framework of GR management.

Implementation of GR management for a business structure and public authorities is the conclusion of an agreement for a long-term successful partnership, which brings results for both participants in the economic and social spheres. Today's business leaders demonstrate a high level of readiness to implement GR management tools and support the feasibility of the ongoing transformation processes in this area.

The main priorities of GR management transformation in the context of achieving the national goals of the development of the Russian Federation for the long term should be the following: approval of measures that block the use of monopolistic advantages of specific organizations by influencing the development and adoption of state (municipal) management decisions; improving the interaction of business and government in the modern economy within the framework of the state support; development of mechanisms for feedback and public monitoring of management decisions in the field of business development.

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Realization of Population's Motivational Potential in the System of Public Administration as a Factor of Institutional Ensuring the Competitiveness of the Region

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Abstract. Purpose: The paper is prepared in order to substantiate the model of information and analytical complex, which allows monitoring the processes of formation and realization of motivational potential of the population in the system of public administration, considered as a social technology of institutional ensuring the competitiveness of the region.

Design/Methodology/Approach: The achievement of this goal was facilitated by the use of such analytical methods as structural, complex and monographic ones, as well as private methods: typologization, structuring, comparison, verification, ranking, graphical extrapolation, economic and mathematical modeling within the framework of the fundamental system-functional approach to the object under study.

Findings: The proposed model is based on the use of modern methods of mathematical statistics (linear regression, Lasso regression and ARD regression) and methods of deep machine learning (neural networks). The advantage of the proposed economic and mathematical model in comparison with standard regression models is the ability to build effective estimates of coefficients for binary endogenous variables.

Originality/Value: Quantification of the factors interacting in formation and realization of motivational potential of the region's population in the system of public administration will contribute to identifying the development trends of civil activity of the regional population and establishing tools to increase the citizens' participation in the political process, and therefore neutralize provoking their opportunistic behavior in the system of public administration.

Keywords: Regional competitiveness factor · Public administration · Motivational potential of the population · Institute agent · Mathematical model · Methods of mathematical statistics

JEL Code: C15 · C52 · R58

1 Introduction

Ensuring the region competitiveness depends on the interaction of many factors, among which the special importance is with social technologies that mediate the subjects' interpersonal social contacts in the process of regional development. These include public administration technologies, which “ensure the interaction of citizens, public associations, business communities and state institutions, carried out through global and local social networks to establish a balance of interests with respect to the goals of socio-economic development” (Loginova et al. 2018).

Public administration acts as the highest degree of democratic principles manifestation in the process of making and implementing political decisions by authorities at all levels, since citizens and their associations in the mechanism of its implementation demonstrate not only the functions of the governed, but also of the governing entity. In this regard, public administration can be represented as “a multi-level and branched system of institutionalized norms, traditions and assessments, covering all levels of socio-economic space—from the macro- to the nanoscale (individual consciousness), and which provides a number of restrictions and requirements for socio-economic mechanisms, in particular, the requirements of taking into account a variety of factors at different levels” (Kleiner 2005).

Thus, public administration can be represented as an institution that creates and reproduces the rules of conduct in the decision-making process regarding the use of economic resources. Public administration as an institution is used to “solve specific problems of existence by generating the necessary rules” (Inshakov 2005), it is based “on public agreement on the need to identify specific institutions and the recognition... of their reproduction rules” (Inshakov 2005).

The category of “public administration” was first introduced in science in 1887 by V. Wilson, but it acquired its true nature at the end of XX – beginning of XXI century, when in the socialization process boost, each person becomes more and more inherent to the status of homo institutus, who is “fiercely and soulfully trying to combine the overcoming of alienation from socially functional forms, exogenous towards him, and the self-liquidation of slavery from sane and imposed models, templates, algorithms, and target action standards” (Inshakov 2005). This means that in the system of public administration, each individual has the opportunity to make an institutionally conditioned choice, that is, he is an agent of public administration institutions and “can choose to participate in them to a different extent, as well as to reject some of them completely” (Inshakov 2005). It should be borne in mind that “if institutions make their agents instruments for achieving goals alien to their majority, this causes either a complete loss of freedom, or the subject's opportunistic behavior, and, in accordance with this state, a forced or protest choice” (Inshakov 2005).

The results of the study conducted by the authors (Loginova and Filippov 2018; Loginova et al. 2018a) allow us to conclude about the passivity of a significant part of the Russian population in the implementation of the subject public administration functions, as evidenced by the calculated indices of public polls (which characterizes the possibility of mass protests) and personal (which characterizes the Russians'

readiness to participate in mass protests) protest potential (Protest potential 2019), the values of which indicate that almost one third of Russians believe mass protests are not only possible theoretical but that they are willing to participate in them (Fig. 1):

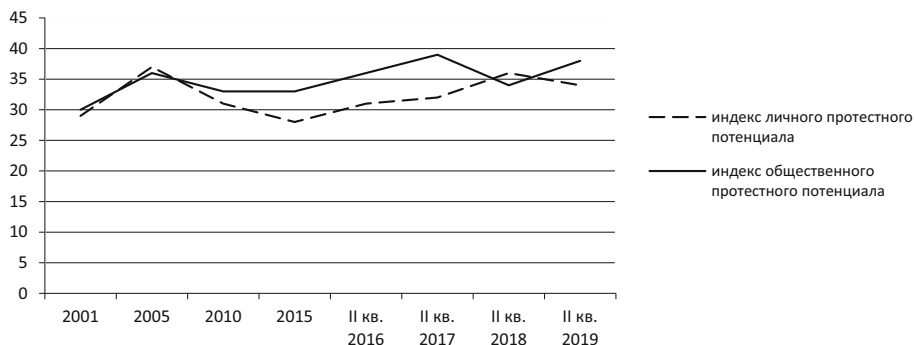


Fig. 1. Indices of protest potential

It is possible to reduce the degree of opportunistic behavior of the population by creating conditions for the formation and implementation of the population's motivational potential in the system of public administration, the study of which will reveal the conditions under which the Russians will perform the creative functions, not the functions of public administration institutions' protest agent.

2 Materials and Method

The theoretical and methodological basis for the development of information and analytical complex aimed at monitoring the state of motivational potential of the population in the public administration system, the results of which will contribute to improving the institutional competitiveness of the region, was formed by research in the field of cause-and-effect correlations in the economy and public administration, presented in the works of foreign (L. P. Coelho, D. Mackay, V. Richart, F. Scholle) and Russian (E. Loginova, N. Loseva, A. Polkovnikov) scientists. The empirical base of the study was economic and statistical data contained in the official statistical collections and yearbooks, as well as content analysis of the official websites of Federal, regional and municipal authorities on the current state of the factors characterizing the formation of motivational potential of the population (resource, institutional and infrastructure) and its implementation (resulting factors) in the cities and municipal districts of Volgograd region.

On the results of observations distorted by errors, the main task of constructing a mathematical model of the population's motivational potential implementation in the system of public administration is the restoration of the true law or a regression dependence construction. To solve this problem, we used methods of mathematical statistics and modern methods of machine learning, which allow us to build

dependency models for predicting target variables from a set of factors. Python programming language and its libraries are proposed as a tool for models' building and data analysis.

3 Results

While solving problems of the population's motivational potential formation in the system of public administration which allows to determine the direction of regional population's civil activity development, the dynamics of its initiative, it is necessary to construct a mathematical model enabling to determine the degree of influence of resource, infrastructural and institutional factors that shape motivational potential, on the resulting factors determining its implementation (Loginova et al. 2018).

To start modeling, it is necessary to introduce variables into consideration, the dependencies between which we will find (Tables 1, 2, 3 and 4).

Table 1. Infrastructural factors

№	Factor	Variable
1	Number of Internet subscribers, thousand people	$\widehat{ab_int}$
2	Number of mobile Internet subscribers, thousand people	$\widehat{mob_int}$
3	Business organizations using the Internet, %	$\widehat{org_int}$
4	Automatic data exchange between internal and external information systems of the total number of organizations, %	$\widehat{obm_dan}$
5	Availability of public services, units/per 1 resident	$\widehat{gos_usl}$

Table 2. Resource factors

№	Factor	Variable
1	Proportion of population with secondary education, %	$\widehat{nas_srobr}$
2	Proportion of population with degrees, %	$\widehat{nas_step}$
3	Percentage of population with higher education, %	$\widehat{nas_vobr}$
4	Number of personal computers per 100 households	\widehat{pc}
5	Average monthly nominal accrued salary per 1 employee	$\widehat{sr_zpl}$
6	The volume of investments in fixed assets for large and medium-sized organizations per inhabitant, thousand rubles	$\widehat{inv_oskap}$

Table 3. Institutional factors

№	Factor	Variable
1	The competitiveness of elections	$\widehat{kon_yib}$
2	Involvement of citizens in the electoral process	$\widehat{vkl_izb_pr}$
3	Participation of citizens in public organizations' activities	$\widehat{g_ob_org}$
4	Public satisfaction with the transport services organization, %	$\widehat{ud_tr_ob}$
5	Public satisfaction with the quality of roads, %	$\widehat{ud_ador}$
6	Satisfaction of the population with the level of heat supply organization (supply of fuel to the population), %	$\widehat{ud_ts}$
7	Satisfaction of the population with the level of water supply organization (sanitation), %	$\widehat{ud_vod}$
8	Satisfaction of the population with the level of power supply organization, %	$\widehat{ud_elek}$
9	Satisfaction of the population with the level of gas supply organization, %	$\widehat{ud_gaz}$

Table 4. Resulting factors

№	Factor	Variable
1	Readiness of citizens to unite for the solution of socially significant problems in public organizations	$\widehat{ob_org}$
2	Number of CBT organizations	\widehat{tos}
3	Participation in law-making activities	$\widehat{pravotv}$

Quantitative values of the input variables were determined on the basis of the data contained in statistics books and yearbooks, officially published by federal and regional bodies as well as through content analysis of official websites of federal, regional and municipal authorities about the current status of the factors determining motivational potential of Volgograd region in the system of public administration.

For each set of explanatory factors, models are constructed to predict the value of the target variables. Linear regression, Lasso regression, and ARD regression were used as tools (MacKay 1992); the sklearn library for Python language and its implementation on these algorithms was also used in the calculations (Coelho and Richart 2016). The determination coefficient R^2 served as a measure of the constructed models' quality.

The practice of constructing mathematical models that determine the correlation between the resulting and influencing variables that characterize the process of formation and realization of motivational potential in the system of public administration, allowed us to observe the resulting factor, which is a binary variable, therefore, standard approaches can not be used to determine the regression dependence. In this case, logistic regression was used to estimate the parameters of the binary choice model. In

order to implement this idea, a hidden variable y_i^* was introduced which the logit model was built for:

$$y_i = \begin{cases} 1, & y_i^* \geq 0 \\ 0, & y_i^* < 0 \end{cases}$$

$$y_i^* = \beta_1 + \beta_2 x + \varepsilon,$$

where ε has a logistic distribution with the density

$$f(t) = \frac{e^{-t}}{(1 + e^{-t})^2}.$$

The ratio of the binary variable values 1 and 0 acceptance chances was estimated, that is, the value

$$\ln \frac{P(y_i = 1)}{P(y_i = 0)}.$$

In our case, the binary variable is $\widehat{pravotv}$ - 'participation in law-making activities'. To ensure the prediction quality, L2 regularization was used to reduce model overtraining.

After L2 regularization, the following results were obtained for a set of infrastructure factors:

$$\begin{aligned} \widehat{ob_org} &= 1,08 \cdot \widehat{ab_int} - 2,83 \cdot \widehat{org_int} + 4,57 \cdot \widehat{obm_dan} \\ &\quad - 8,88 \cdot \widehat{gos_usl} - 127,77 \\ \widehat{pravotv} &= 0,03 \cdot \widehat{ab_int} + 0,72 \cdot \widehat{org_int} - 0,76 \cdot \widehat{obm_dan} \\ &\quad - 0,02 \cdot \widehat{gos_usl} - 0,02 \end{aligned}$$

The greatest contribution to the value of the resulting variable "citizens' readiness to unite in public organizations to solve socially significant problems" is made by the variables: "automatic data exchange between their own and external information systems from the total number of organizations" and business organizations using the Internet. According to this model, the forecast is correct in 98% of cases. A significant impact on the increase in the value of the resulting factor "participation in law-making activities" is made by the variable "business organizations using the Internet", less impact is by the variable "business organizations using the Internet". The prediction for this model is correct in 68% of cases.

For institutional factors, only logistic regression for the resulting variable "participation in law-making activities" with a forecast reliability of 68% gave a more or less acceptable result.

$$\begin{aligned} \widehat{pravotv} = & -0,02 \cdot \widehat{kon_vib} - 0,07 \cdot \widehat{vkl_izb_pr} + 0,59 \cdot \widehat{g_ob_org} \\ & - 0,02 \cdot \widehat{ud_tr_ob} + 0,01 \cdot \widehat{ud_ador} + 0,06 \cdot \widehat{ud_ts} - 0,02 \cdot \widehat{ud_vod} \\ & + 0,11 \cdot \widehat{ud_elek} - 0,09 \cdot \widehat{ud_gaz} + 0,17 \end{aligned}$$

There is a greater contribution to the value of the resulting factor by the variable “citizens’ participation in activities of social organizations”. The least impact is with the population satisfaction with quality of municipal services, which was defined as the set of variables: “population satisfaction with the level of organization of power supply”, “population satisfaction with quality of roads and public satisfaction with the level of heat supply organization”.

After L2 regularization, the following results were obtained for a set of resource factors:

$$\begin{aligned} \widehat{tos} = & 0,74 \cdot \widehat{nas_srobr} + 3,34 \cdot \widehat{nas_step} - 1,49 \cdot \widehat{nas_vobr} + 3,32 \cdot \widehat{pc} \\ & + 0,001 \cdot \widehat{sr_zpl} + 0,007 \cdot \widehat{inv_oskap} - 3,13 \end{aligned}$$

$$\begin{aligned} \widehat{ob_org} = & 0,16 \cdot \widehat{nas_srobr} + 1,2 \cdot \widehat{nas_step} - 6,74 \cdot \widehat{nas_vobr} + 20,8 \cdot \widehat{pc} \\ & - 0,004 \cdot \widehat{sr_zpl} + 0,09 \cdot \widehat{inv_oskap} - 108,13 \end{aligned}$$

The growth of the resulting factor “number of CBT organizations” is the most influenced by the observed variables “proportion of population with academic degrees” and “number of personal computers per 100 households”, as well as “proportion of population with secondary education”. The following factors contribute less to the increase in the resulting factor: “the average monthly nominal accrued wages per employee” and “the volume of investment in fixed assets for large and medium-sized organizations per capita.” The prediction of the model is correct in 64% of cases.

The resulting factor “citizens’ readiness to unite in public organizations to solve socially significant problems” significantly depends on the factor “the number of personal computers per 100 households”. The factor “the share of the population with academic degrees” influences its growth. The less influential observed factors include “the share of the population with secondary education” and “the volume of investments in fixed capital for large and medium-sized organizations per inhabitant”. The reliability of the forecast is 98%, which is a very good result.

Logistic regression gave a good result (reliability of the forecast 71%) for the third resultant variable “participation in law-making activities”:

$$\begin{aligned} \widehat{pravotv} = & 0,03 \cdot \widehat{nas_srobr} - 0,00009 \cdot \widehat{nas_step} + 0,25 \cdot \widehat{nas_vobr} + 0,35 \\ & \cdot \widehat{pc} - 0,0002 \cdot \widehat{sr_zpl} + 0,007 \cdot \widehat{inv_oskap} - 0,007 \end{aligned}$$

Here, the variables “share of population with higher education” and “number of personal computers per 100 households” have the greatest positive impact on the result, the variables “share of population with secondary education” and “volume of

investments in fixed assets for large and medium-sized organizations per capita” make a smaller contribution.

Regression models used by the authors of the paper to analyze the motivational potential of the population in the system of public administration, set out in their previous studies (Loginova et al. 2018; Loginova et al. 2018a) not always give satisfactory results, which caused the need to improve research tools through the use of neural networks.

The neural networks used in modern classification and regression techniques were invented around 2010 by Jeffrey Hinton and Joshua Bengio. For calculations, we use the Karas framework of deep learning written in Python as well as the Theano library and TensorFlow as a mechanism for their implementation. Since its release in 2015, Keras has been one of the most popular and fastest growing deep learning frameworks (Nikolenko et al. 2018). The neural networks also used numpy libraries to work with tensors, pandas to load data and matplotlib to draw graphs.

Let us start with the study of the “participation of citizens in public organizations” indicator. At the first stage, visual data analysis shows that the cities of Volgograd and Volzhsky fall out of the total sample of data by districts and will be excluded from the analysis. We shall also note that the input data has values from different ranges and must be scaled beforehand. Since a relatively small amount of data is processed, the cross-validation method helps to assess the quality of models. The data are repeatedly divided into 32 training and 6 test samples, and the resulting models are averaged.

The data is relatively little, therefore, we will use a small network with two intermediate layers containing 64 neurons each, the last one – dimensional to obtain the results. This avoids overtraining the model (Scholle 2019). The model uses the MSE (mean squared error) loss function. The MAE (mean absolute error) parameter is used for monitoring. Fifty epochs (iterations on training data) are set for testing.

The average result on training data is 2.68. On test data, the average error is just above 5.28. It is noticeable that our model began retraining (prediction of data on the training set is more accurate than on the test set). However, since there is little data in our sample and the error is small, we can explain everything with a small amount of data.

When constructing a model of the number of territorial public organizations, we get too big an error when comparing the expected value and the real data. The task requires consideration of additional factors and construction of a new model.

The study of the binary indicator “participation in law-making activities” requires the use of a binary classification model that gives acceptable results. MSE error is equal to 2.66, while MAE takes the value of 0.83.

Thus, the use of modern methods of neural network modeling and binary classification makes it possible to predict the values of targets with high accuracy, even with a small amount of data.

4 Conclusion

Improvement of population welfare, which is the qualitative characteristic of the region's competitiveness, largely depends on the growing public awareness of political decisions made, and expanding accessibility and quality of public services, which are

directly connected with introduction of public administration technologies where actors are citizens and their associations in state and municipal management practices.

Application of the authors approach to the analysis of motivational potential of the population in the system of public administration, based on the use of modern methods of mathematical statistics, solves the problem of justification of initial statistical indicators system and indicators for a reliable assessment of the factors influencing the growth of the motivational potential of the population, which will enhance the participation of citizens in the political process through measures leveling the conditions that provoke their opportunistic behavior in the system of public administration.

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Institutional Framework of Calculation of Rent for Land in Public Ownership: The Experience of Russian Regions

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Abstract. Purpose: The purpose of the work is analysing approaches applied to the calculation of rent for land in public ownership in the entities of the Russian Federation aimed at optimisation of its mechanism institutional framework to ensure competitiveness of the regional economy.

Design/Methodology/Approach: The authors use two approaches to determination of the rent amount for an immovable property item: element-by-element and coefficient approach. The object of the research is the current legal and regulatory framework in 15 Russian regions on whose territory cities with the population of 1 million people and more are located.

Findings: The most common institutional framework of the mechanism of rent calculation includes the following elements: application of a coefficient approach that involves 2–3 coefficients in most regions; the reference point for the base rental rate is mainly the land tax rate which is adjusted according to the type of activity of a tenant and/or the type of allowed use of a plot and location of the plot; multiplicity and differentiation of rental rates; and other. Multiplicity and high differentiation of rental rates in each region is caused by the effort, one the one hand, to take into account the difference in profitability of use of different land plots, and on the other hand, to use the rent amount as a tool for implementation of the socio-economic policy of the authorities managing the territory.

Originality/Value: Scientifically grounded determination of the amount of rent for land plots in public ownership becomes an integral part of an effective federal, regional and municipal economic policy.

Keywords: Rent · Land · Region · Municipality · Public ownership

JEL Code: K25 · R52

1 Introduction

Rent for land plots in public ownership is an important source of own non-tax revenues of budgets of all levels in the Russian Federation. On the other hand, the rental rate is included in costs of enterprises, serves as one of the criteria of availability of land resources for involvement in production activity. State and municipal land is a considerable part of the forest fund of the country; this is why the amount of its rent has a significant impact on formation of the value of the land and on the situation in the market of immovable property in general.

Finding the optimal balance of public and private interests in land use reduces risks of doing business, leads to improvement in the investment and entrepreneurial climate of the territory (OECD 2011). In these conditions, correct, scientifically grounded determination of the amount of rent for land plots in public ownership becomes an integral part of an effective federal, regional and municipal economic policy. The purpose of this work was to systematize approaches of entities of the Russian Federation with large cities in their territory to determination of land rent.

2 Materials and Method

The institution of land use plays an important role in ensuring competitiveness of economic activity of an individual economic entity and a region as a whole. One of the key elements of land relations is the order of calculation of payment for land if it is rented from regional or local authorities. The amount and the order of determination of rent for land plots in Russia are established by the authorities of a public entity that owns the corresponding land plots. The cost of rent and the order of its formation for land, ownership of which is not divided among levels of government, is established by authorities of a subject of the Russian Federation and credited to the budget of the municipality in whose territory the corresponding plot is located.

The institutionalized order of determination of payment for use of land in public ownership, except general rules of the Civil and Land Codes, can be observed only in the Resolution of the Government of the Russian Federation No. 582 of 16.07.2009 (revised on 21.12.2018) "On the Basic Principles of Determination of Rent for Land Plots in State or Municipal Ownership, and on the Rules of Determination of the Rent Amount as well as the Order, Conditions and Term of Payment of Rent for Land owned by the Russian Federation". This Resolution contains seven principles with which the order of rent formation adopted by the corresponding authority must comply. Therefore, the powers of local authorities, landowners, to establish the rent, with the exception of special cases stipulated by the resolution of the government, are not limited by a strict federal framework.

The study focuses at the regulatory legal acts governing the order of determination of rent in 15 entities of the Russian Federation: Moscow, Saint Petersburg, Republics of Tatarstan and Bashkortostan, Voronezh, Sverdlovsk, Chelyabinsk, Samara, Nizhny Novgorod, Rostov, Novosibirsk, Omsk, Volgograd Regions, Perm, Krasnoyarsk Territories. Selection of regions was determined by location of cities with the population of 1

million people and more in their territories, which forms peculiarities of socio-economic development of these entities of the Russian Federation including their land market.

Rent of public land is an economic transaction but it combines both civil and administrative relations. The rent amount for state (municipal) land is an analogue of prices of goods in market transactions (Serageldin 2016). In cases of sale of land rental rights at auction, it can be assumed that the cost of rent is adequate to the market situation, if the participants are provided with non-discriminatory access. However, in a considerable number of cases public land is rented without the auction procedure. This happens, for example, in relation to the plots on which privatized enterprises are located, or in case of construction of capital facilities on the plot. Transfer of the right of ownership of these facilities entails the duty of the landowner to offer it for rent, and the duty of the owner of the structure to rent the land.

In this regard, the practice of establishment of the rent amount for public land transferred to tenants without auction is of particular interest. In some entities of the Russian Federation the order of rent calculation varies according to the types of land, form of ownership (state, municipal, non-delineated state), as well as in different municipalities of a region. All types of calculation at the level of entities of the Russian Federation and their administrative centres were analysed in course of the conducted research.

At the same time, Resolution of the Presidium of the Supreme Commercial Court of the Russian Federation No. 15837/11 of 17.04.2012 states that control of rent for land plots in state or municipal ownership shall be carried out in a normative manner. Calculation of the rent amount is subject to application from the date of entry into force of the corresponding regulatory act, which complies with the rules of Article 424 of the Civil Code of the Russian Federation. Therefore, using the position of (Inshakov 2007) it can be said that the order of determination of payment for land use becomes a part of the institutional form of development of land resources in course of which they turn into a factor of production.

Analysis of theory of rent relations allowed identifying two approaches to determination of the rent amount for an immovable property item: element-by-element and coefficient approach (Zorin 2011; Ionov et al. 2006; Baltin 2018). The element-by-element approach implies establishment of rent for immovable property by summing individual components, the size of each of them is intended to provide landowners with sufficient compensation for the costs of maintaining and operating the immovable property item as well as unearned income from possession of the property (Zorin 2011).

The coefficient approach implies adjustment of the base amount of rent with the use of special decreasing and/or increasing coefficients (Zorin 2011). The amount of the base rental rate, as a rule, depends on the landlord's assessment of correlation of supply and demand in the land market. Another option for calculation of the base rental rate is the implicit (imputed) rental rate, the amount of which is equal to the risk-free interest rate (World Bank 2015). Referral to the implicit (imputed) rental rate is based on the idea that, on the one hand, item owners have the right to expect income from the property belonging to them in the amount of the minimum risk-free return, and, on the other hand, tenants receive income from use of property in their production activity corresponding at least to the benefit from the most reliable way of allocation of resources (Deiningner 2003).

Since the value of land, like any other factor of production, is due to its capacity to bring profit when used in the process of creating goods (Peterson 2006), application of coefficients is purposed to consider differences in profitability of land use when calculating rent. This position is also justified in works by Ricardo (2016) and Smith (2017), and most fully substantiated in K. Marx's theory of land rent (1985). Despite the fact that in classic works absolute rent, differential rent of types one and 2 are considered in terms of agricultural land, the conclusions of scientists are quite applicable to other categories of land plots. Consequently, demand for land, as well as for other production resources, is a derivative of demand for goods in production of which it participates. With consideration of inelasticity of land supply, the fair rental value will be determined by the maximum possible profitability of its use (Baltin 2018).

Therefore, in this research the institutional framework of the mechanism of rent determination formed in each of the regions under consideration was compared with provisions of the theory of rent relations. The obtained results made it possible to conduct a positive analysis of Russian approaches to calculation of payment for use of land in public ownership.

3 Results

In course of the conducted research, it was established that the element-by-element approach is not applied in calculation of rent for land plots in public ownership. The specific nature of the owner determines the lack of expenses associated with possession of land plots, which explains use of the coefficient approach to determination of the rental rate in all the territories analysed by us.

The base rental rate in absolute monetary terms is established only in Saint Petersburg and Nizhny Novgorod. In a range of regions, the amount of payment for land use is based on the rate of return of risk-free financial instruments. For example, Volgograd Region provides for application of the rate of return of government bonds in rent calculation, Voronezh and Novosibirsk Regions – the refinancing rate of the Bank of Russia.

The Republic of Tatarstan, Krasnoyarsk and Perm Territories, Novosibirsk Region established the base rate of rental payments in the amount corresponding to the land tax rate. Probably, this is due to the fact that the amount of land tax represents alternative minimum costs of a non-state user of a land plot in case of acquisition of land ownership. In the vast majority of other regions, the base rental rate is not singled out expressly. On the basis of the values of the coefficients (3–5% of the value of a land plot) approved by regulatory legal acts it is possible to draw a conclusion that the authorities of the corresponding territories also relied more on land tax rates (1,5–2,0%) rather than on other economic indices.

The number of coefficients included in the order of calculation in the entities of the Russian Federation under consideration varies from one (Moscow, Republic of Bashkortostan, Omsk Region) to seven (Saint Petersburg). Undoubtedly, application of a large number of coefficients complicates the mechanism of rent calculation for both tenants and landowners but at the same time increases its flexibility and aims to make it more reasonable (Ziyadina 2018). All analysed regions without exception adjust the

rent amount with the use of coefficients or by establishing differentiated rates, first of all, to take into account the type of activity carried out in land plots. Therefore, in practice authorities apply provisions of the classical theory of land rent.

The form of implementation of this provision in regional and municipal regulatory acts differs only in the number and method of gradation of types of economic activity in rented plots. In nine of 15 studied entities of the Russian Federation differentiation of rent amounts depends also on the type of permitted use (purpose) of land plots and on the category of tenant. For example, Novosibirsk, Chelyabinsk, Volgograd Regions and Krasnoyarsk Territory at the same time apply two corresponding coefficients, in Perm Territory there is one coefficient – the coefficient of types of land use and categories of tenants (K_1), but it takes into account both classifications. In Sverdlovsk and Rostov Regions, Republic of Bashkortostan and the city of Moscow the differences in the rent amount depend on the range of the scale of rental rates determined jointly by the type land and the category of tenant. In Tatarstan, Saint Petersburg, Voronezh, Samara and Omsk Regions dependence was established only in relation to types of permitted use of land plots, and in Nizhny Novgorod Region – in relation to the category of tenant.

Some regions try to take into account location of land plots as a factor affecting their value (Tikhonova et al. 2015) and, consequently, the fair rent amount (Ionov et al. 2006). This approach directly complies with the differential rent of the first type (Marx 1985). For example, in Sverdlovsk, Novosibirsk, Rostov Regions, Perm and Krasnoyarsk Territories local government bodies are granted the right to approve own values of the coefficients applied in calculation of rent for land plots in state ownership, including those in non-delineated ownership, or even a regional regulatory legal act contains differentiation of calculation by municipalities in the territory of the subject of the Russian Federation. Moreover, the cities of Saint Petersburg, Ufa, Chelyabinsk, Samara and Nizhny Novgorod have performed zoning of the whole territory with the aim to additionally differentiate the rental rates.

In all of the analysed territories the mechanism of rent calculation provides for cases of significant reduction of payments for individual groups of tenants, which include organisations carrying out socially important types of activity (Baltin 2018), as well as organisations the activity of which corresponds to the current priorities of the authorities managing the territory. As a rule, such priorities are implementation of large investment projects, comprehensive development of land plots, and completion of projects of bankrupt construction companies. As such, the practice of establishing preferential rental rates means expanding the designated purpose of the institution of public land rent beyond the exclusive source of budget revenues and giving it the role of one of the tools for implementation of the socio-economic policy of the authorities managing the territory.

This leads to multiplicity of rental rates in each subject of the Russian Federation and expansion of the range of values of rental rates in combination with differentiation of the rent amount due to consideration of the multifactorial nature of formation of the fair value of land resources. According to our estimates, the difference between maximum and minimum rental rates in one region is 10 times and more and can reach thousands of times.

Rules of civil law provide for the possibility to change the rent amount taking into account the continuing nature of land rental agreements and the need to reduce risk from adverse market factors caused by instability of socio-economic processes as well as to establish a fair price (Tikhonova et al. 2015). If a land rental agreement stipulates that the rent amount shall be calculated with consideration of coefficients established by a state authority, an actual change in the payment amount as a result of adjustment of the specified coefficients will not be an alteration of an agreement provision on the rent amount in compliance with par. 3, Art. 614 of the Civil Code of the Russian Federation (Kirichenko and Medvedev 2016). The majority of the analysed regions provide for annual change in the amount of payment for land plots offered for rent both as a result of auction and without auction in line with inflation rates. Saint Petersburg uses the coefficient of immovable property market dynamics instead of the inflation index.

Since only two regions use the base rental rates in absolute terms, other territories faced the need to choose between the cadastral or market value of land plots as part of the rent calculation formula. The cadastral value is less accurate since important individual specific features of land plots are often not taken into account in its implementation (Agafonova and Zavalnyuk 2018). Nevertheless, all the entities of the Russian Federation analysed by us apply the results of cadastral valuation. Voronezh, Omsk, Novosibirsk, Rostov and Volgograd Regions included the market value in calculation of the rent amount of only individual types of land plots. For example, Volgograd Region determines rent for the land plots on which capital facilities are constructed on the basis of the market value. The prevalence of the cadastral value is due to lower costs for its determination (Agafonova and Zavalnyuk 2018). Moreover, many regions, as noted above, relied on land tax in formation of the order of rent calculation, and the land tax is calculated on the basis of the cadastral value. In these conditions, use of the cadastral valuation of land plots when calculating payments for land use supports the unity of logic of the approach being applied.

4 Conclusion

Therefore, despite the diversity of the institutional framework of the mechanism of determination of rent for land of public entities in Russia, the following typical features can be distinguished as a result of systematization of practice of 15 entities of the Russian Federation:

- calculation of the rent amount is based on the coefficient approach and includes 2–3 coefficients in the majority of the regions;
- the rate of land tax usually serves as the reference point for the base rental rate, it is adjusted according to the type of the tenant's activity and/or the type of allowed use of plots and location of plots;
- multiplicity and differentiation of rental rates exists;
- the rent amount changes annually in line with inflation rates;
- determination of rent involves application of the cadastral value of a land plot, only in some cases it is supplemented by the market value.

The conclusions made in this research can be used for further analysis of the degree of optimality of the institutional framework of the mechanism of calculation of rent for land plots in public ownership applied in Russian regions from the perspective of ensuring competitiveness of the regional economy in the largest entities of the Russian Federation.

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Redomiciliation, Deoffshorization and International Companies

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Abstract. The research is aimed at the study of cross-sectoral instruments of modern law that can neutralize the negative consequences and enhance the positive effects due to the globalization of the economy, the integration of all areas of public life, the formation of common market freedoms within various regional unions and associations, and the one that dictates the need for unifying the sources of international and national law, the creation of a layer of supra-national law in order to attract investment and return legal entities to the national economy. The solution of these problems is possible through a set of economic and legal means of a diversified nature. In legal terms, one can speak about the means of administrative, civil, private international and tax law at the same time.

Taking into account the latest legislative changes at the federal level, the authors analyze the provisions of national and international law, fixing and regulating such cross-sectoral instruments as redomiciliation and deoffshorization, and the role and legal regime of international companies in these processes.

The authors study different approaches to the definition of residency and adaptation, the so-called redomiciliation of a legal entity in private international law in Russia and abroad. The redomiciliation is investigated as a completely new category in the Russian legislation, which was introduced specifically for international companies by Federal law of 03.08.2018. The provisions of the new law about international companies are analyzed, the possible options for the definition of an international company are discussed taking into account the author's approach to these legal entities as a new form of doing business, the legal consequences of personal law changes by a foreign legal entity in the procedure of redomiciliation, as well as the requirements for foreign legal entities doing redomiciliation, the requirements for foreign law and order and

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the conditions of state registration. The conditions of an international company's loss of its status, both compulsory and voluntary, are studied. The general and the different in the legal status, the procedures of registering and investing in an international company and an offshore company are compared. The importance of deoffshorization in the process of financial modernization of the Russian state is substantiated.

The study revealed the typical features of redomiciliation. The conditional definition of an international company is offered. The common features of an international company and an offshore company are revealed. It is recommended at the national level to bring to uniformity the sectoral criteria for determining personal law of a legal entity; at the supranational and international levels to deal not with zones with special economic conditions and not with the withdrawal of capital from a particular country, but with tax evasion, obtaining advantages through unfair behavior; and also to unify the redomiciliation sources at the level of international treaties and national law.

Keywords: Economic globalization · Integration, freedom of mobility of persons, goods and services, and capital · Harmonization of law · The interdisciplinary instruments of law · Investments · Legal entities · Residency of a legal entity · Domicile · Criteria for determining personal law of a legal entity · National legal entities · International legal entities · Redomiciliation · De-offshorization

JEL Classification: K41 · O38 · L86 · K10 · K15 · K24 · E65 · K15 · O14 · O25 · O33

1 Materials

The materials of the study are, first and foremost, the newly-introduced regulatory directions of Federal law of 03.08.2018, No. 290-FZ "On International Companies". The regulatory framework of the study of the national regulation level also includes: the Civil Code of the Russian Federation; the Tax Code of the Russian Federation; Federal law of 08.08.2001 No. 129-FZ "On State Registration of Legal Entities and Individual Entrepreneurs"; Federal law of 26.12.1995 No. 208-FZ "On Joint Stock Companies"; Federal law of 08.02.1998 No. 14-FZ "On Limited Liability Companies"; Federal law of 26.07.2006 No. 135-FZ "On Protection of Competition"; Federal law of 03.08.2018, No. 291-FZ "On Special Administrative Districts in the Kaliningrad Region and Primorye Territories"; Federal law of 25.02.1999 No. 39-FZ "On Investment Activity in the Russian Federation Pursued in the Form of Capital Investments"; Federal law of 07.08.2001 No. 115-FZ "On Counteraction to Legalization (Laundering) of Criminally Obtained Incomes and Financing of Terrorism"; Federal law of 24.11.2014 No. 376-FZ "On Amending Parts One and Two of the Tax Code of the Russian Federation (in respect of taxation of profits of controlled foreign companies and income of foreign organizations)", etc.

In addition, the normative materials of the study were the international (Convention on the Recognition and Enforcement of foreign judgments in civil or commercial

matters of 02.07.2019; and the preceding Lugano Conventions of 2007 and 1988) and some foreign legal acts (the Code of Private International Law of Havana of 20.02.1928 – “Bustamante Code”; Federal law of Switzerland on private international law of 18.12.1987; the Law of Liechtenstein of 1996 “On the Change of Regulation on Individuals and Societies”; the Portuguese Civil Code of 1966; the Law of Italy of 31.05.1995 No. 218 “Reform of the Italian System of Private International Law”; the Code of Private International Law of Bulgaria of 04.05.2005, etc.).

The program strategic documents are presented in the study by such acts as: the State Program of the Russian Federation “Public Finance Management and Regulation of Financial Markets”, approved by the Decree of the Government of the Russian Federation of 15.04.2014 No. 320; the National Security Strategy of the Russian Federation approved by the Decree of the President of the Russian Federation of 31.12.2015, No. 683; the Strategy of Economic Security of the Russian Federation for the period till 2030, approved by Decree of the President of the Russian Federation of 13.05.2017, No. 208; the Main areas of Russia’s budget, tax and customs tariff policy for 2019 and for the planned period of 2020 and 2021, approved by the Ministry of Finance.

The theoretical basis of the study was the work of the Russian and foreign scientists in the sphere of civil, entrepreneurial and private international law on legal integration (Bogatyrev and Dolinskaya 2013; Usenko 1992); the harmonization of the corporate regulation and the determination of nationality of legal entities (Inshakova 2009; Inshakova 2017; Inshakova 2019; Radchenko 2012); the legal regulation of investments and investment activities (Bogatyrev 1992; Dolinskaya 2011); the implementation of the principle of verification and determination of jurisdiction of investment disputes (Boguslavsky 2000); the approaches of the Russian and foreign law to certain issues of regulation of the corporate contract (Dolinskaya 2016; Stepanov et al. 2012).

The empirical base of the study was the judicial practice.

2 Methods

The methodological framework for the study in addition to the main method of cognition – historical materialism – is represented by a set of general scientific (dialectical, historical, inductive, deductive, analytical, synthetic) and specific scientific (formal-legal, comparative law, interpretative, statistical, procedural-dynamic) methods.

3 Introduction

In the context of economic globalization, integration of different areas of public life (Bogatyrev et al. 2013; Usenko 1992), freedom of mobility of persons, goods and services, capital, necessity of unification, including creating a layer of supranational law or at least comparability of the sources of international and national law, there arise acute issues on investment attraction, preservation and return of organizations (legal entities) into the national economy (Inshakova 2009; Inshakova et al. 2019).

In solving these problems, the states use economic and legal means, among the latter are diversified, including the means of administrative, civil, private international and tax law.

Due to the adoption of the block of federal laws of the Russian Federation on 03.08.2018 let's analyze such cross-sectoral instruments as redomiciliation, de-offshorization and the participation of international companies in these processes from the standpoint of national and international law.

4 Approaches to the Definition of Residency and Redomiciliation of a Legal Entity in Private International Law in Russia and Abroad

The concept of “domicile” (domicil) is gradually moved from common (Anglo-American law) to international law, and from there to the law of Russia belonging to a different legal “family”.

From physical persons (in respect to whom an English lawyer R.T. Kindersley (1792–1879) (Kindersley 2018) gave the definition), it is extended to legal entities (for example, Chapter II of the Code on Private International Law (Bustamante Code) (Havana, 20.02.1928) (Durdenevsky 1941)).

This term is used for the purposes of private international, tax and procedural law (e.g. the Convention on the Recognition and Enforcement of Foreign Judgments in Civil or Commercial Matters (Convention on the Recognition and Enforcement of foreign judgments in civil or commercial matters) (02.07.2019), the preceding Lugano Convention of 2007 and 1988) and, in our opinion, tends to the signs of a legal entity, the participant of civil circulation (Arbuzova 2017).

The concept of “domicile” is related to personal law, nationality, residence, and the status of a legal entity.

The term of residency of a legal entity was first used in 1876 in the United Kingdom as part of the court case “CalcuttaJuteMills v. Nicholson” (The Calcutta Jute Mills company 2019).

Most often they talk about such criteria for determining personal law of a legal entity:

- criterion of incorporation;
- criterion of the place of the organization management (the theory of settlement);
- criterion of the place of main activity;
- control criterion (Boguslavsky 2000; Inshakova 2017; Radchenko 2012).

In Russia, when determining the residency of legal entities in private international law, the principle of incorporation is proclaimed (Art. 1202 of the Civil Code of the Russian Federation (hereinafter – CC RF)). But Par. 2 of Art. 8 of Federal law of 08.08.2001 No.129-FZ “On State Registration of Legal Entities and Individual Entrepreneurs” (hereinafter – FZ on State Registration) indicates the criterion of settlement. The Tax Code of the Russian Federation (hereinafter - TC RF) has introduced the concept of the place of actual management of the organization, on whose basis the

companies can change their nationality for tax purposes both voluntarily and forcibly. Thus, in Sub-par. 3 of Par. 1 of Art. 246.2 of TC RF the control criterion is in evidence.

In international law there gradually appeared rules about “adaptation”, “conditioning”, “cross-border migration of companies”, “redomiciliation”, etc.

A vivid example demonstrates the Swiss Federal Act on Private International Law of 18.12.1987. It is about “taking pertaining” to foreign law without liquidating and re-establishment.

Its conditions:

- admissibility by the law of the state to which a legal entity is subject;
- admissibility by the law of the state to which the legal entity plans to obey;
- ability to adapt to one of the organizational and legal forms provided by the law of the state, which the legal entity plans to obey (Art. 161);
- public call of the legal entity “to creditors with a proposal to declare the requirements and information about the expected change in the personal statute” (Art. 163).

Noteworthy is the variability in determining the moment at which the legal entity begins to obey the new law (in this case, the Swiss law):

- (A) if trade registration is required, “from the moment the partnership proves that the centre of its business activity has been transferred to Switzerland and it has taken one of the legal forms provided for by the Swiss law”;
- (B) without that necessity “from the moment its intent to obey Swiss law becomes apparent, provided that the partnership has sufficient contacts with Switzerland, and that it has taken one of the legal form provided for by the Swiss law”;
- (C) pooling of capital additionally requires the submission of an audit certificate issued by a body whose powers are recognized by the Federal Council and proving that the capital of the legal entity is covered in accordance with the requirements of the Swiss law (Art. 162).

Similar procedures are provided for by Art. 233-234, 678 of the Law of Liechtenstein of 1996 “On the Change of Regulation on Individuals and Societies” referred to in Art. 33 (3) (“A transfer of the company’s seat from one State to another”) of the Portuguese Civil Code of 1966, Par. 3 of Art. 25 (“A transfer of the registered office to another State”) of the Law of Italy of 31.05.1995 No. 218 “Reform of the Italian System of Private International Law”, Art. 59 (“The transfer of the central administration to another State”) of the Bulgarian Private International Law Code of 04.05.2005.

The legislative approaches to changing the location of the state’s legal entity can conditionally be divided into 4 groups:

- prohibiting the legal entity to change the location without its being liquidated up in the country of the initial placement;
- not requiring the liquidation of the legal entity;
- accepting a legal entity without re-establishment;
- requiring the re-establishment of the legal entity.

As a rule, redomiciliation implies the change of the state of registering the legal entity and its legal address for another state of registration with the new legal address at the reservation of the assets, rights and obligations under the previously concluded transactions, and sometimes the names, and the existing bank account.

5 Redomiciliation as an Absolute Novelty of the Russian Legislation and the Procedure of Adaptation of a Legal Entity to Foreign Law and Order

For the Russian law redomiciliation is an absolute novelty that was introduced specifically for international companies by Federal Law of 03.08.2018, No. 290-FZ “On International Companies” (hereinafter – FZ).

The Federal law itself refers to international companies as legal entities (for example, Art. 3), then as the status of a legal entity (for example, Pt 1 of Art. 1). We believe it will be more correct to talk about a new form of doing business.

Under Pt 1 of Art. 1 of FZ let’s draw a conditional definition of an international company – it is a business entity registered in the unified state register of legal entities (hereinafter – UGRLE) in connection with the change of a foreign legal entity’s personal law in the procedure of redomiciliation. There have been set additionally:

- (1) requirements to foreign legal entities doing domiciliation;
- (2) requirements for foreign law and order;
- (3) conditions of state registration.

The 1st group consists of the following:

- a foreign legal entity (but not a quasi-corporate entity) (Pt 2 of Art. 1, Par. 4 of Pt 3 of Art. 2, Par. 2 of Pt 3 of Art. 5 of FZ);
- a commercial organization (the dividing of legal entities into commercial and non-commercial ones provided for in Art. 50 of CC RF is not supported by most law and order) (Pt 2 of Art. 1 of FZ);
- a corporation (the concept is known to most states) (Pt 2 of Art. 1 of FZ);
- a foreign legal entity that is not a credit institution, a non-credit financial institution, an operator of payment systems or an operator of payment infrastructure services (so Russia has expressed its interest in the real sector of the economy) (Par. 5 of Pt 8 of Art. 5 of FZ);
- an organization engaged in business activities on the territory of several states, including in Russia (the semantic proximity to the characteristics of TNCs), at the time of decision-making about changes in their personal law, not later than 01.01.2018, independently or through its directly or indirectly controlled persons determined in accordance with Ch. XI of Federal Law of 26.12.1995 No. 208-FZ “On Joint Stock Companies” and Art. 45 of Federal Law of 08.02.1998 No. 14-FZ “On Limited Liability Companies” or through other persons in a group of persons with a foreign person in accordance with Federal Law of 26.07.2006 No. 135-FZ “On Protection of Competition” (hereinafter – FZ on Protection of Competition), on any of the grounds referred to in Art. 9 of FZ on Protection of Competition, either

through the branches or representative offices (other subdivisions) (Sec. 1, Pt 3 of Art. 2 of FZ);

- a legal entity, that applied for entering into a contract on carrying out activities as a participant in the special administrative district (hereinafter – SAD), determined in accordance with Federal Law of 03.08.2018, No. 291-FZ “On Special Administrative Districts in the Kaliningrad Region and Primorye Territories” (hereinafter – FZ on SAD) (Sec. 2, Pt 3 of Art. 2 of FZ);
- a legal entity that has assumed obligations to invest in the territory of the Russian Federation, including on the basis of a statement of intent (Pt 8 of Art. 2 of FZ) to invest in the territory of Russia, a special investment contract, a concession agreement, an agreement on public-private (municipal-private) partnership or another agreement, in the form of capital investments, determined in accordance with Federal Law of 25.02.1999 No. 39-FZ “On Investment Activity in the Russian Federation Implemented in the Form of Capital Investments”) and/or investments in the authorized capital, a fund¹ or contributions to the assets of the Russian economic societies (Bogatyrev 1992; Dolinskaya 2011) in an amount and terms established by FZ (Sec. 3, Pt 3, Pt 4–6 of Art. 2 of FZ)².

The requirements for foreign law and order are as follows:

- a foreign legal entity registered (established) in the state that is a member or observer of the Financial Action Task Force on Money Laundering (FATF) and/or a member of the Council of Europe Committee of Experts on the Evaluation of Anti-Money Laundering Measures and the Financing Terrorism (MONEYVAL) (Par. 4 of Pt 3 of Art. 2 of FZ);
- a foreign legal entity registered (established) in the state whose legislation recognizes redomiciliation (Pt 2 of Art. 1, Pt 1 of Art. 11 of FZ);
- similar approaches of Russia and the state of the initial status and location of the legal entity to the notion of redomiciliation (changing the place of primary activities of the legal entity, not its legal form and parties).

Russia has also introduced special conditions for the state registration of an international company:

- the registration of an international company is conducted through intermediary of the so-called management company (Art. 2 of FZ on SAD, Art. 5 of FZ);
- the list of documents submitted by the international company to a management company for registration is wider than that provided for by FZ on State Registration,

¹ The terminology is perplexing, because the property basis of JSC and LLC is only the authorized capital.

² Taking into account the payment terms of contributions to the authorized capital, the wording of Pt 5 of Art.2 of FZ – on the cost of capital investments regardless of their payment, and in respect of investments in the authorized capital, based on the amount of actually paid (performed) ones. In our opinion, the opposite approach would be preferable for the economy.

- and concerns both the legal entity³ itself and, in our opinion, the legal order under which the foreign legal entity was created (Pt 2 of Art. 1, Pt 1 of Art. 11, Pt 3 (especially Par. 10) of Art. 5 of FZ);
- the list of grounds for the management company’s refusal in submission of documents for registration for the applicant party differs from the list of grounds for refusing such registration (cf. Pt 8 of Art. 5 of FZ and Art. 23 of FZ on State Registration);
 - non-application of the rules on preliminary approval upon the state registration (Pt 16 of Art. 5 of FZ);
 - shortened periods of state registration (Pts 12, 13 of Art. 5 of FZ).

The status of an international company is granted to a foreign legal entity simultaneously with the state registration in the State Register (Pt 3 of Art. 2 of FZ).

The international company may lose its status:

- (1) forcibly
 - (a) in case of failure of submission by the management company on the necessity of compliance with the requirements of Sec.1 of Pt 3 of Art. 2 of FZ (on the implementation of economic activities) and/or obligations provided for in Par. 3 of Pt 3 of Art. 2 of FZ (for implementation of investments in the territory of the Russian Federation), or the failure to provide documents under Pt 7.1 of Art. 2 of FZ (confirming the investment in the established volume, form and deadlines) at the expiration of 6 months from the date of submission (Pts. 2.1, 3 of Art. 10 of FZ);
 - (b) if the international company loses the status of a participant in the special administrative district, except in cases provided for in Pts 9 and 9.1 of Art. 10 (Pt 3 of Art. 10 of FZ);
- (2) voluntarily
 - (a) by submitting an application by the management company for voluntary termination of the status of an international company on the basis of the decision of the general meeting of its participants (Pt 8 of Art. 10 of FZ);
 - (b) when reorganizing the international company in the form of accession to it of a legal entity with the location outside the territory of the special administrative district (Pt 8 of Art. 10 of FZ)⁴;

³ For the purpose of Pars 3-5 of Pt 3 of Art. 5 of FZ you must make sure that the structure of the international company’s authorities and their competence satisfy the requirements of the general civil and corporate legislation of Russia; with respect to Pars 7 and 8 of Pt 3 of Art. 5 of FZ – that a person acting on behalf of the international company without power of attorney satisfy the requirements of the labor and migration legislation of Russia.

⁴ Neither in reorganizing an international company in the form of merger, separation and isolation, nor in its affiliating the international company is transferred neither to the legal entities created as a result of such reorganization, nor to the legal entity joined by the international company (Pt 10 of Art. 10 of FZ). In our view, FZ contains a loophole associated with such form of reorganization as transformation: as only JSC or LLC can get the status of an international company, you probably should either specify on the prohibition of their conversion to other legal entity forms to preserve the status of an international company, or the consequences of mutual transformation – whether the status of an international company is maintained or not.

- (c) when making a record in the State Register of the location change of the international company outside the territory of the special administrative region (Par. 2 of Pt 9. 1 of Art. 10 of FZ);
- (d) in connection with the registration of the international company in a foreign country in the procedure of redomiciliation (Art. 11 of FZ).

- The termination of the status of an international company is forcibly limited by:
 - the procedural aspects (as a result of the audit, in keeping with certain rules of document flow – Art. 10 of FZ) and the period (in fact – the statute of limitations) (Pt 7 of Art. 10 of FZ).

Failing is the construct of norms on another group of grounds for terminating the status of an international company – due to the loss of the status of a participant in the special administrative district (Par. 1 of Pt 9.1. of Art. 10 of FZ). The latter is provided for by Art. 5 of FZ on SAD and related to the contract on the implementation of activities.

If in Pt 6.1, Par. 1 of Pt 11 of Art. 5 FZ on SAD provides for a compulsory procedure for loss of status as a sanction, in Par. 1 of Pt 9, Pt 10, Par. 2 of Pt 11 of Art. 5 of FZ on SAD – voluntary order, in Pt 10, Par. 3 of Pt 11 of Art. 5 of FZ on SAD – forced order, but due to the fact that the international company may apply to court that is not a sanction, in Pt 10, Par. 4 of Pt 11 of Art. 5 of FZ on SAD, Arts 10, 11 of FZ voluntary and involuntary termination of the status of an international company are united in accordance with FZ, and there is a mixture of grounds and timing: in Pts 10 and 11 of Art. 5 of FZ on SAD, the termination of an agreement on the implementation of activities is the basis for termination of the participant status of the special administrative district and at the same time the status of an international company, and in Par. 1.1 of Pt 9 of Art. 5 of FZ on SAD the termination of the status of an international company is specified as the basis for termination of the contract on the implementation of activities.

In case of termination of the status of an international company, the legal entity, as a general rule, will continue to function as a normal Russian JSC or LLC with the reservation of already accrued rights and obligations in full (Pt 11 of Art. 10 of FZ).

The solution of two more issues is of theoretical and practical importance.

The law denies the fact of succession between a foreign legal entity and an international company in connection with its state registration (Pt 5 of Art. 4 of FZ), but it is this fact that is practically spoken about in Pts 3, 4, 7 of Art. 4 of FZ.

The refusal of legal succession means that when deciding on the liability of an international company for the debts of a former foreign legal entity, foreign law is applied, taking into account the provisions of FZ.

FZ provides for a unique situation: extending two jurisdictions, or rather their mobility, over international companies.

General rule: personal law of an international company is the Russian law (Pt 1 of Art. 4 of FZ).

Alternative: The international company's right of choosing personal law of a legal entity which is more "comfortable" for its participants (Pt 1.7. of Art. 4, Pt 13 of Art. 7 of FZ) that will be provided for in the Charter, and the use of the Russian law as a residual if there are loopholes in it (Pt 1.8 of Art. 4 of FZ). International companies also have the right to choose the rules of accounting (financial) statements and the language of financial statements (Pts 13 and 15 of Art. 2 of FZ).

Additional rules: an international company may also be subject to:

- prior personal law of a foreign legal entity;
- the rules of foreign exchanges (for example, Pts 1.2, 1.9 of Art. 4, Pt 6. 1 of Art. 8 of FZ);
- foreign law in the securities market (Pt 19 of Art. 7 of FZ).

Different from the Russian law is the provision on the possibility of recognition of a corporate agreement's prevalence over the Charter (Dolinskaya 2016; Stepanov et al. 2012) (Pt 8 of Art. 4 of FZ).

A special currency regime is established for an international company - the status of a non-resident, the right to carry out transfers of foreign currency, settlements in foreign currency, transfers of foreign currency from Russia and to Russia without opening bank accounts in authorized banks (Arts 1, 10 of Federal law of 10.12.2003 No. 173-FZ "On Currency Regulation and Currency Control").

For the purposes of the tax legislation, international companies are recognized as Russian organizations (Par. 2 of Art. 11 of TC), although they have a special tax procedure.

Finally, within 6 months from the date of entering into the state register of data on the registration of an international company in the procedure of redomiciliation (if a longer period is not established by the legislation of the state of the original personal law of a legal entity), the organization exists in two (!) jurisdictions (Pt 14 of Art. 5 of FZ). In the case of compulsory termination of the status of an international company, questions arise about the future of the legal entity, since the period of termination status exceeds its duration in the register of foreign legal entities in the state of their original personal law (Pt 7.1 of Art. 2, Pt 14 of Art. 5, Pts 1, 1.3, 2.1–5 of Art. 10 of FZ).

6 International Company and Offshore Company: The General and Different

In a number of parameters, an international company is close to offshore companies, although there are differences.

It is a foreign company registered in a special geographical area. The location of the international company is within the territory of the special administrative district determined in accordance with FZ on SAD (Pt 1 of Art. 2 of FZ).

But if traditional offshore companies only operate abroad, not at the place of their registration, FZ establishing the forms and types of investment activities does not make a territorial reference of investments. Thus, the international company can, and in some cases should, invest in Russia, both in and outside the special administrative district.

Offshore companies are non-residents in relation to the country where they are registered. The status of an international company in foreign exchange, civil, tax, financial law differs, but differs from Russian legal entities.

Despite being declared a resident in TC RF the international company has a special tax procedure, which brings it closer to offshore companies.

For the international company, there is a special, but not simplified, as in case of offshore companies, registration procedure.

They are brought together by a special currency regime and financial reporting requirements. At the same time, there has been established a special procedure for auditing and similar examinations.

“Classic” offshore companies are characterized by the obligation to pay the annual registration fee in the amount and manner established by TC RF (Art. 12 of FZ).

The right of the international company to apply the restriction of access to information contained in EGRUL (about their members and the head) (Art. 6 of FZ) is drawn to the privacy of owning offshore. But this does not apply to Russian state bodies, local governments, bodies of state extra-budgetary funds, the Central Bank of the Russian Federation, courts, and does not affect the annual report of the management company of the special administrative district on its activities posted on the Internet and can indirectly serve as a source of information about the international company.

In addition, the circle of persons entitled to access to information about the international company should be expanded at the expense of the financial institutions in accordance with Art. 7 of Federal Law of 07.08.2001 No. 115-FZ “On Combating Legalization (Laundering) of Proceeds from Crime and Financing of Terrorism”.

In the absence of a unified approach to the definition of offshore the deoffshorization has intensified in the twenty-first century - the state’s holding of a complex of activities in the legislative, enforcement and information fields against the concealment of entrepreneurs’ income and other unfair acts using the instruments of private international law and financial law.

7 The Importance of Deoffshorization in the Process of Financial Modernization of the Russian State

Since 2011, the President of Russia regularly pays attention to deoffshorization.

Pursuant to the instructions of the Russian Government dated 05.03.2012 No.VP-P24-1269 the Federal Tax Service (FTS) of Russia introduced the first ever draft of anti-offshore changes (Letter of FTS of Russia of 30.03.2012 No.SA-20-7/348).

Deoffshorization is discussed in the State program of the Russian Federation “Public Finance Management and Regulation of Financial Markets” approved by Decree of the Government of the Russian Federation of 15.04.2014 No. 320, Par. 62 of the National Security Strategy of the Russian Federation approved by the Decree of the President of the Russian Federation of 31.12.2015 No. 683, Par. 16 of the Strategy of Economic Security of the Russian Federation for the period till 2030, approved by Decree of the President of the Russian Federation of 13.05.2017 No. 208, Sec. 1.2 of The Main Directions of the Budget, Tax and Customs Tariff Policy for 2019 and for the Planning Period of 2020 and 2021, approved by the Ministry of Finance of Russia.

The most significant measures taken are:

- (1) Federal Law of 24.11.2014, No. 376-FZ “On Amendments to Parts One and Two of the Tax Code of the Russian Federation (regarding the taxation of profit of controlled foreign companies and income of foreign organizations)”, providing for the taxation in Russia of income of the companies located in the offshore jurisdiction, if the company does not distribute the proceeds to the benefit of Russian persons controlling such companies;
- (2) prohibitions in the budget, currency and special legislation on obtaining Vnesheconombank loans, receiving subsidies from the budget, budget investments and state (municipal) guarantees, conclusion of state and municipal contracts for companies in the offshore jurisdiction;
- (3) Russia’s accession to the international automatic exchange of information (the OECD Convention on Mutual Administrative Assistance in Tax Matters, the Multilateral Competent Authority Agreement on the Exchange of Country-by-Country Reports, the Multilateral Competent Authority Agreement on the Automatic Exchange of Financial Account Information, Federal law of 27.11.2017 No. 340-FZ);
- (4) the 2nd block of anti-offshore laws of 19.02.2018 (change in banking, tax and criminal law);
- (5) the 3rd block of anti-offshore laws of 03.08.2018.

Their analysis and comparison with international offshore restrictions allows:

- to conclude the similarity by the instruments of the offshore and antioffshore legislation;
- to join the position of those economists, lawyers and politicians who call to fight not against the zones with special economic conditions and not even against the withdrawal of capital from a particular country, but against tax evasion, obtaining advantages through unfair behavior.

Thereby, such instruments as redomiciliation and international companies will be useful.

8 Conclusions

The results of our research are:

- the identification of typical features of redomiciliation (change of the state of registration of a legal entity and its legal address to another state of registration with a new legal address while reserving assets, rights and obligations under previously concluded transactions, and sometimes the name and the existing bank account);
- the proposal of a conditional definition of an international company. An international company shall be understood to mean a business entity registered in the Unified State Register of Legal Entities (hereinafter – Register) due to the change of a foreign legal entity’s personal law in the procedure of redomiciliation subject to

additional requirements to foreign legal entities doing domiciliation, to international rule of law, to the conditions of state registration;

- the conclusions about the similarity on a number of parameters of an international company to offshore companies, on the offshore instrumentation of the offshore and antioffshore legislation.

It seems appropriate to recommend:

- at the national level (Russia) - uniformity in sectoral criteria for determining personal law of a legal entity;
- at the supranational and international level - to fight not against zones with special economic conditions and not even against the withdrawal of capital from a particular country, but against tax evasion, obtaining advantages through unfair behavior;
- and also to unify sources for redomiciliation at the level of international treaties and national law.

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



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Study of the Structure of National Wealth of the Countries of the World by Means of Cluster Analysis Methods

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Abstract. Purpose: a scientific substantiation of the use of cluster analysis methods in the study of the structure of countries national wealth.

Design/methodology/approach: To achieve this goal, the authors applied the K-means clustering methods, a hierarchy analysis method, and DBScan. Each method used three metrics: uniform (Euclidean) one and two uneven metrics: the minimum from the distance to the boundaries of the triangle and the product of the normals of the points. The study used the materials of the World Bank on dynamics and structure of the countries national wealth in 2000 and 2014. The data are presented by the authors in barycentric coordinates, where a point corresponds to each country.

Findings: Five clusters that differ in the number of countries were formed. A shift clustering made it possible to identify the countries with similar trends in the structure of national wealth. Growth trend of the human capital share from 2000 to 2014 in almost all countries of the world was observed. The authors used the K-means method and combined the results obtained using uniform and uneven metrics. The DBS scan algorithm attributed a significant number of countries to a “noise”. Therefore, its use should be supplemented by other methods and tools.

Originality/value: Formation of clusters of countries with observed similar trends and a similar structure of the national wealth makes it possible to focus on the place of various countries in the “cluster hierarchy”, and may serve as a reference point for further in-depth studies of trends in the share of natural, human, and industrial capital, and factors influencing these changes to make positive decisions about social and economic development of the country.

Keywords: National wealth · Human capital · Natural capital · Industrial capital · Clustering algorithm · Clustering · Cluster

JEL Code: E01 · F00 · C38

1 Introduction

The importance of the problem under analysis is determined by the necessity of the clarification of the place and role of specific factors in the growth of national wealth, its volume and dynamics in various countries of the world for the development of an efficient economic policy.

The research conducted in (Nesterov and Ashirova 2003; Goldsmith 1968; Valenty and Nesterov 2000) had a significant impact on the study of content, composition, reproduction and measurement of the national wealth and its main elements. The analysis of the existing methods of various elements of national wealth calculation and the assessment of its volume in general allows speaking about the priority of the World Bank methodology that allowed making the cluster formation of the existing data. The chosen algorithm and the used metrics were focused on the comparison of the volume and the structure of national wealth of 91 countries of the world according to the World Bank data what allows creating the main clusters reflecting the level of human, industrial and national capital with a high reliability. The results of research can vary from the widely used data due to a new methodology of cluster formation of the data used by the authors.

The difficulty in the calculation of the elements of national wealth by a traditional method of the UN (System of national accounts 2008 2009) encouraged the search of alternative ways of assessment. So, in the late 1990s the group of specialists of the World Bank developed as an experiment an alternative method of the analysis of the structure of national wealth which was based on the rent approach (Kunte et al. 1998; Where Is the Wealth of Nations? 2006; The Changing Wealth of Nation 2011; Lange et al. 2018). It is based on the definition of the national wealth as the total of three components: natural capital, industrial capital and human resources. It is worth mentioning that Inshakov in his original conception of the factors of production joined the given factors into the group of factors transforming the natural objects, which differentiate all the products through the knowledge and experience, technology, natural and social conditions (Inshakov 2003).

The method of the World Bank was firstly focused on the inter country comparisons that's why its authors had to make a number of significant simplifications. The produced assets were assessed in a traditional way on the basis of the regular inventory check, which was carried out on the basis of monetary evaluation of the initial stock of assets, their wear and tear and investments. For the assessment of natural resources and human capital the income approach was used. The human capital (in the research of 2006 it is entitled intangible one) (Where Is the Wealth of Nations? 2006) was evaluated by the authors according to the "residual cost". The net national income produced due to natural resources was deducted from the total volume of net national income. After that the current value of the "non-resource" net national income per an average number of years of the productive life of population (life expectancy for the first year of life minus average age of population) was calculated. From the product obtained in the result which can be produced by the population the sum of assets and land were deducted. However in the research of the World Bank of 2018 in contrast to an earlier

period, the human capital is calculated as an obvious component of the accounts of national well being for every country.

2 Materials and Methods

The goal of the present research was the identification of the tendency of percentage change of natural, human and industrial capital of the countries studied by the specialists of the World Bank for the period 2000–2014 (91 countries) and then to create the clusters from the countries with similar observed tendencies. In the given paper several methods of cluster formation are used (Mueller and Guido 2017; Madhavan 2015):

- (1) K-means is the simplest algorithm of cluster formation which was suggested in 1950s by the mathematicians Hugo Steinhauser and Stewart Lloyd (independently from one another). The mentioned algorithm divides an assemblage of elements of the space into a well-known number of clusters k . The principle of the work of the algorithm is as follows: the projected centers of clusters are identified (so called “centroids”); the distances from every point to every center are measured; the points are divided into clusters (minimal distance from a point to the cluster center).
- (2) The methods of hierarchy analysis or hierarchy cluster formation. The basis of the method is the construction of a hierarchy (tree) of the nested clusters. There exist two variants of the implementation of the algorithm of the hierarchy analysis i.e. the agglomerative and divisional methods. In the first case the construction leads from particulars to generals i.e. initially every point presents the clusters and further the points are united forming new clusters and in division methods the clusters are constructed according to the principle “from generals to particulars” i.e. one large cluster consequently is divided into clusters of a smaller size. For the functioning of the algorithm the unknown number of clusters should be known.
- (3) DBScan is the spatial cluster formation for the applications with noise (Density-based spatial clustering of applications with noise). The given algorithm is based on the density of the location of points. The most densely located points will create the clusters. The DBScan has two important advantages: capability of the identification of clusters of irregular form and opportunity of the identification of the “noise of the point which are not included into any cluster”.

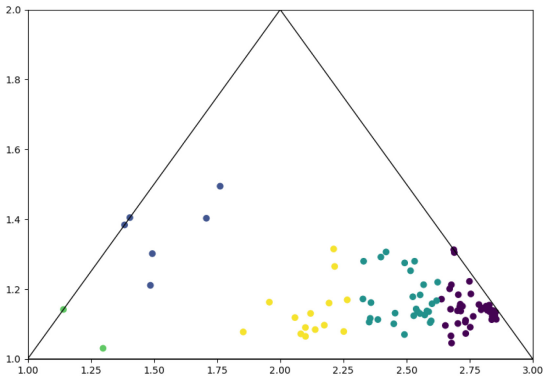
The algorithm works in the following manner: a random point is selected and the reachable points in ϵ radius are marked. If the number of such points is lower than min_samples , the point is considered as a noise. If not it gets a mark of a new cluster and its “neighbours” undergo the same procedure. The peculiarity consists in the fact that in some cases the points remain contiguous and can be included into various clusters. All other points in every new beginning of the algorithm will remain in their places.

During the clusterization each method used the following metrics (measures of the distance between the points): uniform (Euclidean) one and two uneven metrics (the minimum from the distance to the boundaries of the triangle and the product of the normals of the points).

3 Results

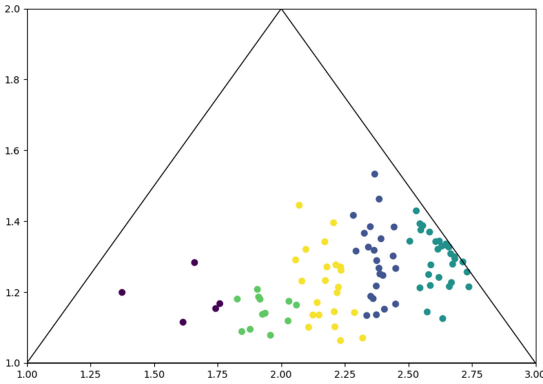
In order to present the result, the barycentric coordinates were used, in the system of which each country is presented by a point. The closer it is to either side of the triangle, the greater the impact this aspect makes in total national wealth. The application of the K-means method using the uniform metrics resulted in the creation of 5 clusters (Figs. 1 and 2), the main characteristic of which was the level of human capital which prevail in almost all countries of the world, which can correspond to different levels of industrial and natural capital:

- (1) The countries where the natural capital predominates. The share of the industrial and human capital is small. The cluster includes the developing countries in Africa and South America specializing in the extraction and export of natural resources. In 2014, the cluster included Suriname, Niger, Mali, Guyana, and Mauritania.
- (2) The countries with a relatively low share of human capital. The share of natural and industrial capital is medium. The cluster includes the developing countries, mostly poor ones. The cluster composition in 2000–2014 has changed significantly, in 2014 it mainly includes the countries of Africa: Cameroon, Republic of the Congo, Mozambique, Gabon, Chad, etc.
- (3) The countries with a low or medium share of industrial and natural capital. The share of human capital is medium. The cluster includes the developing countries. So, in 2014 it included Albania, Bolivia, Burundi, India, Ethiopia and other countries.
- (4) The countries where the human capital predominates (55–85%), 10–20% of wealth is accounted for the natural and industrial capital. In 2014, it included China, Latvia, Australia, Argentina, South Africa, Pakistan, Georgia and other countries.
- (5) The countries where about 80% or more of national wealth are accounted for the human capital, 10–15% are accounted for the industrial capital. The value of natural capital is low. The cluster includes almost all developed countries and some developing countries (in 2014 they were Malaysia, Costa Rica, Colombia, El Salvador, Uruguay, Sri Lanka). This is the most stable cluster.



Cluster 1 is violet, Cluster 2 is aquamarine, Cluster 3 is yellow, Cluster 4 is blue, Cluster 5 is green.

Fig. 1. Cluster formation from the countries by means of the method K-means with the use of the even metrics, 2000.



Cluster 1 is violet, Cluster 2 is aquamarine, Cluster 3 is yellow, Cluster 4 is blue, Cluster 5 is green.

Fig. 2. Cluster formation from the countries by means of the method K-means with the use of an even metrics, 2014.

In general during the period 2000–2014, practically in all countries, the share of human capital grew. In comparison with year 2000, in 2014 39 countries out of 91 countries of the world remained in the same clusters, 52 moved to another cluster. The dynamics of cluster formation of shares of national wealth of the countries of the world allowed identifying 5 clusters.

- (1) The share of the industrial capital in the structure of national wealth remained practically unchanged, the redistribution of shares is observed between the human and natural capital in Indonesia, Malaysia, Norway, Russia, etc.
- (2) A reduction in the share of human capital, an increase in the share of industrial capital, a small increase in the share of natural capital is shown in Bangladesh, Romania, Albania, Argentina, Greece, Great Britain, etc.
- (3) A slight decrease in the share of industrial capital, a significant increase in the share of natural capital, a significant decrease in the share of human capital, a transition to a cluster with a lower share of human capital happened to Burkina Faso, Malawi, Botswana, Egypt, Zimbabwe, Mali.
- (4) The growth in the share of natural and industrial capital with a significant reduction in the share of human capital was stated in Pakistan, Paraguay, Thailand, Chile, Belize, Zambia, Cote d'Ivoire, Mozambique, Bolivia, Kenya, Comoros, Nicaragua, Madagascar, Nepal, Chad, SAR and etc.
- (5) A fairly significant increase in the share of industrial capital, a slight decrease in the share of natural capital, a decrease in the share of human capital was observed in Latvia, Mexico, Canada, Colombia, Estonia, India, Ecuador, Ethiopia, and Suriname.

The clusterization with the use of the non-uniform metrics allows you to select the points in individual clusters that lie maximally close to a certain edge. Figure 3 shows the clustering of countries using the K-means method on the basis of an uneven metric (the minimum from the distance to the borders of the triangle). Most countries were found in the first cluster, cluster № 2 was represented by Japan, cluster № 3 by Germany and Switzerland, cluster № 4 included Austria, Great Britain, Greece, Denmark, Spain, Italy, the Republic of Korea, the Netherlands, Portugal and El Salvador, cluster № 5 included Belgium and Luxembourg.

All countries in small clusters are united by a low share of natural capital in the national wealth. So, in the countries of the 4th cluster, it is 1–2%, of the 3rd cluster it is 0.9%, of the 5th it is 0.7%, of the 2nd it is 0.3%. From an economic point of view, it is advisable to combine all small clusters into one cluster, because the differences between them are not significant. The use of the metric of the product of normals of points gives similar results.

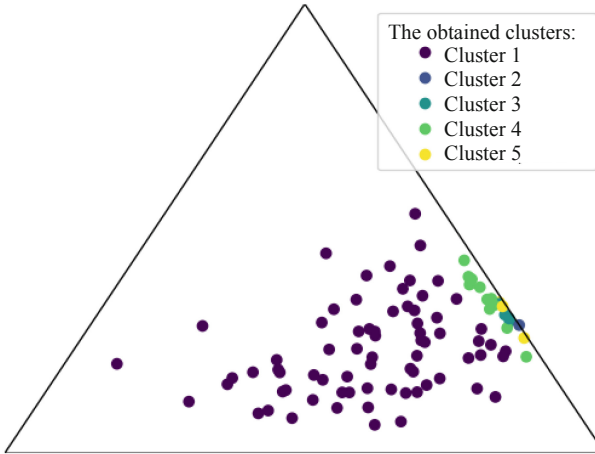


Fig. 3. Clusterization of the countries by the K-means method with the use of uneven metrics (minimum from the distance to the triangle boundaries), 2000.

The clusterization with help of the method of hierarchy analysis using the Euclidean metric allowed us to form 5 clusters that differ greatly in the number of countries (Table 1). The main characteristic of the cluster in this case was the level of the industrial capital. It should be noted that according to the data of 2014, the countries more or less equal in terms of social and economic development were included into one cluster, in comparison with the clusters formed on the basis of the data of 2000, countries presenting the exceptions began to occur much less frequently. In our opinion, this can be explained by a change in the methodology for the assessment of human capital for later data, when it began to be assessed as an explicit component of welfare accounts. Thank to this fact, its level has increased in the countries possessing natural resources. In these countries, the human capital was underestimated when it was assessed according to the residual principle. For example, Russia's human capital per capita in 2000 was 11.8 times lower than in the world, in terms of its value the Russian Federation was found below Namibia, Zimbabwe, Ghana and Haiti, while some countries even had negative values (Gabon, Republic of the Congo, Nigeria).

Table 1. Clusters obtained by means of hierarchical analysis using the Euclidean metric

	2000	2014	Cluster characteristic
Cluster 1	Australia, Austria, Albania, Argentina, Bangladesh, Belgium-Luxembourg, <i>Bolivia</i> , <i>Brazil</i> , Great Britain, Gambia, <i>Guatemala</i> , Germany, Greece, Denmark, <i>Zambia</i> , <i>Zimbabwe</i> , Ireland, Spain, Italy, <i>Kenya</i> , <i>Colombia</i> , Comoros, <i>Costa Rica</i> , <i>Mauritania</i> , <i>Mali</i> , Morocco, <i>Mozambique</i> , <i>Namibia</i> , <i>Niger</i> , Netherlands, Nicaragua, <i>Pakistan</i> , <i>Paraguay</i> , Peru, Portugal, <i>Rwanda</i> , <i>Salvador</i> , Senegal, <i>USA</i> , Philippines, Finland, France, <i>Chile</i> , <i>Switzerland</i> , Sweden, <i>Ecuador</i> , <i>Ethiopia</i> , <i>South Africa</i>	Australia, Austria, Albania, Argentina, Bangladesh, Belgium-Luxembourg, United Kingdom, <i>Hungary</i> , <i>Venezuela</i> , <i>Haiti</i> , Gambia, Germany, Greece, <i>Georgia</i> , Denmark, <i>India</i> , <i>Indonesia</i> , <i>Jordan</i> , Ireland, Spain, Italy, <i>China</i> , Comoros, <i>Republic of the Congo</i> , <i>Republic of Korea</i> , <i>Latvia</i> , Morocco, <i>Mexico</i> , <i>Moldova</i> , Netherlands, Nicaragua, <i>Norway</i> , Peru, Portugal, <i>Russian Federation</i> , <i>Romania</i> , Senegal, <i>Singapore</i> , <i>Suriname</i> , <i>Thailand</i> , Philippines, Finland, France, Sweden, <i>Estonia</i> , <i>South Africa</i> , Jamaica, Japan	In 2000 these were the countries with a high share of human capital (70–85%), and small shares of natural and industrial capital In 2014 these were the countries with a relatively small share of natural capital, a fairly high share of human (50–65%) and industrial capital (25–45%)
Cluster 2	<i>Georgia</i> , <i>Suriname</i>	<i>Madagascar</i> , <i>Malawi</i> , <i>Malaysia</i> , <i>Nigeria</i> , <i>Chad</i> , <i>Ethiopia</i>	These are the countries with an extremely small share of industrial capital (3–4% in 2000, 7–12% in 2014)
Cluster 3	<i>Belize</i> , <i>Botswana</i> , <i>Burkina Faso</i> , <i>Hungary</i> , <i>Venezuela</i> , <i>Guyana</i> , <i>Honduras</i> , <i>Dominican Republic</i> , <i>Egypt</i> , <i>India</i> , <i>Indonesia</i> , <i>Jordan</i> , <i>Cameroon</i> , <i>Canada</i> , <i>China</i> , <i>Republic of Korea</i> , <i>Latvia</i> , <i>Malaysia</i> , <i>Mexico</i> , <i>Moldova</i> , <i>Nepal</i> , <i>Norway</i> , <i>RF</i> , <i>Romania</i> , <i>Singapore</i> , <i>Thailand</i> , <i>Sri Lanka</i> , <i>Estonia</i> , <i>Jamaica</i> , <i>Japan</i>	<i>Burundi</i> , <i>Gabon</i> , <i>Rwanda</i>	In 2000 these were the countries with a share of industrial capital about 15–30% In 2014 these were the countries with a share of industrial capital about 20% and the shares of natural and human capital of 30–60%

(continued)

Table 1. (continued)

	2000	2014	Cluster characteristic
Cluster 4	<i>Burundi, Haiti, Ghana, Cote d'Ivoire, Madagascar, Uruguay, Chad</i>	<i>Guyana, Guatemala, Honduras, Dominican Republic, Zambia, Canada, Kenya, Colombia, Cote d'Ivoire, Mauritania, Nepal, Niger, Salvador, USA, Uruguay, Chile, Switzerland, Sri Lanka, Ecuador</i>	The countries with a small share of industrial capital (in 2000 it was less than 10%, in 2014 it was less than 25%) and with a large enough share of human capital (50–80%)
Cluster 5	<i>Gabon, Republic of the Congo, Nigeria</i>	<i>Bolivia, Brazil, Belize, Botswana, Burkina Faso, Ghana, Egypt, Zimbabwe, Cameroon, Costa Rica, Mali, Mozambique, Namibia, Pakistan, Paraguay</i>	In 2000 the cluster included countries with a negative value of intangible (human) capital In 2014 these were the countries with a share of industrial capital of 10–20% and human capital less than 70%

*countries that changed the cluster are shown in italics

The DBScan algorithm applied to the objectives of this study was not useful because it located a significant number of the countries to the “noise”. At the same time, simply excluding the country from the analysis seems extremely incorrect.

4 Conclusion/Recommendations

At the same time, judging by the data obtained, there is an even greater mixture of different countries, which are usually referred to different levels of economic and social development.

The analysis of the structure of national wealth using the following methods: K-means, the method of hierarchy analysis and DBScan with the use of three metrics: the Euclidean (standard) one, the minimum from the distances to the borders of the triangle and the product of the normals of the points, allowed us to identify 5 clusters and establish the growth of the share of human capital in all the countries under analysis.

The use of the K-means method seems to be the most successful. However, since the starting points of the clusters are set at random, every beginning of it can give other, contradicting results. In particular, according to the results obtained, the Russian Federation in 2000, being in Cluster 2 with a low level of human capital, neighboured with such countries as Venezuela, Gabon, Moldova, and in 2014, it was already in Cluster 3 with a “relatively low level of human capital” and was located together with Albania, Botswana, Nicaragua, Peru, Zimbabwe, Morocco. At the same time, Estonia, for example, which is characterized by the emigration of qualified personnel, is located

in cluster 5 with a high share of human capital. That's why these results can be just information for consideration, and not the final conclusions.

The shift clustering obtained by the K-means method using the Euclidean metric also allowed us to identify 5 clusters. In this case, the results are even more uncertain. So, in one cluster, the 2nd, which is characterized by a "reduction in the share of human capital" were the United States, Finland, Germany, the Netherlands, Italy, Sweden, the Republic of Korea, Japan, as well as Bangladesh, Romania, Albania, Sri Lanka, Jamaica. And the Russian Federation, with a relatively stable structure of national wealth, finally was found in Cluster 1, in one cluster with Norway, China, Malaysia, Singapore, as well as Indonesia, Congo, Venezuela, Honduras, Burundi and Nigeria. All this allows us to study the main trends in the development of the national wealth structure of the countries of the world from various positions, and most importantly, its significance for the development of the country.

The hierarchical clustering method made it possible to obtain 5 clusters that significantly vary in the number of countries represented. At the same time, if the K-means method used the human capital as the main criterion, then the hierarchical clustering method used the industrial capital.

Uneven metrics allow us to group the points in individual clusters that lie as close to a certain edge as possible. However, when using uneven metrics, it is not always advisable to divide the points into a large number of clusters, because the countries in small clusters may vary insignificantly according to the main clustering criteria.

The algorithm of DBS scan located a significant number of the countries to a "noise". That's why, its use should be supplemented by other methods and tools. In general, it seems appropriate to use the K-means method and to combine the results obtained using uniform and uneven metrics.

The formed clusters from the countries with observed similar trends and the structure of national wealth, the main characteristic of which was the level of human capital, allow us to focus on the place of different countries in the "cluster hierarchy" and on their dynamics. The formed clusters can also serve as the starting point for further in-depth studies of trends in the share of natural, human and industrial capital, as well as for the identification of the factors of these changes, which can become a definite basis for making positive decisions concerning the social and economic development of the country.

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**Systemic and Institutional Reform
of the National Rule of Law as a Factor
in the Competitiveness of the Russian
Economy in the Context of Digitalization**



Interactive Demo On-Line Maintenance Foreign Trade Deals of Business Entities of BRICS Jurisdictions

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Abstract. Purpose: The purpose of the chapter is to explore approaches to creating a special Internet portal “Foreign Economic Activities of BRICS Online”.

Design/methodology/approach: In the chapter, the authors prove that working Internet portal, displaying in real time on television screens and computer monitors cargo vehicles and its routes, will allow government officials and heads of business entities in on-line mode analyze and coordinate the implementation of foreign economic deals through existing international export and import channels. Based on a materialistic world view, the authors implement a systematic approach to the research of the problem.

Findings: From the perspective of practical jurisprudence, the new Internet platform will contribute, in particular, to simplifying the process of proving facts of fulfilment or non-fulfilment of obligations under foreign trade contracts.

Originality/value: As it will allow, to provide unshakable evidence to the judicial authorities - screen shots of specific fragments of the world map with the exact geographical coordinates of the location of the goods moving in the framework of a particular deal at a certain point in time. It is substantiated that the functioning of the Internet platform and the display of the routes of exported and imported goods in real time should be carried out with electronic technical pairing with digital smart contracts.

Keywords: Foreign trade deals · BRICS jurisdictions · On-line maintenance · Digital smart contracts

JEL Code: K10 · K15 · K24 · K41 · O38 · L88

1 Introduction

The emergence of innovative technical capabilities today determines the development of not only science, but also such areas as the financial and economic system, the legal system, and public administration. The current situation on the world market reflects the confrontation of various economic structures, which are characterized by individual historically determined interests and features of internal development and external

behaviour. In order to prevent the risks of deep recessions in trade relations, countries are creating integration associations, usually associated with common export and import markets. The Russian Federation is an active participant in the integration processes within the BRICS (Inshakova et al. 2019).

Fluctuations in supply and demand for goods that lead to an increase or decline in trade between countries, the contribution of foreign trade to the state's GDP are in the focus of analysis of federal executive organs that regulate, control and supervise the activities of subjects of foreign economic deals. In this regard, technologies that can provide interactive and demonstration digital maintenance for foreign trade transactions are of great practical importance. The creation of such software will allow solving the problems that, on the one hand, are facing the government organs of the BRICS countries, on the other hand, transnational commercial organizations that are direct participants in export-import relations.

The powers of the Ministry of Economic Development of the Russian Federation include the monitoring and analysis of socio-economic processes, the development of periodic reports on the condition of the economy, the monitoring and forecasting world market conditions, socio-economic processes, measures of economic and trade policies in foreign countries, their impact on the socio-economic development of the Russian Federation (Decision of the Government of the Russian Federation of 05. 06. 2008 No. 437). The Ministry of Finance of the Russian Federation is authorized to solve the strategic task of drawing up a draft federal budget, as well as analyzing information about the condition of public finances (Decision of the Government of the Russian Federation of 30. 06. 2004 No. 329). The Federal Service for Financial Monitoring collects, processes, analyzes and verifies information on operations (transactions) with money or other property subject to control in accordance with the legislation of the Russian Federation (Presidential Decree of June 13 2012 No. 808). Based on the results of studies of these organs, the President of Russia holds interstate negotiations with leaders of other countries on issues of commodity turnover between states, areas of joint activity, the need to increase or decrease certain economic indicators. The implementation of interstate cooperation falls mainly on business entities operating in industry, energy, transport, and in the field of information and communication technologies (Inshakova and Goncharov 2019).

The meaning of the creation and application of this software is the formation of a legal and managerial mechanism that simplifies the process of tracking and recording the facts of the movement of goods across borders and customs terminals, necessary for the security and effective protection of the legitimate rights and interests of participants in foreign trade relations, ultimately - for their expansion and intensification. Interactive demonstration digital maintenance of foreign trade deals is of particular importance during interstate negotiations: it is important for the participants in such negotiations to clearly visualize the real condition of the market and to see in real time the goods moving in the framework of a particular deal on a map of the whole world.

2 Materials and Methods

The scientific development of the material was carried out on the basis of a set of regulatory and doctrinal sources. The article uses federal laws and other regulatory acts of the Russian Federation. The Presidential Decree of May 7, 2018 No. 204 “On National Targets and Strategic Tasks of the Development of the Russian Federation for the Period until 2024” was investigated, Decisions of the Government of the Russian Federation of 05.06.2008 No. 437 “On the Ministry of Economic Development of the Russian Federation”, of 30.06.2004 No. 329 “On the Ministry of Finance of the Russian Federation”, Regulation on the Federal Service for Financial Monitoring, certain norms of the Civil, Civil Procedure, Arbitration Procedure Codes of the Russian Federation. The Bill No. 419059-7 “On Digital Financial Assets” dated March 20, 2018, the Federal Law dated March 18, 2019 No. 34-ФЗ “On Amendments to Parts One, Two and Article 1124 of Part Three of the Civil Code of the Russian Federation” were critically analyzed.

Doctrinal sources are represented by scientific publications of domestic jurists and economists, including: Belov V.A., Inshakova A.O., Kalinina A.E., Goncharov A.I. and etc.

The development of the content of this article is based on the materialistic worldview and the universal scientific method of historical materialism. The general scientific methods of cognition are applied: the dialectic, hypothetical-deductive method, generalization, induction and deduction, analysis and synthesis, empirical description. Particular scientific methods were also used in the research: normative-dogmatic, comparative-legal, structural-functional, etc.

3 Results

Current tasks of digitalization of foreign economic activity of business entities from BRICS jurisdictions

It is necessary to create software for the operation of a special Internet portal, as well as a derivative web application that will provide online complaints (like <https://Youstice.com>). Indicated web application it is advisable to integrate as a service on the same Internet portal, thereby creating an interstate trading Internet platform - “Foreign Economic Activities of BRICS Online”. The meaningful purpose of the Internet platform is reflection in the interactive mode of actually carried out deals in real time, namely, the display on television screens and computer monitors of moving vehicles (ships, planes, trains) throughout the world map with the exact geographical coordinates and smart contract numbers of specific foreign trade transactions.

Currently, there are Internet services that allow each user to see in real time, for example, all flying passenger airliners, all ships sailing in the seas and oceans. The most popular and widespread service is Flightradar24: live air traffic (<https://flightraders24.ru/>), which allows you to track the icons of planes that are moving around the world map in flight in the coordinates over which the board is currently flying. When you hover, a computer mouse over the airplane icon, an information panel appears with brief information about the flight. You can manually specify the date,

flight number, departure and destination ports, the airline and the service will show where and how much time the plane is in the air.

As for the foreign economic activity of economic entities of BRICS jurisdictions, such an Internet platform is offered for the first time. Reflection of moving vehicles that transport exported and (or) imported goods, in real time, it can be done by electronic-technical pairing of the specified Internet platform with digital smart-contracts related to blockchain interaction. At the same time, the expansion of digital technologies in economic activity, its inclusion in the civil turnover meets the priority tasks of the economic development of the Russian Federation (Presidential Decree of May 7 2018 No. 204).

A rule should be enshrined that each foreign economic deal implemented in the form of a smart-contract is subject to mandatory registration of this smart-contract by a special electronic-digital method on the specified Internet platform. Goods, that undergo the process of chipization during the manufacturing process by marking with special microchips, moving according to the routes and conditions of foreign economic deals, will be able to automatically send via satellite channels signals about their whereabouts at any given moment in time (per minute), being fixed by individual crypto codes to specific individual smart-contracts. Due to the chipization of goods (containers with goods) and communication with satellite constellations, per-minute geo-location and fixing the coordinates are possible of each vehicle (ship, train, plane) that carries out the transportation of exported (imported) goods in the current time period. This, in turn, allows you to display in detail their movement on the Internet portal “Foreign Economic Activities of BRICS Online”.

You should consider the option of a pop-up window with a set of information when you hover of the cursor over on one or another moving in a foreign economic deal transport vehicle. In the information window, it is proposed to reflect brief information on the relevant transport vehicle and smart-contract: deal’s registration number, name of the parties to the deal, dates of the deal, nature and main parameters of the goods, status of payments, other data.

It is great legal importance automatic per-minute screenshots of the entire interactive map provided for by the work-program of the Internet portal and it archiving, which will directly help reduce potential conflicts in the future. Since the electronic-digital recording of the facts of the movement of goods is carried out in the mode of per-minute photographing of the entire map of foreign economic activity of economic entities, insofar as evidence of the execution, non-execution or improper execution of each deal at each past point in time will be provided, having procedural and legally significant consequences. Moreover, in addition to screen shots, the storage of all information on each smart-contract and, accordingly, on the movement of transport vehicles with goods performed in a distributed registry system, in the blockchain interaction mode, to which the Internet portal is connected as a single link in the chain. An interested person’s request to the distributed registry system about the coordinates of the goods at a given point in time will make it possible to obtain an answer that does not require additional evidence about a violation or the proper fulfillment of obligations.

The current legislation of the Russian Federation allows documents and materials made in the form of digital, graphic records as written evidence, including those

obtained by electronic or other communication, using the Internet information and telecommunication network (part 1 of article 71 of the Civil Procedure Code of the Russian Federation; parts 1, 3 of article 75 of the Arbitration Procedure Code of the Russian Federation).

Online claims filing web-application will greatly simplify the procedure filing and consideration of claims. The evidence base in the form of screenshots of an interactive map showing the routes, information from the distributed registry system about smart-contracts will be generated automatically. A special algorithm should be provided, issuing from the provided list the appropriate measure of responsibility for violation or improper fulfillment of the terms of the deal, including the calculation of the penalty depending on the type and duration of the violation. A business entity, using the Internet portal “Foreign Economic Activity of BRICS Online”, in the personal account, the parties to the smart-contract will instantly see their debts and (or) forfeit and measure of responsibility along with the available evidence, and also see an offer to pay off a debt and (or) a penalty on a voluntary order.

If the business entity (party to the smart-contract) agrees with this proposal, it confirms the payment with its enhanced qualified electronic signature then the bank will automatically debit the funds. If the user does not agree with such a proposal and within the specified 30-day period does not give an answer to the claim, the opposing party has the right to apply to the court for the protection of their rights. It should programmatically ensure the electronic transfer of data (screen shots and information from the distributed of the Internet portal “Foreign Economic Activity of BRICS Online”) registry system to judicial organs, as well as the ability to file a statement of claim either from your personal account or from the My Arbitrator system, but with the possibility of attaching evidence files from the Internet portal “Foreign Economic Activity of BRICS Online”. In this perspective, the proposed Internet platform is quite functional, as is the technology for collecting evidence in a potential court case.

The aforementioned approach to the settlement of disputes, firstly, will facilitate the simplification of interaction between business entities, secondly, it will reduce the number of potentially possible appeals to the courts, reduce the burden on them due to the preliminary high availability of evidence and their incontrovertibility. Thirdly, an incentive measure should be provided for by law in the pre-trial settlement of conflicts: the right to include in the text of the transaction a condition to reduce the fine, to reduce the penalty interest to 50%, if the counterparty agreed to voluntarily pay off the debt within 10 days.

Current tasks of harmonizing legislation on the use of distributed registries in BRICS jurisdictions

In our opinion, modern foreign economic relations should evolve towards automation of execution. First of all, it is due to the high development of information technology. The most promising application tool for it is technology of distributed registries (blockchain interaction) (Kalinina et al. 2019).

Today, many states are striving to create special legislation for the implementation of projects based on blockchain technologies. So, in Malta, three laws are passed: (1) Malta Digital Innovation Authority – regulates the activities of a special state organ, that certifies and controls the distributed registry platform, the Malta Centre for Digital Innovation (Malta Digital Innovation Authority Act No. XXXI 2018); (2) Innovative

Technology Arrangement and Services Act – establishes the rules and procedure for the registration of crypto-currency exchanges, as well as organizations related to the turnover of crypto-currencies (Innovative Technology Arrangements and Services Act, 2018); (3) Virtual Financial Assets Act – Virtual Digital Financial Assets Act, governing financial transaction's rules and public token issuance (ICO) (Virtual financial assets act No. XXX 2018). Gibraltar passed a law on licensing of activities related to the distributed registry, while it is proposed to create a separate authorities organ in this sphere. In Switzerland, the United Arab Emirates, Singapore, the United Kingdom and Canada, the sphere of regulation of such projects is the responsibility of the financial regulator. In these countries “sandboxes” appear - special legal regimes for some organizations in which projects are legally implemented in a legal vacuum or prohibition environment.

Blockchain projects are banned in China and South Korea. Chinese legislation still does not develop a unified approach to the regulation of crypto-currency relations. On the one hand, there are requirements for state registration in the Telecommunication Bureau of crypto-currency exchanges (also websites related to digital assets), on the other hand, crypto-currency is considered as a virtual product, which can be the subject of purchase and sale deals. Individuals and legal entities are allowed to store and dispose of this category of goods, however, the ICO procedure is completely prohibited (EEC: Regulation crypto-currency 2018).

Among the other BRICS member countries, India took the most negative position on the legal regulation of distributed registry technologies - a complete ban on the use of crypto-currency and other digital assets. The relevant bill was prepared by the government, and earlier in 2018, the Reserve Bank of India issued an act banning transactions related to the storage, use, disposal, or other disposal of virtual digital assets (<http://elitetrader.ru>).

There is a provision in the Law of India on the Contracts of 1872, namely, item (e) of Article 2 defines the agreement as an obligation, coupled with the mutual satisfaction provided under it. At the same time, the norm of Article 23, which regulates the question of the limits of admissibility (legality) of reciprocal satisfaction and the subject of the contract, literally establishes the limits: what can and cannot be signed about the contract in the light of legal consequences. While Indian law in this case, differs from the Russian approach of *causa* (presentation) of the deal. The difference is in the relativity of the subject and oncoming satisfaction. For example, under a contract of sale of a house for 10 thousand rupees, the house is a subject for the seller, but a counter satisfaction for the buyer, while 10 thousand rupees is a subject for the buyer, and counter satisfaction for the seller (Belov 2014). This approach to the subject and price of the contract, given the prohibition of transactions with digital assets in India, is due to the high probability of signing purchase and sale contracts through a smart-contract in the field of foreign economic activity of business entities of India and other BRICS participants. This will inevitably lead to a conflict of norms and disputes about what can be the subject of a smart-contract and what cannot be.

In the Russian Federation, work is underway to prepare legislation governing this sphere of relations, and work is also underway to launch sandboxes. Bills have been submitted to the State Duma, according to which a smart contract is an electronic form of an agreement that ensures autonomous fulfillment of obligations, operating in a

distributed data registry. Amendments to Articles 160 and 309 of the Civil Code of the Russian Federation add the possibility of fulfilling obligations in an automated mode through information technology (Federal Law of March 18 2019 No. 34-FZ, Bill No. 419059-7). In general, the legislative activity of states is due to the potentially high efficiency of projects based on blockchain- interaction technology (Goncharov and Goncharova 2019).

4 Conclusion

The creation of the Internet portal “Foreign Economic Activities of BRICS Online” is very relevant and significant. The problematic links for its implementation are the inconsistent approaches of the BRICS legislators to understanding and regulating blockchain interaction and smart-contracts. In our opinion, lawmakers should forever delimit the technology of distributed registry itself and the operations of anonymous entities with fiduciary funds in the Internet using encryption (crypto codes). The use of distributed registers to intensify the foreign economic activity of economic entities of BRICS jurisdictions is expedient and efficient. The key electronic-digital element of the Internet portal “Foreign Economic Activities of BRICS Online” is the registration and tracking on it of existing smart contracts for the export (import) of goods.

The difficulties associated with differences in legal systems and the application of conflict of laws rules in cross-border deals, as well as the huge distances between the location of, for example, the supplier and the buyer, are mitigated by the ability to exchange information inside a smart contract. Parties at any time can adjust the terms of the deal by making changes to the original code, confirming its mutual expression of will through a crypto-key. This option will allow you to adjust the volume of goods and the frequency of deliveries, change the route and the transport vehicle without the need to conclude additional contracts, that affect to the duration of the ongoing legal relationship and the costs associated with the preparation of the necessary documentation. Current changes in the terms of interaction between the parties of contracts for each smart-contract must also be reflected on the Internet portal “Foreign Economic Activities of BRICS Online”.

According to the BRICS Declaration of July 26, 2018, one of the objectives of the partnership is to deepen cooperation in the areas of: digital technologies, industrialization, innovation, inclusiveness; investments to maximize opportunities and solve challenges, arising from the fourth industrial revolution (<http://infobrics.org>). Strategies identified to narrow the digital divide, including through helping people and lagging states in technology adoption and providing technology transfer mechanisms. The Internet portal “Foreign Economic Activities of BRICS Online”, which interactively reflects the fulfillment of existing smart- contracts, will significantly increase the level of relations between the member countries of the association. Transparency and interactivity in the exercise of control and oversight powers of state organs, in the conduct of interstate negotiations with the participation of leaders of countries, heads of departments, business entities will increase the efficiency of foreign economic activity. Just as the Internet has had and is having a tremendous impact on modernity, over time, a noticeable impact can be expected from the idea of using interactive, reflected on a

special Internet platform, foreign economic smart contracts of business entities of BRICS jurisdictions.

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Digital Blockchain Registration of Legally Significant Stages of Complex Good's Export-Import Supplies by Business Entities of the EAEU and BRICS Jurisdictions

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Abstract. Purpose: The purpose of the chapter is to explore and disclose an algorithm for integrating into a single set of special legal measures and digital technologies, providing a conflict-free and mutually beneficial for the parties purchase and sale and subsequent supply to customers of complex goods (cars, airplanes, river, sea vessels).

Design/Methodology/Approach: This algorithm is based on continuous online customer control of the selected product, starting from the stage of forming certain components for this product and its initial assembly on the factory conveyor, ending with supply to the address, specified by the terms of the deal. Based on a materialistic world view, the authors implement a systematic approach to the research of the problem.

Findings: It is proved, that it is advisable to test the proposed legal digital algorithm on foreign trade deals, implemented by business entities of the EAEU and BRICS jurisdictions.

Originality/Value: It is noted, that with a completely acceptable software and computer security and technical readiness to work in the new conditions, the legislation of both the national law-order and their integration associations, the EAEU and BRICS, lags far behind. The authors are confident that leading innovative progress will play the role of a positive impulse for the accelerated development and legal consolidation of a much-needed regulatory framework for expanding and intensifying export-import supplies of complex goods. Since modern economic growth is directly dependent on technological and information-communication tools for the implementation of public relations in this sphere of economic activity.

Keywords: Digital · Blockchain · Registration · Complex goods · Export-import supplies · Business entities · EAEU · BRICS · Jurisdictions

JEL Code: K10 · K15 · K24 · K41 · O38 · L88

1 Introduction

The commodity turnover of the EAEU countries has a characteristic feature - the predominance of exports, however, imports in this integration association are developing at a slow pace. The commodity turnover of the BRICS countries is characterized by relatively modest volumes, however, the dynamics of the volume of international trade operations shows a steady upward trend; for this, the participating countries are making efforts. Each state seeks to realize its industry advantages for the development of foreign trade within an integration association. One of the prerequisites for such cooperation is the closeness of the positions of the participating countries on trade policy issues. To expand foreign trade, BRICS countries should take advantage of digital platforms and electronic commerce.

According to our comprehensive statistics in the structure of exports of complex goods, in particular, transport from Russia (mainly ground transport, except for rail and tram trains) Kazakhstan is in first place (28%), Belarus in second place (22%). Also, transport is actively exported to Armenia and Kyrgyzstan. Transport vehicles imports to Russia are mainly from Japan, Germany and China. Transport vehicles in all Russian import's deals is in third place in the list of main imported goods, accounting for about 11%, and the amount for the period of the first half of 2019 is about 28 billion US dollars. Obviously, import of transport vehicles plays a big role in the Russian economy, and export of transport vehicles closely connects our country with most of the EAEU member countries. Thus, the issues of international transportation, sale and purchase and supply of complex goods - transport vehicles are of great importance for the development of Russia as a high-tech power. Unfortunately, quite often these relations are complicated and inhibited due to conflicts between the parties. Often, business ties break up, entrepreneurs have to look for new counterparties, enter into new contracts. At the same time, a lot of material and time costs are spent on resolving conflicts that have arisen, and newly formed communications are not guaranteed to be reliable. To improve and intensify of complex good's export-import supplies by business entities of the EAEU and BRICS jurisdictions, as well as to prevent potentially conflicts and appeals to the courts, a digital blockchain registration of legally significant stages of these foreign trade deals should be applied.

2 Materials and Methods

The scientific development of the material was carried out on the basis of a complex set of regulatory and doctrinal sources. The article examined the documents of the International Institute for the Unification of Private Law (UNIDROIT), the international rules of INCOTERMS, federal laws and other regulatory acts of the Russian Federation. The Presidential Decree of May 7 2018 No. 204 "On National Targets and Strategic Tasks of the Development of the Russian Federation for the Period until 2024", certain provisions of the Civil Code of the Russian Federation were considered. The Johannesburg Declaration of the Tenth BRICS Summit, the Fortaleza BRICS Declaration, the Main Directions for the Implementation of the Digital Agenda of the Eurasian Economic Union until 2025 were analyzed.

Doctrinal sources are represented by scientific publications of domestic jurists and economists, including: Inshakova A.O., Kalinina A.E., Goncharov A.I., Deryugina T. V. and etc.

The development of the content of this article based on the materialistic worldview and the universal scientific method of historical materialism. The general scientific methods of cognition are applied: the dialectic, hypothetical-deductive method, generalization, induction and deduction, analysis and synthesis, empirical description. Particular scientific methods were also used in the study: normative-dogmatic, comparative-legal, structural-functional, etc.

3 Results

The need for accelerated formation of the regulatory framework for digitalization of foreign economic activity in the national law-orders of the BRICS and the EAEU

The Johannesburg Declaration of the Tenth BRICS Summit of July 26, 2018 in paragraphs 56, 60, 73, 83 as the targets of the BRICS activities establishes the need to develop effective strategies to reduce the digital divide, including by providing support to people in the sphere of education and through the use of new technologies, as well as ensuring the availability of effective mechanisms for transferring relevant technologies. (Johannesburg Declaration. 10 BRICS Summit, 26.07.2018). According to paragraph 73 of this declaration, the BRICS countries welcome the signing of a Memorandum of understanding in the field of joint research on distributed registry and blockchain technologies in the context of the development of the digital economy. The said document was signed on July 26, 2018 by Vnesheconombank, the Brazilian Bank for Economic and Social Development BNDES, the Export-Import Bank of India, the State Development Bank of China and the Development Bank of South Africa.

Within the EAEU, the situation with the development of digital technologies looks even more revolutionary; the question is being raised about the formation of a single digital industrial space. The main directions of the implementation of the EAEU Digital Agenda until 2025 establish the digital transformation of the markets for goods, services, capital and labor, as a means of creating a single digital industrial space. During this transformation, the business environment is expected to reduce costs, reduce the number of intermediaries, and reduce the barriers that exist when entering new markets. (<http://www.eurasiancommission.org/>).

Trade and investment are named as the first priority area of cooperation of BRICS countries. It directly follows from the Fortaleza Declaration, according to which states are ready to explore new areas for full cooperation and closer economic partnerships in order to promote the development of market relations, financial integration, infrastructural interconnection, as well as interpersonal contacts. (Fortaleza BRICS Declaration 2014). Practice confirms that the above activities are implemented in reality. According to the comprehensive statistics we have at the end of 2018, Russia's trade with other BRICS participants is growing and in monetary terms is about 110 billion US dollars. The same trend exists within the framework of the Eurasian Economic

Union. According to the results of the first half of 2018, the volume of mutual trade between the participating countries increased by 12% and reached 44 billion US dollars, and foreign trade - by 21% - 548 billion US dollars (Shustov 2018).

Until recently, there were no regulatory acts of the above integration associations to regulate the digital support of foreign trade deals of business entities of the participating countries. At the same time, the digitalization of electronic registration of deals is reflected in international legal acts. So, paragraph 5 of INCOTERMS 2010 provides for the possibility of electronic communication when signing contracts. Moreover, for electronic means of communication (EDI messages) the same effect is recognized as for paper messages, if the parties have agreed on it or if it is accepted. The term “electronic record or procedure” is fixed as one of the terms, which means a set of information consisting of one or more electronic messages and, when applicable, functionally executing the same function as a paper document.

Russian national legislation, being influenced by all the above international acts, is also tuned to the wave of digitalization of economic activity. Currently, outdated requirements of the legislation on written signing of deals, the need for paper fastening of all stages of counterparty interaction also create obstacles to the application of a multi-subject jurisdictional blockchain (Kalinina et al. 2019). Consequently, the reform of the legislation in the framework of the National program “Digital Economy of Russia” and the Presidential Decree of May 7, 2018 No. 204 “On National Targets and Strategic Tasks of the Development of the Russian Federation for the Period until 2024” - these are the main vectors for the further thoughtful and painstaking work of lawmakers (Presidential Decree of May 7, 2018 No. 204). In the process of implementing the normative segment of the digital economy in the national law-order, a great deal of work remains to be done to eliminate the contradictions of the new norms and existing legal acts (Deryugina and Borisova 2018).

Foreign economic deals with complex goods are characterized by multi-stage and risks at each of the implemented stages. Deals are inevitably associated with the transportation of goods, which, in turn, entails difficulties and possible conflicts regarding the violated rights of the parties. An additional challenge is manifold options for implementation international freight transportation. It can be carried out by direct and indirect transport, by various means of transport, each of which has its own specifics of legal regulation. In addition, international transportation is governed by conflict of laws rules. The dispatch of goods is governed by the laws of the state of departure, the issuance and receipt of goods is subject to the law of the territory to which it was delivered. For other contentious issues, the law applies of the state of carrier or place of conflict resolution. However, despite the existence of international rules that may help in permission litigation with a foreign element, such as the Vienna Convention of 1980, the Principles of international commercial contracts, approved by UNIDROIT, INCOTERMS, etc., parties to the contracts rarely include references to them in the documents, which causes additional difficulties in case of conflict. With the complexity of the structure of business relations interdependent become not only exporters, importers and transit countries, the degree of reliability of its intermediaries is also important, as foreign trade deals require banking, transport, juridical support. The main source of disputes, but at the same time, means to prevent possible conflicts are the control and monitoring of the movement of goods, marks on its quality, quantity

and assortment. It aspect is aggravated by the spatial remoteness of counterparties. The party that received the goods of inadequate quality, in a smaller quantity established by the contract or in the uncoordinated assortment, cannot promptly act on the violator. The injured party learns about improper fulfillment or non-fulfillment of the contract only at the time of receipt of the goods or if the contractor is late in time. It leads to long-term and costly litigation. Some types of trade and delivery of goods are generally difficult to control and track, for example, the oil and gas sector of the economy, the specific delivery method of which is due to the threat of transportation disruption (a pipeline passing through several countries at once).

To neutralize these problems should be applied digital legally significant fixation of the stages of foreign economic deals. Modernization of foreign economic deals will be required, consisting in a combination of the electronic-digital form of agreements between the parties with the marking of complex goods with embedded digital microchips.

Digital legally significant fixation of the stages of foreign economic deals with complex goods

Export and import supplies of cars, aircraft and ships have specific features of both objects and subjects of such contracts. Transport vehicles are often supply from the manufacturer, that is, its go through several stages - from production and assembly of parts to direct delivery to the customer. In their composition, as objects of civil rights, they are complex things, that is, they consist of various things connected in a certain way, which involves their use for general purpose. The Civil Code of the Russian Federation establishes, that deals signed in relation to complex things, apply to all parts (things) that are part of its, since the terms of the deal do not provide otherwise (Inshakova et al. 2017).

In 2019, for example, the automobile corporation Mercedes-Benz launched a prototype blockchain system, in the creation of which Daimler AG (internal services of the corporation) and Icertis (the platform for managing corporate contracts from the USA) participated. The system is based on the Icertis Blockchain Framework and uses smart-contracts that form a transparent distributed registry. This approach will help vendors comply with standards, established by Mercedes-Benz and simplifying the automaker's complex supply chain.

Mercedes-Benz's business is dominated by long supply chains that are difficult to manage and difficult to control. The blockchain stores procurement documents and contracts. The company considered that this would transparently transform the transfer of contracts throughout the supply chain. The prototype of the new system is based on the fact, that a subcontractor's failure to fulfill contractual obligations at any stage is reflected in the blockchain. Currently, the blockchain is used by the company in relation to several selected suppliers as an experiment, and while the company is developing an information base on the operation of the system and its prospects. Blockchain allows all partners in the supply chain to seamlessly track raw materials and components. In addition, this system can help in preventing the entry into the supply of fake auto parts through identification for each hardware and assigning time limits to its income. Tags on individual parts can also help the transport vehicle's owner know, which parts have been changed, and service centres can determine part service life.

Other automobile companies, for example, BMW, Porsche, began to introduce blockchain into its production. GM, BMW, Renault and Ford have created the MOBI blockchain consortium, which is exploring the possibilities of using a distributed registry in the automobile manufacturing. The system is planned to be used in various ways: in payments, data collection, deliveries, finance, etc. In our opinion, the technology of distributed registries (blockchain-interaction) is the most promising and effective for it (Kalinina et al. 2019).

Also it is noteworthy that in 2019 the Ministry of Transport of the Russian Federation decided to introduce a blockchain platform in Russian marine transportation. The Maersk platform used provides for the creation of a network of logistics, trading companies, ports and government organs. The Russian Customs Service noted that the platform can be introduced, but only after changes in the legislation, since at the moment there are no relevant legal norms.

To ensure ownership rights and quality of goods, foreign colleagues suggest using blockchain and cryptography in combination to create hardware-based digital identification of all connected physical objects. Communication and transactions between devices are autonomous and secure thanks to the blockchain. A crypto chip with a high degree of security allows each device to become a block-chain. The chip is proposed to be manufactured in the form of an NFC non-removable sticky tag (short-range wireless data transfer technology), and the Android application is used to execute a blockchain transaction when registering unique chip's information. (Reyna et al. 2018).

Near field communication or "communication near field" ("near contactless communication") is a technology for wireless data transmission, operating in a small radius and providing data exchange between devices that are at a distance of no more than four centimetres. This technology is a simple extension of the contactless card standard (ISO 14443) and combines smart-card interface and reader into a single device. NFC is primarily intended for use in digital mobile devices. So, confirmation of the location of the cargo at a certain point of its passage is possible only in direct contact with the microchip, which becomes an integral part of the cargo. Scanning the unique data, contained in the chip allows you to identify the product and establish its integrity. Without data exchange, it is impossible to make changes to the distributed registry, which ensures the reliability of the system.

The application of such an algorithm is possible in Russia. Marking complex goods with microchips will allow for customs clearance of goods transported through customs in mode continuous electronic digital registration. This mode allows you to track the movement of goods, marked with microchips, namely, the passage of certain electronic checkpoints by it, allows you to record legally significant data in the distributed registry. The latter, in turn, saves and provides the necessary information about the movement, quantity and quality of goods on deals to interested parties, who have access to this register.

It should be noted, that the basis of this cargo movement registration system is an electronic-digital smart-contract, which is an encoded sequence of established actions and includes in its program the crypto-codes of those microchips that mark the goods for this deal. Thus, the smart-contract not only streamlines the actions of the parties to the contract, but also executes the preventive function of a protective, public law and prophylactic nature, helping to reduce the number of potentially conflict situations

between the parties. Particularly problematic in the sphere of international trade are the transportation of complex goods - cars, aircraft and ships, due to the complex structure of such things. Transport vehicles consist of many parts, both external (doors, trunk, windows) and internal (engine mechanism). The internal parts are worse controlled in the supply process, while making up the basis for the direct use of cars, aircraft and ships - the movement of goods and people. Therefore, the system of electronic registration of the stages of assembly and supply of just such goods is especially important for the development of foreign trade relations.

The proposed digital legally significant fixation of the stages of foreign economic deals in electronic systems of distributed registers will allow you to control all the stages, that each complex product goes through, starting with the concentration of components and spare parts for it, ending with the exit from the factory conveyor. Further, at each loading and unloading, in warehouses and at the point receiving, moreover, with a continuous Internet presence and under the control of the buyer. In the database of the registry should be recorded legally significant actions of the parties, when loading and unloading and receiving goods, as well as settlements under the contract. For example, the moment of shipment of goods is recorded and transmitted electronically to a database, from where the buyer can get information about the time of dispatch, quantity and quality of the goods. In the same way, the fact of crossing each customs border is monitored. For enhanced control, it is advisable to duplicate data from counterparty servers in the systems of controlling government organs. The delivered cargo is checked for compliance with the requirements and terms of the contract for microchips installed on each discrete item of goods. Confirmation of receipt of goods is transmitted to the register, which serves as the basis for the fulfillment of a counter obligation to pay for goods. This method of controlling the movement of goods not only facilitates the interaction of the parties to the contract, but also serves public law purposes: tax, customs, etc.

When implementing foreign trade relations, business entities must reach mutual agreement regarding those legal facts that are subject to registration in a distributed registry. These facts can be anything: the quantity and quality of the goods, the place and time of shipment, the procedure for transporting the goods, the option of the customs regime and the procedure for customs clearance of goods. To participate, the parties will need to open their personal account on Internet portal gosuslugi.ru and express consent to the processing of data by the system. In practice, goods should be tracked through an electronic microchip, which must be scanned at technical departments of ports, customs points, etc. The receipt of a signal from a product that has reached a certain point becomes the basis for the automatic debiting of the buyer's money from the letter of credit at the bank in the part established by the contract. And the more detailed the deal will be differentiated into stages, the more facts will be recorded in a distributed registry, the more weighty the evidence base will be, the less will be the "space" for conflicts. Registered fact, recognized as relevant to the contract and recognized by both parties to it, no longer requires additional, re-proof.

The step-by-step registration algorithm for the stages of cargo movement will also provide confirmation of the authority of the person, responsible for it. Verification of the authority of this person will consist in electronic-digital registration of participants in foreign trade relations. This will allow, especially taking into account the

participation of a foreign element, to exclude illegal and dishonest actions already at the stage of access to the deal's database. Such registration will increase the level of trust of the parties to the contract, which is very important in modern foreign trade relations and directly affects the effectiveness of foreign economic activity. Any information about the parties, that they consider necessary to ensure their own security, can be entered into the database to avoid contentious situations in the future or simplify its resolution through an out-of-court procedure.

4 Conclusion

The authors propose an algorithm for combining digital registration of legally significant stages of foreign trade (export and (or) import) deals with complex goods (cars, transport vehicles, airplanes, sea, river vessels) with tagging of its goods with microchips and remote connection of these microchips with smart-contracts, drawn up for such deals. It is proved, that modern foreign trade relations will receive a powerful positive impulse due to the deep involvement of buyers in the purchase and sale of complex goods through a detailed preliminary Internet-selection of various options for picking complex goods. Along with it, also due to the involvement of buyers in the relationship of continuous Internet-control of the movement of goods, starting from the initial assembly on the factory conveyor, ending with its supply to the final address of the deal.

Digital blockchain registration of legally significant stages of complex good's export-import supplies by business entities of the EAEU and BRICS jurisdictions is quite feasible in the current condition of computer funds and software. However, the legislation in this sphere of foreign economic activity requires basic formation and development, both in the national law-order itself and in integration associations too. The algorithm of integration into a single complex of special legal measures and digital technologies is quite viable, which ensures a conflict-free and mutually beneficial for the parties purchase and sale and subsequent supply of complex goods to customers. The algorithm provides for continuous customer's online control of the selected goods, starting from the stage of forming the components for its goods and assembling it on the factory conveyor, ending with supply to the address according to the terms of the deal. The proposed legal-digital algorithm should be tested on foreign trade deals, implemented by business entities of the EAEU and BRICS jurisdictions. Modern innovative progress will play the role of a positive impulse for the accelerated development and legal consolidation of a much-needed regulatory framework for expanding and intensifying export-import supplies of complex goods. In the neo-industrial era, the balance of supply and demand, economic growth directly depend on the technological and information and communication tools for the implementation of public relations in this sphere of foreign economic activity.



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State Information Systems as a Tool to Combat Economic Crimes

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Abstract. Working on the article the authors aimed at analyzing the status of economic crimes and measures to combat them using information systems created by state bodies controlling the sphere of the economy. It is noted that crimes in the economic sphere are latent in nature, difficult to detect, and their investigation requires solving a wide range of legal, organizational and tactical tasks. The purpose of the research is to study the possibility of using state information systems for identifying, investigating and preventing crimes committed in the economic sphere. The regulatory and supervisory authorities of the Russian Federation have created a wide network of information systems that reflect the statistical, organizational, legal, financial and economic indicators of the activities of economic entities. Taking the above mentioned into account, the state information systems are becoming an important source of forensic information in the identification, investigation and prevention of economic crimes, informing and supplying it with artificial intelligence technologies for analysis.

Keywords: State information systems · Economic crimes · Crime detection · Crime investigation · Crime prevention · Regulatory authorities

JEL-kod: K49

1 Methods

The methodological basis of the study was a set of methods of scientific knowledge, among which the dialectical method occupies a leading place. Besides, general scientific (analysis, synthesis, abstraction, concretization, generalization) and private scientific (comparative legal, technical and legal) methods are applied in the article.

2 Introduction

The economic interests of business entities are regulated by a wide range of branches of law: economic, labor, tax, civil, financial, customs and others. This is not a complete list of legal knowledge, what the economic entity should guide in its activities. The list of industries has expanded thanks to the introduction of digital technologies in the

economic sector. This led to changes in the strategy of the business entity. Personnel, production, organizational and managerial, financial, marketing, and competitive approaches to business have changed. Due to the Internet, goods and services have become available to a wider circle of consumers in different countries.

Qualitative changes have occurred in the relationship between the state and entrepreneurs. Information and telecommunication technologies have become an instrument of state remote control and supervision of business. Internet technologies made it possible to keep automated records of legal entities, individual entrepreneurs and self-employed citizens; to control the timeliness and reliability of the income records submitted by them; stages of transporting goods from producer to consumer and much more. So business entities are required to comply provisions of information law.

The subject of the economy, pursuing the goal of systematic profit making, should not use illegal means and methods in the course of its entrepreneurial activity. The prohibition of criminal forms of activity of an economic entity is determined by the Code of Administrative offences of the Russian Federation (hereinafter referred to as the Administrative Code of the Russian Federation) and the Criminal Code of the Russian Federation. Chapter 14 of the Administrative Code encloses more than 80 administrative offenses in the field of business and the activities of self-regulatory organizations. In the Criminal Code of the Russian Federation in chapter 22, there are more than 50 kinds of *corpus delicti* in the field of economic activity. The number of acts constituting administrative offenses and criminal offenses indicates the diversity of forms of criminal behavior of entities engaged in entrepreneurial activity. So, 109463 economic crimes were identified in Russia in 2018, the share of which in the total number of registered crimes was 5.5% (in total, 1 991 532 crimes were registered in 2018) (The state of crime in Russia for January–December 2018).

The implementation of state programs in the Russian Federation for the control and supervision of economic entities in the format of digital technologies allows to draw attention to some aspects of the fight against economic crimes. Currently, about a dozen new information systems appear annually at the federal level alone, which are beginning to be regarded as an accessory legal instrument for regulating public relations (Amelin 2016). It means the use of state information systems, which concentrate information about business entities and their activities for detecting, investigating and preventing crimes in the economic sphere. Therefore, the fight against crime in the economic sphere largely depends on the proper use of Internet resources by law enforcement and other regulatory authorities.

2.1 The Use of State Information Systems in Detecting Crimes in the Field of Economic Activity

The detection of economic crimes is an important task for the law enforcement and regulatory authorities of the state, as well as a necessary measure to ensure national security in the economic sphere. The complexity of this type of activity for the state lies in the fact that the constituent elements of economic crime take an implicit (latent) form. It is possible to identify these elements, as a rule, due to the methods of documentary, accounting and economic analysis.

A wide range of government bodies (the Federal Tax Service, the Central Bank of the Russian Federation, the Federal Antimonopoly Service, the Pension Fund of the Russian Federation, the Ministry of Internal Affairs of the Russian Federation, the Investigative Committee of the Russian Federation, etc.) and the Russian Federation representatives of self-regulatory organizations (trustee in bankruptcy, auditors, inspectors, etc.). The result of such control is the formation of various registers, information systems or databases containing information about business entities, their activities, along with violations of legislation governing the business sector. An example of such information systems is the Register of dishonest suppliers (contractors, executors), the Register of dishonest contracting organizations, the Register of persons held administratively liable for violation of antitrust legislation, the Register of searched persons for enforcement proceedings, information about persons whose impossibility of participation in the organization is confirmed in a judicial proceeding and others.

Currently, there is a problem of potential threats to the security of the constitutional system of the Russian Federation. They cannot be eliminated using the mechanisms of criminal law regulation of relations in public life, in the scope of protection of the foundations of statehood (Muraev and Solovyeva 2018).

The practice of combating economic crimes indicates that typical causes for initiating criminal cases are the results of the activities of the administration, control, and law enforcement agencies themselves when they perform scheduled and unscheduled inspections of the financial and economic activities of organizations, institutions, and enterprises. While the content of state information systems showing indicators of economic activity of individuals and legal entities, is not studied for this purpose by the concerned bodies at all, or to a limited extend only at the level of the supervisory agency.

It is possible to increase the efficiency of the use of departmental state information systems in identifying constituent elements of economic crimes due to their integration into the Unified National System of Economic Information. The foundation of the Unified National System can become possible within the framework of the implementation of the national programs “Digital Economy of the Russian Federation” and “Digital Public Administration” (Passport of the federal project 2019). So, one of the tasks of the State Automated Information System “Management” is to monitor and analyze the processes occurring in the real sector of the economy, financial, banking and social spheres, as well as the socio-economic development of the constituent entities of the Russian Federation (Decree of the Government of the Russian Federation 2009). For a high-quality solution of the problems of forecasting and evaluating the activities of small, medium and large enterprises, artificial intellectual systems should be integrated in the Unified National System of Economic Information. The functioning of the Unified National System of Economic Information in such mode will allow to analyze large volumes of data and identify markers of criminal behavior of citizens, individual entrepreneurs and legal entities.

2.2 The Use of State Information Systems in the Investigation of Crimes in the Field of Economic Activity

Typical sources of information on economic crimes are financial, organizational, administrative, operational, technical, technological and other documentation which reflects the circumstances of the commission of illegal actions by individual entrepreneurs and legal entities, or allows you to understand production processes, the violation of which subsequently led to a criminal result. According to L.V. Bertovsky in investigating crimes related to professional activities in the field of economics the regulatory model of the activity being checked should be clarified according to the regulatory documentation (State All-Union Standards, Technical Specifications, Construction Directions and Rules etc.) (Bertovsky 2016).

A significant part of such documentation is concentrated in state bodies administering and supervising the activities of economic entities. Therefore, at the earliest stages of the investigation of economic crimes, it is required to search and analyze such sources of information. And taking into account the foundation of the Unified National System of Economic Information based on information and telecommunication technologies, this process becomes less labour-intensive.

The type of information sought during the investigation of the crime and the Internet resource for its placement depend on the content of the norm of the Criminal Code of the Russian Federation. For example, when investigating illegal banking activities (Article 172 of the Criminal Code of the Russian Federation), it is required to establish whether banking activities are carried out by a legal entity without registration or special permission (license). Information on the state registration of legal entities, individual entrepreneurs, peasant (farmer) households is available on the official website of the Federal Tax Service of Russia. A list of credit organizations registered in the Russian Federation and granted a banking license can be found on the official website of the Central Bank of Russia.

When investigating an abuse in the field of procurement of goods, works, services to meet state or municipal needs (Article 200.4 of the Criminal Code of the Russian Federation), it is required to study the official website of the Unified Information System in the field of procurement containing: procurement plans and schedules; information on the implementation of procurement plans and schedules, on terms, on prohibitions and on restrictions on the admission of goods originating from a foreign state or a group of foreign states, work, services, respectively, performed or provided by foreign persons; a list of foreign states, groups of foreign states the Russian Federation has concluded international treaties on the mutual application of the national regime in procurement with, as well as the conditions for applying such a national regime; information on the execution of contracts; register of contracts concluded by customers; Unified register of procurement participants; register of mala fide suppliers (contractors), performers; register of complaints, scheduled and unscheduled inspections, their results and issued instructions; results of procurement monitoring, procurement audit, as well as procurement monitoring and others (Federal Law 2013).

State information resources can help to find out the owners of the company and their shares in the authorized capital, to study the structure of the company and to trace the entire chain of owners. In addition to Russian owners, the structure may include

foreign beneficiaries. Therefore, the resources indicate the share of their ownership and brief information about each company or foreign citizen.

Information obtained from the resources of state bodies should be investigated in terms of its nature, scope, content, sufficiency and degree of significance for the case under investigation. The Federal Law of February 9, 2009 “On ensuring access to information on the activities of state bodies and local self-government bodies” establishes the principles of providing access to information on the activities of state bodies and local self-government bodies - publicity, accessibility and reliability of information on the activities of state bodies and local governments, as well as the timeliness of its provision. Therefore, the information posted on the official websites of state bodies and local authorities in the form of open registers or databases can be used in the course of initiating a criminal case and its investigation. At the same time, there is no need to verify the accuracy of the information received from the site by sending written requests to a state body or local government.

When employing information from state information resources, the legal ways, means and methods of obtaining it must be observed for its subsequent correct interpretation during the investigation and trial.

It is possible to put the information obtained from the Web resources of state administration, supervision and statistics bodies into the file of criminal investigation by inspecting the official website. The results of the inspection are to be legalized in a record specifying the site URL; the name of the section of the site or registry where the necessary information is located; actions for downloading an electronic file with the required information (if the IP resource provides such an opportunity); date and time of getting the necessary information; full content of the information sought. As applications to the official record, it is advisable to print out downloaded electronic files, or take screenshots of a computer screen with the image of the information sought.

2.3 The Use of State Information Systems in the Prevention of Crimes in the Field of Economic Activity

The national security strategy of the Russian Federation defines national priorities, which include state and public security, including the prevention of crimes. Accordingly, the fight against economic crimes is an urgent and priority area of activity for the entire state and law enforcement agencies, in particular, which must solve the tasks of preventing and eliminating threats related to economic and corruption crime (Truntsevsky and Ischuk 2019).

A number of researchers note that “it is necessary to improve the awareness of citizens and employees of legal entities about the rules and procedures for transactions and other business transactions in order to prevent their victimity. The effectiveness of the regulatory bodies, and therefore its generally preventive value, depends on measures to put into practice more advanced control methods, including automated systems for processing various declarations, vesting them the appropriate powers to prevent economic crimes, their interaction, well-established information exchange, coordination of their activities with each other, with state authorities and local authorities, law enforcement agencies, public organizations in key areas of preventing economic crime” (Larichev and Zhukovskaya 2015).

The above-mentioned results in posting materials and databases that contain information aimed at preventing economic crimes on the websites of state bodies. For example, information on methods of committing fraud, counterfeiting and measures to prevent them is provided on the official websites of territorial bodies of internal affairs in the section “For Citizens”; the responsibility of citizens for the use of their personal data when registering one-day companies and others is explained (Crime Prevention: Official site of the Main Directorate of the Ministry of Internal Affairs of Russia for the Novosibirsk Region).

Investigative units of the Investigative Committee for the constituent entities of the Russian Federation on their websites bring to the attention of citizens positive examples of investigating crimes in the field of counteracting the legalization (laundering) of proceeds from crime; analyze the practice of investigative departments in making submissions on the elimination of circumstances that contributed to the commission of the crime and the effectiveness of their consideration, etc.

Internet resources of other state institutions are also aimed at preventing crime in the economic sphere. For example, the Central Bank of Russia places on its website reference and informational materials on combating money laundering and the financing of terrorism; cash fraud; counterfeiting; counteracting bankruptcy of credit organizations; countering the unlawful use of insider information and market manipulation, etc.

The official website of the Federal Tax Service contains the section “Business Risks: Test Yourself and the Counterparty”, as well as the Transparent Business service, which provide comprehensive information about the taxpayer - organization. Using the services of the Federal Tax Service of Russia, the user can quickly receive information:

- from the Unified State Register of Legal Entities;
- from the Register of Disqualified Persons;
- from the Unified Register of small and medium-sized enterprises;
- from the State Register of accredited branches, representative offices of foreign legal entities;
- from the Unified State Register of Taxpayers about foreign organizations;
- about the multiple participation of an individual in organizations;
- about the addresses indicated during state registration as a location by several legal entities, etc.

In order to prevent violations in the production and turnover of ethyl alcohol, alcohol and alcohol-containing products, the official website of the Federal Service for the Regulation of the Alcohol Market publishes reviews of the practice of control and supervision activities of the Federal Service for the Regulation of the Alcohol Market, which analyzes the most frequently committed violations of mandatory requirements identified during inspections and administrative investigations.

In general, it should be noted that state bodies realizing control and supervision functions on their official websites pay attention to the prevention of offenses in the

areas of financial and economic activity regulated by them by posting normative legal acts regulating legal relations in the corresponding field; reviews of identified violations; registers of unscrupulous participants in relations and so on.

3 Results

The result of the study was the conclusion that the use of state information systems in the fight against economic crimes is only gaining its popularity among regulatory and supervisory authorities. Created information systems need to be generalized. The authors proposed the creation of a unified state system of economic large volumes of economic data to increase the effectiveness of the fight against crime in the economic sphere.

4 Conclusion

In general, there is a positive tendency to use state information systems in the fight against crimes in the economic sphere. However, it is necessary to intensify the work on equipping digital systems with intelligent agents for accounting and control over the activities of the founders, heads and leading managers of companies in order to:

- tracking the overflow of contingent managing “fly-by-night firms” and “sleeping firms”;
- facilitating the identification of relationships between firms, possible ways of the flow of funds;
- compiling a list of individuals to regularly fill out income declarations (since the activities of the top management of one-day firms are obviously associated with significant undeclared income) (Alexandrov 2017).

In Russia, within the framework of the Digital Economy of the Russian Federation program, it is proposed to create a digital profile of citizens and legal entities in order to improve the quality of life and the conditions for doing business at the legislative level. A digital profile is a collection of information about citizens and legal entities contained in the information systems of state bodies, local governments and organizations that exercise separate public powers in accordance with federal laws, as well as in a unified system of identification and authentication. The digital profile infrastructure is a set of information systems in a single identification and authentication system that provides access to the digital profile (Draft Federal Law 2019). The infrastructure of the digital profile will allow interested parties to get quick access to the information about citizens, legal entities and individual entrepreneurs in the “single electronic window” mode. We believe that the relevance and reliability of the information posted in the digital profile will be another tool to reduce the level of criminal forms of behavior of individuals and legal entities in the economic sphere, as well as a source of evidence in case of committing crimes in the economic sphere.

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Competitiveness of Social-and-Ecological Entrepreneurship in Regional Markets: Prospects for the Legalization of a Mission-Driven Corporate-Legal Model

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Abstract. **Purpose of the study** is to substantiate the possibility of implementing the foreign experience of competitive mission-driven corporations in the design of the Russian socio-environmental corporate-legal model. **Methodology** is based on the development of the key idea that “environmental entrepreneurship” is part of a broader social-legal phenomenon - social entrepreneurship, and therefore the goal of environmental-oriented entrepreneurial activity should not be profit-making, but a positive corporate social and environmental impact on society and the environment. Empirical (comparative legal, description, interpretation) and theoretical (formal and dialectical logic) research methods became the most popular. **Results:** 1. We have identified a tendency that indicates the transformation of ideas about values that affect the effectiveness of managerial decisions. It becomes profitable for an entrepreneur to be socially responsible and the dominant shareholder-oriented legal model of corporate governance, aimed at increasing shareholder value, is gradually transforming into a mission-driven corporate system aimed at solving social and environmental problems. 2. We justified the possibility of implementing the foreign experience of competitive corporations in the construction of the Russian socio-environmental corporate-legal model by legalizing the mission-driven legal form of a legal entity (by analogy with the American “Benefit corporation”) along with an independent, third-party, transparent mechanism, expert assessment of social and environmental impact. Integration of the mission into the corporate governance model will enhance regional competitiveness. **Recommendations:** A technical solution to this proposal is possible if the federal law “On Joint-Stock Companies” is amended. When making amendments, the inclusion of the “mission of the driven joint-stock company” in the system of business companies as a form of business entity should be taken into account.

Keywords: Social entrepreneurship · Business law · Corporate law

JEL: O350 · L51

1 Methodology

The methodology of this study is based on the development of the key idea that “environmental entrepreneurship” is a part of a broader social phenomenon – “social entrepreneurship” (Barkov and Grishina 2019), that allows us to adjust the application of the term by proposing a more precise one - “socio-environmental entrepreneurship”. In accordance with this methodological approach, the goal of environmental-oriented entrepreneurial activity should primarily be a positive corporate social and environmental impact on society and the environment, rather than an increase in the shareholder value of a corporation, when profit is considered as a means of fulfilling the corporation’s mission to address social and environmental issues. It is assumed that the methodological potential (ideas, principles) of social entrepreneurship, as a tool for studying social processes and changes, should be in demand when substantiating a competitive legal model of Russian socio-environmental entrepreneurship (Barkov and Grishina 2018).

The empirical basis of the study is the legislative experience of foreign countries that have embarked on a sustainable development path, where the evolution of environmental entrepreneurship legislation can be traced in a single connection with the legalization of social entrepreneurship (Barkov and Grishina 2018), as well as corporate governance practice oriented, environmentally responsible mission corporations. In accordance with the purpose of the study, the most used were empirical (comparative legal, description, interpretation) and theoretical (formal and dialectical logic) research methods.

2 Introduction

At the moment, the development of environmental entrepreneurship is considered as one of the most important factors for sustainable development of the regions, contributing to the transition to a rational model of environmental management and increases its competitiveness. It is believed that environmental-oriented corporations play a leading role in enhancing regional competitiveness in the context of rapidly digitalizing economies (Tarakanov et al. 2019), relying on their potentially innovative nature, characteristic of high-tech environmental entrepreneurs who have achieved the greatest success in world practice (Vershina 2010; Portnov 2012; Yashalova 2012). At the same time, it seems that the successes of world leaders among innovative companies are ensured not only by their technological potential, but also by their innovative mission-driven business model and corporate governance, the experience of which can be claimed as an actual empirical base of scientific research that helps substantiate the Russian competitive social environmental corporate model.

Results: substantiation of the possibility of implementing the foreign experience of competitive mission-driven corporations in the Russian socio-environmental corporate-legal model development.

Competitive Advantages Mission-Driven Corporate Governance

One of the leaders among the mission-driven eco-responsible corporations was declared American diversified company “Dow Chemical Company”, which occupies

32 place in the ranking of “Top 50” innovative companies in the world. Corporations with a turnover of \$ 60 billion, produces household and industrial chemicals used in pharmaceuticals, agriculture, military products, food industry, construction, science and technology. Among the determining factors of the competitive advantages of the chemical company “Dow”, one of the first places is occupied by the corporate mission statement, organically integrated into an innovative, environmentally-friendly business. The company sees its mission as a solution to global problems: the development of renewable energy, the purification of drinking water, energy conservation, the impact on the melting of glaciers and others. In an effort to lead the transition from a linear to a cyclical model of a sustainable economy, “Dow” successfully implements the Renuva™ program in 2019, a key initiative of which is an innovative project aimed at processing polyurethane foam from expired mattresses in order to prevent them from falling into landfills.

It seems that the given example of a successful innovative, environmentally-oriented socially responsible corporation indicates the transformation of ideas about values that affect the effectiveness of management decisions. In the context of the digitalization of the economy, when success in a competitive confrontation depends on intangible factors and investments in human capital, one of them is a corporate mission statement, which changes the emphasis in focusing on entrepreneurial activity. It becomes profitable for the entrepreneur to be socially responsible and earlier dominated outdated shareholder-oriented legal model of corporate governance, aimed at increasing shareholder value, is gradually turning into a mission-driven corporate model aimed at solving social and environmental problems. At the same time, the advantage of mission-driven corporate governance is the ability to ensure the interests of both a wide range of stakeholders and shareholders.

Modern ideas transformation about the concept of corporate social responsibility. The impact of the concept on the competitiveness of an eco-oriented corporation.

However, experts point out that the declaration of adoption of social or environmental mission and adherence to the principles of corporate social responsibility (CSR) (Minchichova 2016) is often not able to provide competitive advantages of the corporations and needs to be improved. According to Wayne Visser, the modern concept of CSR, developed in accordance with the recommendations of the OECD, as the basis of international management standards (which is designated by him as CSR version 1.0), in the financial crisis proved ineffective. In order not to fall behind in the competitive confrontation should refocus the business on an updated version of corporate social responsibility (CSR 2.0), the disclosure of which is devoted to the monograph “the Age of responsibility: CSR 2.0 and the new DNA of business” (Visser 2011).

The author uses the metaphor “new business DNA” to explain the content of CSR 2.0, thereby explaining that the transformation consists in changing the approach to the basics of responsibility. There are four bases in the author’s concept, and there are also four nitrogenous bases in biological DNA: “creation of social value, effective corporate governance, contribution to the development of society and environmental integrity”. Moreover, the social value of business is not in enriching shareholders, but in serving a

mission aimed at solving social and environmental society problems, and profit should be considered as a means of achieving the goal.

Visser's concept of "CSR 2.0" is a guide to reorienting the goal of entrepreneurship towards serving the mission, changing the corporate governance model based on CSR-2.0. Rethinking values allows us to conclude that following the principles of CSR 2.0 is no longer the right of the corporation, as was considered with respect to CSR 1.0, but a duty that brings the concept closer to the ideology of social and environmental entrepreneurship (Grishina 2016). In this regard, it is no coincidence that an alternative to the international standards of the ISO series, which is not capable of ensuring the competitive advantages of the corporation, appeared in the form of certification "B Corporation certification (abbr. - B Corp)" in the development of CSR theory and is recognized today as "the standard for 21- century business".

"B Corp" Certification Benefits for Eco-Friendly Corporations

The B Corporation certification (also known as the B Lab) is a private initiative for assessing the social and environmental impact of corporations that has existed and has been conducted since 2007 by the American non-profit rating agency "B-Lab". The authority of the "B-Lab" is now so strong that the agency's divisions are located not only in all US states, but also in Australia, Afghanistan, Canada, New Zealand, South Africa, most countries of Europe and Latin America. The "B-Lab certification" certificate issued by the rating agency is a "quality mark" of the manufactured product that meets international standards, the brand of "social utility" of the corporation, which allows it to deservedly be called "Certified B Corporations" - a certified socially useful corporation.

The "B Lab" agency assesses the degree of positive social and environmental impact of a potential corporation using the "B Impact Assessment tool", which is a list of questions and answers to them. The assessment covers all the activities of the company and measures the positive impact on a two hundred-point scale: corporate governance issues, wages and benefits policies, social and environmental benefits of goods, relationships with stakeholders, and environmental impact (Kitsai 2015).

"B Corp certification" has advantages over ISO and they consist in the fact that it does not declare its intentions to improve its environmental impact, but actually measures all social and environmental indicators of the corporation, going beyond the scope of product certification. With the help of certification it is evaluated how successful the mission-driven business model affects all stakeholders. "B Corp" confirms that the social and environmental business meets high standards of proven performance at all stages of the production cycle. This certification guarantees the products produced by the environmentally-friendly "Certified B Corporations" environmental safety, quality, social value and competitiveness. As of July 2019, there are already 2993 "Certified B Corporations" that have embarked on sustainable social and environmental development in 150 sectors of the economy in 64 countries of the world.

The "B Corp certification" as well as ISO standardization is voluntary. However, if the entrepreneur chooses the legal form "Benefit corporation" (abbreviated as "B corporation") that is specially designed for carrying out social and entrepreneurial activity, then the certification of "B Corp" becomes a mandatory procedure for him. At the same time, a social entrepreneur receives not only additional burdens, but, above all, benefits.

Legalization of the special legal form “Benefit corporation” intended for the implementation of social and environmental entrepreneurship.

In the context of the uncontrolled use of such epithets in corporate marketing policy as “sustainable”, “green”, “environmentally responsible,” “socially beneficial,” it is difficult for a consumer who prefers a socio-ecological brand to find a brand that uses these terms justifiably. According to a sociological services survey in the US, 68 million Americans are among potential consumers using purchasing power to support “socially-beneficial” brands (Clark and Babson 2018). At the same time, a reliable guideline that enhances the competitive advantage of the brand is an indication of the legal form - “Benefit corporation”, which the corporation must communicate in its name. The legalization of “Benefit corporation” was actively supported by the rating certification agency “B Lab”. On agency’s initiative, a model Benefit Corporation law was developed – “Model Benefit Corporation Legislation” (MBCL), on the basis of which similar laws have been adopted in 35 US states today.

French “Danone”, with an annual turnover of more than \$ 30 billion, is one of the certified corporations of “B Corp”. The company is world famous for its food social and environmental innovations, as well as a manufacturer of baby milk and medical nutrition. The mission built into Danone’s business is labeled “the desire to bring health through food to as many people as possible.” Their motto is “One planet. One health.” However, Danone, having established its subsidiary Danone North America in the USA in April 2018, was not limited to the competitive advantages provided by “B Corp” certification, but strengthened them by registering its American partner in the “Benefit Corporation” form.

The social and environmental successes of Benefit Corporation did not go unnoticed by European social entrepreneurs. In 2016, Italy became the first country in Europe to legalize the legal form of the legal entity “Societa’ Benefit” (socially useful company), designed in the likeness of the American Benefit Corporation. Not without the participation of “B Lab”, which offered services in developing a model law for the EU countries and assessing the degree of social and environmental impact of Italian corporations.

In the near future, a company with an expanded social object (with mission) will be legalized in France (French Société à objet social élargi). This analogue of Benefit Corporation, and Danone will be able to further strengthen its competitiveness in Europe. This foreign model experience of introducing into the legal field a special mission of an oriented organizational and legal form of a legal entity, along with an independent expert assessment of the degree of their social and environmental impact can also be claimed in Russia when legalizing environmental entrepreneurship.

3 Conclusions

1. We have identified a tendency that indicates the transformation of ideas because of values that affect the effectiveness of managerial decisions. In the context of the digitalization of the economy, when success in the competitive confrontation depends on intangible factors, one of them is the corporate mission, which changes emphasis in the focus of entrepreneurial activity. It becomes profitable for an

entrepreneur to be socially responsible and the dominant shareholder-oriented corporate governance model aimed at increasing shareholder value is gradually turning into a mission-driven corporate system aimed at solving social and environmental problems. At the same time, the advantage of a mission-driven corporate governance is the ability to ensure the interests of both a wide range of stakeholders and shareholders.

2. We justified the possibility of implementing the foreign experience of competitive corporations in the construction of the Russian socio-environmental corporate-legal model, by legalizing a special mission-oriented organizational form of a legal entity, similar to the American “Benefit corporation”, along with an independent peer review mechanism for social and environmental impact.

4 Recommendations

A technical solution to this proposal is possible by amending the Federal Law “On Joint-Stock Companies” and by incorporating the “mission-oriented joint-stock company” (rus. MOAO) mission into the system of business companies as varieties of a public joint-stock company. The concept of adjusting joint-stock legislation should be based on determining the following aspects legal provisions of the MOAO:

- (A) There should be focus on a mission that has a positive social and environmental impact. This idea should be reflected in the charter of the joint-stock company, when making a decision on establishing a company - by unanimous decision of shareholders, when re-registering - a qualified majority of 2/3 of the number of shareholders. At the same time, a mechanism for buying shares from those who do not want to join the MOAO of shareholders at a “fair” price should be considered. It is advisable to provide an approximate list of mission types - oriented activities in the social, environmental, scientific, ethical, cultural spheres, not related to the idea of maximizing shareholder value.
- (B) There should be a mechanism for mandatory transparent assessment of the degree of social and environmental impact by an independent, third-party, competent expert, taking into account the interests of all interested parties. The list of interested parties (employees, consumers, suppliers, local authorities, civil society, shareholders), as well as a mechanism for taking their interests into account when making decisions of the MOAO, which does not allow the dominance of any of the parties, should be clearly defined by fixing a mandatory quota in Board of Directors.
- (C) A mechanism of “transparency” in social and environmental reporting and control over the achievement of the mission should be provided. The requirements and the procedure for annual public reporting of the degree of social and environmental impact of the MOAO, as well as a mechanism for monitoring compliance and responsibility for non-compliance with the mission, should determine the competence and principles for the formation of the Mission Management Council.




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Institutional Paradigms of Foreign Trade Transformation During Digital Economy Transformation

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Abstract. The article analyses the reasons for changing the formation of foreign trade influenced by the digital economy. The authors highlight the consequences of the proliferation of ICT for catching up and developing economies. They identified the institutional paradigms of social and institutional factors that may impede the catching-up process for forming effective institutions. The article analysed the state of digitalization of the Russian economy. It allocated constraints affecting the massive introduction of digital technology in society. The authors analysed the possibilities and limitations of interaction with the EU as a strategic partner of foreign trade in the context of international economic integration. They studied the main legal documents regulating EU foreign trade relations and highlighted the existing principles of organizing the EU's internal market as well as the restrictions arising from the political will. This analysis resulted in the main paradigms for the theory of internalization in the digital economy. The article concludes that digital networks are becoming the dominant organizational form and a key feature of building the institutional environment for interaction between partner countries and multinational corporations to establish foreign trade. Institutional changes in the Russian economy occur under digitalization. It described the trends of the institutional environment in the financial sector and proposed a paradigm for regulating the digital economy during the institutional transformations.

Keywords: Digitalization · Institutional change · Internationalization · Foreign trade · Information and communication technologies · Deglobalization · Digital divide · Economic system · Digital networks · Digital platforms · Digital companies

JEL Classification: O14 · O32 · L14 · K13 · F36

1 Introduction

Digitalization has challenged the foundations of international business formation and foreign trade between countries, thus forcing them to reconsider their priorities. International business studies have long highlighted that information technology is changing the process of internationalization, emphasizing clear benefits such as lower

transaction costs, saving the user time, speed and scalability (Brouthers et al. 2016; Kotha et al. 2001; Singh and Kundu 2002). However, there is a growing awareness that digitalization not only changes information costs in the cross-border transfer of firm-specific advantages when using enterprise process automation systems but also changes the nature of the institutional environment of enterprises (Strange and Zucchella 2017). This study identifies typical institutional paradigms for implementing digitalization in the existing economic system considering the spread of information technologies.

Digitalization is the process of converting products, services, and organizational processes into Internet-compatible data packets that are created, stored, and transmitted in bits and bytes along with related information to improve marketing, sales level, and expend outreach (Chen et al. 2018; Sambamurthy et al. 2003). Mobile devices, big data analytics, cloud storage, social networks, 3D printing, additive manufacturing, artificial intelligence (AI) and machine learning are examples of technologies that drive digitalization. Research of the international business of Internet or e-commerce companies have so far focused mainly on service-intensive organizations such as Airbnb, Facebook, Amazon, etc. (Kotha et al. 2001; Singh and Kundu 2002). For example, we contrast the internationalization of Marriott hotels which expanded to 122 countries in almost 100 years (Marriott 2019) and Airbnb which penetrated 190 countries in just 8 years (Solomon 2016). These service multinational corporations relatively easily use physical assets, scalability technologies, and platforms through their specific assets with additional resources from local partners (Collinson and Narula 2014; Hennart 1993).

Innovations in information and communication technologies (ICT) have led to revolutionary changes not only on the economic front but also in the social and personal spheres of human life. Initially, ICTs have resulted from rapid technological advances in the semiconductor industry, in the telecommunications sector and, more recently, in a wide range of new services related to multimedia and the Internet (Dalum et al. 1999; Castellacci 2006). Currently, the main technological trajectories in the field of ICTs are automation and the Internet. The convergence of these technological advances could mark the beginning of a new technological paradigm (Freeman and Louça 2001).

A technological paradigm is a set of interconnected and pervasive innovations increasing productivity in many sectors of the economy (Dosi 1988; Freeman et al. 1982). A new technological paradigm based on ICT and digitalization can have soon important economic consequences for growth and wealth and lead to radical changes in the structure of production and the organization of firms, in consumption patterns and institutional settings. Innovative research has carefully examined the emergence and spread of ICTs and, in particular, has focused on the broad economic impact that these universal technologies have on various sectors of the economy (Castellacci 2006, 2008).

One of the main issues often discussed in this area concerns the impact of the spread of ICT on catching up and developing economies. Is the new ICT-based technology paradigm creating new opportunities or additional obstacles for catching-up countries? The answer to this question is the subject of significant contradictions in the literature on innovation and economic development, and it is difficult to discuss

because of the fundamental elements of uncertainty, complexity and unpredictability that arise in it. By and large, we can distinguish two different positions.

The first is a more optimistic position that emphasizes new opportunities for developing countries through the creation and dissemination of new information and communication technologies. This position is based on the old argument in the catch-up literature on “penalty of taking the lead” (Veblen 1915). Following this, developing countries can use their backward position, imitate and implement advanced foreign technologies created by leading countries and rapidly invest in new technologies. In the new era, less developed countries are less committed to the technological paradigm of mass production that prevailed in previous decades, in terms of investments in physical capital, equipment and infrastructure, so that it is easier for them to jump into a new technological system based on ICT.

The fast process of catching up with Asian NICs, Newly Industrialized Countries such as Korea, Singapore and Taiwan, over the past few decades shows that the opportunities offered by the spread of the ICT-based paradigm can be successfully exploited through the country. It is possible provided that the development strategy they pursue emphasizes the need for active investment in new technologies and related infrastructures and skills.

These successful cases, however, contrast with the general trend of increasing disparities in income and technology levels that the world economy has experienced over the past few decades (Parayil 2005; Castellacci 2011). A large group of less developed countries, mainly in Africa, Asia and Latin America, actually grew at a rather slow pace. Therefore, for many of them, the gap in technology and income widened significantly. Some countries have a very low level of technological potential, infrastructure and education and have thus difficulties to use their backward position by introducing advanced foreign technologies related to ICT.

Thus, there is a second position in development research that is less optimistic about current and future growth prospects based on innovation and imitation. This is based on several historically oriented studies on technological development, growth and catch-up (Abramovitz 1986, 1986). Historical data indicate that economic development is far from an automatic and easy process, but rather very complicated and costly. Therefore, this second position is more concerned with social and institutional factors that may impede the process of catching up. In this regard, there is an assertion that the new paradigm based on information and communication technologies creates as many new obstacles to development as the opportunities that it opens up. The process of creating new technologies and its international distribution is currently more difficult to use for catching up countries due to the higher requirements for the skills, competencies and opportunities that modern ICT-based global competition requires (Fagerberg and Godinho 2005). In particular, international technology diffusion, which was a major catch-up factor in previous decades, seems to have become more complicated and demanding over time (Fagerberg and Verspagen 2002).

2 Materials and Methods

This study uses elements of an innovative methodology of post-institutional analysis based on the interdisciplinary synthesis, which involves overcoming the mono-aspect, dichotomy and dogmatism of many concepts of orthodox neo-institutionalism.

3 Research and Development

The impact of ICTs increases efficiency and productivity, saves time, reduces difficulties, eliminates information distortions, improves communication and more (Castellacci and Tveito 2018). As a result, the introduction of ICT has had a positive impact on economic outcomes such as capital accumulation, exports and government accounts. The influence of ICT was considered as driving factor contributing to the growth of the country's GDP by increasing the level of TFP and labour productivity. Crafts (2004) argued that the impact of ICT on labour productivity in modern society was greater than the influence of the steam engine that appeared in the mid-nineteenth century. The maximal impact of this technology on labour productivity was 0.41% per year for the years 1850–70, while the estimated impact of ICT on labour productivity growth in the USA in 1974–90 was 0.68% per year.

A recent OECD report (2018) focuses on stimulating growth through digitization in Southeast Asia, China and India. This indicates that ICT services embodied in manufacturing and services account for a significant proportion of the value of exports from these Asian countries. According to a report from the World Bank's Development Study Group, Better Than Cash Alliance and the Bill and Melinda Gates Foundation for the G20 Global Partnership for Financial Inclusion, digitizing payments and remittances are vital to meeting the G20's goals, helping to achieve its main purpose: strong, sustainable and balanced growth. The report shows how the widespread adoption of digital payments in all their forms, including international and domestic money transfers, can help achieve the goals of the G20. Digitization can help overcome the costs and physical barriers that have hurt valuable efforts to gain access to financial resources, provide an opportunity to quickly expand access to financial services and help empower women by promoting more active account ownership and asset accumulation.

The promotion of digitalization has been the focus of attention of the Russian government for several years. This includes attempts to provide most services to every citizen on their web portals or electronically and to make transactions transparent and smooth. The Russian government has launched a revolutionary reform of the Digital Economy, according to which it involves expanding the coverage of the Internet and turning Russia into a country with digital rights. It is also seen as an engine that stimulates business growth, job creation and increased transparency in major sectors of the economy and increased transactions with other countries. Increased Internet penetration, improved telecommunications services, the availability of skilled IT workers, startups that provide ICT services, and the government that promotes ICT through various schemes, operations and services are important factors contributing to economic results.

But the analysis revealed the presence in the Russian economy of weak institutions that limit positive prospects for people. There is an urgent need to shift the focus from a simple increase in the use of ICT goods and services to strengthening the governance and institutional structures of Russia to make them strong enough to provide the necessary support for ICTs, to influence welfare through various channels. Without the support of a strong institutional structure, the evil of corruption, informality and inept governance will continue to negatively affect growth and prosperity, prevent the spread of the positive impact of ICTs throughout the economy.

Given the fundamental implications of the ICT revolution and its ubiquitous and observable impact, we expect ICTs to have a significant impact on growth and development statistics. Thus, we expect that the spread of ICT should have a clear impact on growth and productivity. In the light of existing research, this is surprisingly unclear. According to the results of studies published in the *ICT, Growth and Happiness* publication, the macro-influence of ICT on productivity and economic growth is ambiguous and, in general, the impact of ICT on growth is small. The spread of ICT has coincided with lower growth rates in industrialized countries since the 1970s. Hence the famous paradox of Solow (1987): “You can see the computer age everywhere but in the productivity statistics.” Higher growth rates in the 1990s encouraged renewed optimism, but the positive impact of ICTs was more pronounced in the US than in Europe and Japan, and slower growth after the 1990s weakened ICT optimism. Thus, the results of research using macrodata are ambiguous and uneven: some suggest a positive effect of ICT on growth, others do not. Adding new results of growth regression, the Chapter “ICT, Growth and Happiness” discovers that the impact of Internet use on economic growth was positive until 2000, but for rich countries after 2000 the effect was even negative.

For development, the key question is whether ICTs contribute to convergence and inequality between countries and better interaction by establishing contacts and various transactions between companies. If ICT requires high skill levels and sophisticated infrastructure, rich countries can greatly benefit from ICT, which can lead to economic discrepancies and widen the digital divide. On the other hand, if ICTs are not competitive and accessible to all with low thresholds, or if poor countries can jump over and abandon costly intermediate steps, such as landline telephone lines, the result can be digital and economic convergence. According to the *ICT, Growth and Happiness* study, the results in this regard are also mixed. Some countries converge, others diverge. According to Yousefi (2011), the observed impact of ICTs on economic growth is stronger in middle-income and rich countries, and several studies have highlighted the importance of complementary assets, such as literacy and education, which are critical to harnessing the potential in countries with the development of ICT. Analysing our results, we see a positive trend, although the Internet had a negative impact on growth in rich countries after 2000, a stable positive effect remained in poor countries.

Deglobalization is currently an obvious opportunity, which in our opinion will cause a significant qualitative shift in the strategies, structures and behaviour observed in international business. To agree with this qualitative shift, it would take a study of international business to develop deeper policy integration, a key driver of deglobalization. To support this integration, this article discusses emerging opportunities in

three areas of international business research: political strategies and the roles of multinational enterprises (MNEs), global value chains and the role of the national context. For political strategies and roles, it is necessary to examine how regular business activities and the deliberate political agency of MNEs influence the political sustainability of globalization. For supply chains, issues include their future reach and specialization, changes in organizational forms and the impact of political considerations on location decisions. Research opportunities in the national context relate to their ability to support globalization and their link to economic and military power.

We will consider the EU countries as a partner in establishing foreign trade during the period of the digital transformation of society. The EU's internal market covers the free movement of goods, people, services and capital and is at the centre of European cooperation. The Treaty on the Functioning of the European Union (TFEU) prohibits member states and, in some cases, private organizations from taking measures that impede free movement. Besides, the Treaty contains provisions prohibiting companies from obstructing competition in the domestic market. Legislation, including directives and regulations, complements its legal architecture and seeks to eliminate differences between national rules that may disrupt the domestic market process and establish common standards for 28 Member States (Inshakova et al. 2019a, b).

Since the Lisbon Treaty entered into force, the EU's goal has been a social market economy. The most important question is what this means and to what extent the variations are compatible for this purpose and with attempts to satisfy the needs of different groups of citizens. More specifically, how divisible (or indivisible) is the domestic market? Is it politically and legally expedient and beneficial for society to separate the four freedoms from each other and thus no longer guarantee all freedoms for each member state? But also, how conceivable and useful are the differences in each of the four freedoms? For example, regarding the precise definition of the freedom of people movement: to what extent can national exceptions be permitted?

The question of the divisibility or indivisibility of the domestic market is crucial because it is important for the general direction of European integration and it must be the matter the Treaty with the consent of all member states. The differences between individual freedoms are essential for everyday political practice, where the way of concretization of European legislation depends on the purpose of the policy. It includes questions about the required European standard or level of protection, the scope of discretion for member states and the appropriate legal or policy instruments.

First, various factors constantly violated the process of European market integration. These factors include national laws and regulations that are designed to protect national public interests but can create obstacles to free movement within the EU. In other words, there is tension between Europe's interest in market integration and national public interests. For example, protecting market integration can have negative consequences for the national social sphere.

Secondly, although the harmonization of national rules is important for eliminating market distortions while protecting national interests at the European level, it does not always require uniformity and rapprochement across the entire width of domestic market rules. On the contrary, considering national differences can also strengthen EU support, for example, because it is more follows the temporary and ever-changing nature of many EU accords or the special circumstances in a particular member state.

The domestic market is not based on the simple one-size-fits-all approach but instead leaves room for discrepancies. The way that the single market deals with distortions and allows us to vary national public interests can also provide interesting information about other areas of politics.

Thirdly, the integration of the market and the adoption of European legislation in the domestic market can also get outside influence, for example, of non-EU countries. The internal and external worlds of European market integration are inextricably linked. The completion of the domestic market, therefore, also depends on the arrangements and rules agreed upon with the outside world (Frolov and Lavrentyeva 2019).

It is clear that not everyone benefits from the free market equally and sees an improvement in their standard of living, even if the economic added value of the European domestic market is widely recognized. Nearly a quarter of the EU population is estimated to be at risk of poverty or social exclusion. Employment and living standards vary widely not only between the Member States but also between regions in the Member States. The Member States also have significant differences in terms of working regimes, education, health and social security. Therefore, many people are concerned about how the EU addresses social problems associated with the open market, labour. According to the 2017 Eurobarometer, more than eight out of ten Europeans consider unemployment, social inequality and migration to be the three most important issues facing the Union and expect a free market economy to go together with a high level of social protection. Seven out of ten believe that social and unemployment policies are poorly managed and support decision-making at both the national and EU levels.

Since the entry into force of the Lisbon Treaty in 2009, TFEU Article 3 (3) stipulates that the EU will work for the sustainable development of Europe, based, among other things, on a highly competitive social market economy aimed at full-employment and social progress. Other goals referred to in Article 3 (3) support these goals, namely, combating social exclusion and discrimination and promoting social justice, protection and intergenerational solidarity. These passages confirm the more general purpose of Article 3 (1), namely that the purpose of the Union is to promote peace, its values and the well-being of its peoples. But well-being goes beyond defending the social dimension in the above sense; it also involves protecting other public interests, such as the environment, sustainable development and consumers. Thus, supportive policies of this kind are also significant for the formation of the domestic market. The Union is based on the values of respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including human rights, persons belonging to minorities. These values are common to the Member States in a society dominated by pluralism, non-discrimination, tolerance, justice, solidarity and equality between women and men.

However, opinions vary considerably regarding the form for a social market economy and its associated goals and values.

Article 26 of the TFEU defines the domestic market as an area without internal frontiers in which the free movement of goods, people, services and capital is ensured in accordance with the provisions of the Treatments. This definition does not say anything about the way of domestic market formation, the intensity of EU regulation,

the relationship between national and European public interests or the idea of a social market economy. It is also unclear what exactly is the connection between the four freedoms and whether a hierarchy between them is possible. TFEU Article 151 concerning European social policy objectives also applies to the domestic market. Goals such as promoting employment, improving living and working conditions, adequate social protection, sustainable high employment and the fight against isolation are directly linked to the domestic market.

The task of developing the social dimension of the domestic market and protecting other public interests in the future is literally a job. In this context, two determining factors are the existing principles of market organization, for example, fundamental rights outlined in the Charter of Fundamental Rights of the European Union, as well as opportunities and impossibilities arising from the political will.

Two factors: market principles and political will

The first factor is that the Member States cannot fully determine the socio-economic goals and core values of the Union. In particular, we can highlight some principles of market organization in EU law, which represent important legal and political guidelines for their further development. Firstly, there are fundamental rights of citizens and other residents of the Union, enshrined in the Charter of Fundamental Rights of the European Union. The Charter includes provisions on human dignity and freedom, solidarity, citizenship and justice. They direct not only the legislator of the Union and the Member States in the areas of politics covered by the legislation of the Union but also the Court in their judicial audits of the relationship between the domestic market and national public interests. We will discuss this in the sections below.

However, it is essential to carefully consider here the solidarity as the main principle for the Member States and its possible value to citizens. It is not yet clear what this principle includes or what is required of it, but it is clear that it is gaining increasing political and legal significance. Not only Treaties defined it as one of the core values of the Union, but Article 3 of the TFEU also mention it, that is, in terms of ensuring solidarity between generations and between Member States and promoting economic, social and public development, territorial cohesion. In practical terms, the EU pursues the latter goal by redistributing funds through the Structural and Investment Funds, including the European Regional Development Fund and the European Social Fund. However, the importance of solidarity between member states is also reflected in the Union's foreign policy, common foreign and security policies, migration and asylum policies, and in the domestic market, even if the treaties do not specifically mention it in this context. There, solidarity is indirectly mentioned in the decisions of the Court on the freedom of movement of services and persons but also the political assessment of the legislative process. Solidarity is also an important factor in loyal cooperation not only between the Member States and the institutions of the Union but also between the Member States themselves.

The TFEU also contains a number of basic principles (Articles 8–13) that oblige the institutions of the Union to provide not only purely economic but also public interests a high level of protection when adopting any European legislation, rules or policies. Article 9 of TFEU specifically provides that:

In defining and implementing its policies and activities, the Union shall take into account requirements linked to the promotion of a high level of employment, the guarantee of adequate social protection, the fight against social exclusion, and a high level of education, training and protection of human health.

Other provisions relate to combating discrimination and promoting equality on various grounds, integrating requirements to promote sustainable development and addressing consumer protection requirements. Regarding the single market, the main legal basis for domestic market legislation (Article 114 TFEU), which we will discuss below, states that any proposals should be based on a high level of protection of health, safety, environmental protection and consumer protection.

These socio-economic goals, core values and principles of the market organization together form the basis for the second factor: determining precisely what level of social protection and progress is being pursued in the context of European decision-making, how much guidance that requires of the EU, and how much discretion is left to the Member States is above all a question of political assessment. The initial expectation, i.e. that the creation of a common market would improve the standard of living, implied that there was no need to transfer significant national competencies in the field of social policy to Europe. However, when reality proved the opposite, the political will to make social protection an important element of the domestic market was expressed through other channels in the legislation, including directives arising from the legal foundations of the domestic market set out in Article 95 of the EU Treaty (now Article 114 TFEU). Examples are the Directive on the safeguarding of employees' rights in the event of transfers of undertakings, the Directive on the protection of workers in the event of insolvency of their employer, and various directives on equal treatment of men and women. Although the EU's legislative branch of on the implementation of social policy has been and remains limited, for example regarding employment and social security policies, the Union legislator widely interprets its competence in domestic market issues to guarantee the social rights of workers. In this sense, we can say that the EU has some social experience.

EU's Treaties contain various provisions prohibiting rules and behaviour that impede free movement. The Court, which plays a major role in interpreting the more general provisions of the Treaty, at the beginning of the history of the European communities, provided that these provisions should be applied and enforced by the Member States through their courts. The court described European law as an autonomous source of law, binding Member States and citizens to comply equally with the rules governing the common market. As a result of this normative-functional integration method, which emphasized market liberalization and the removal of barriers to movement, the law governing the domestic market, in which four freedoms play a decisive role, has spread and extended to almost all areas of economic and social life. Thus, these market rules provide a regulatory framework for national measures and actions, even if they pursue public goals and guarantee social rights.

Although widely used, the four freedoms are not absolute in nature. Member States may restrict freedom of movement to some extent to protect non-economic interests, such as the fundamental rights of citizens, including social rights, which may be guaranteed under certain conditions and four freedoms. Case law has recognized that the Member States may restrict freedom of movement to protect non-economic

interests, provided that the relevant national measure is proportionate. Therefore, it considers certain public interests, usually national values or ethical or politically sensitive issues, such as protecting vulnerable consumer groups, the regional language or the regulation of gambling.

The scope created in this way makes possible a balanced assessment that can be used to protect social rights and interests. However, there are certain situations in which decisions of the Court subordinate social rights to the rules of free movement. In the Viking and Laval cases, the Court restricted the right of the trade unions to strike, for which they criticized him. His approach here contradicts the fundamental principle of the Charter of Fundamental Rights of the European Union, which requires a balanced assessment of economic freedoms and fundamental rights of citizens. After all, the Charter implies that the freedoms of the domestic market are no more important than fundamental rights or public interests. Economic freedoms and the guarantee of social rights are by no means mutually exclusive but complement each other, which became apparent in the Regulation on the Freedom of Movement of Workers in the Community of 1968, which stipulated that workers working in the territory of another Member State should use the same social and tax benefits as national workers. In its decisions, the Court interpreted the social advantages term in a broad sense to include non-financial advantages, such as the right to require the use of a particular language in litigation and the right to reside for an unmarried workmate who is a citizen of another Member State that the Court has approved shall be regarded as social advantages within the meaning of Article 7 (2) of the Rules.

The court also issued key rulings on the importance of the free movement of people compared to maintaining national social security systems, that is, between transnational and national social solidarity. In fact, it promoted to transnational solidarity between citizens by providing them more and more access to national social security rights, on the basis that member states should treat their citizens and citizens of other EU member states on an equal footing. It used the principle of proportionality to interpret social solidarity in a way that gives citizens the right to social assistance but within the limits of available resources. The Court requires the Member States to show solidarity with citizens of other Member States, depending on how long a person has lived in the host Member State, an indicator of his/her level of integration, and provided that the person does not become an unreasonable financial burden for host Member State. A dilemma between transnational and national solidarity also exists in case of law relating the free movement of services regarding access to medical care in the other Member States, where the Court guaranteed certain citizens access to such assistance under certain conditions. On the one hand, we can say that the Court's approach to the rights of citizens has added an aspect of social solidarity to the economic paradigm of the domestic market that extends beyond the usual beneficiaries of the provisions on free movement. On the other hand, its assertion of individual rights was criticized for weakening the social solidarity that underlies national social security systems. In this regard, Newdick meaningfully refers to citizenship, free movement and health care: strengthening individual rights by undermining social solidarity. In any case, it is clear that the free movement of people and services has affected the guarantee of public interests through social security systems based on national social solidarity.

Thus, negative integration is directly based on the norms of treaties and includes an assessment of national public interests within the framework of EU legislation, while the Member States are obliged to consider the interests of free movement in this assessment and not create a disproportionate four freedoms. In interpreting the law on the domestic market, the Court plays a leadership role, and this role is critical to the discretion that remains to protect national public interests. The fact that the Member States are primarily responsible for creating social policy and that the Union's legislator has little or no contribution gives the Court a final say in assessing how national social interests relate to EU free movement rules. In the end, whenever the exercise of national authority affects freedom of movement in the domestic market, a private individual may invoke the provisions of the Freedom of Movement Treaty and challenge the provisions of social law in court. The member state should then show that its policy aimed at protecting social interests.

The situation is different when the Union legislator takes the initiative. It is authorized to evaluate public interests in the context of the domestic market (positive integration). The fact that it possesses such legislative competence already implies that the domestic market is not just the removal of trade barriers. That is why lawyers and other researchers began to consider the domestic market as a battlefield of values and interests³⁶. As noted above, treaties require the Union's legislator to take into account other interests, such as the high level of protection of health, safety, the environment and consumers (TFEU Article 114 (3)). The question then becomes how various interests are weighed up and considered in a practical sense. Our analysis of two key laws affecting interests, in addition to removing internal market barriers, i.e. the Employment Allocation Directive and the General Data Protection Regulation (GDPR), led to some conclusions.

Sometimes the importance of removing barriers to the four freedoms of the domestic market is diametrically opposed to other public interests. In the initial proposal for the Posting of Workers Directive, the Commission stated that it was a question of finding a balance between two principles that conflict.³⁷ On the one hand, there is free competition between companies. This requires a "level playing field" that eliminates unfair competitive advantages following national regulations. The Member States, on the other hand, want to protect workers, for example, by setting minimum wage levels, to consider the circumstances of the respective country. The final adopted Directive explicitly refers to the free movement of services as one of the objectives of the Community.

We also see other tensions in evaluating the public interest in the Employment Allocation Directive. The protection of not only free competition and the free movement of services is contrary to the protection of workers, but there is also the issue related to the level of safeguarding of these public interests: the first two interests require that the legislator of the Union take measures, while the protection of workers, according to the interpretation of the Commission, requires action on the part of the Member States.

The interests of data protection are not diametrically opposed. This is about protecting privacy, on the one hand, and, on the other, the free movement of personal data seen as an aspect of the domestic market. Indeed, some argue that the free movement of knowledge and data should be considered as fifth freedom of the domestic market.

Regardless of whether they are enshrined in the GDPR or the old Data Protection Directive, these interests remain unchanged, although the wording is slightly different. The reason for the new Regulation lies mainly in the rapidly changing social and technological context called the data transfer of the economy, which makes the exchange of data within the EU crucial for the growth of wealth (Inshakova et al. 2019a, b).

The legal system also assumes that protecting privacy does not necessarily undermine the free movement of data. On the contrary, the Commission argued that a unified system of confidentiality rules would enhance confidence in the protection of personal data and thus facilitate the free movement of data. Although this belief is not based on any empirical data, the new Regulation is designed in a way that if organizations comply with some guarantees of confidentiality, the free flow of data will be guaranteed by the absence of diverging national regimes.

Similar trade-offs between free movement and other public interests exist in other legislation. For example, the Audiovisual Media Services Directive strikes a balance between freedom of movement and cultural interests. The preamble of the Directive states that the growing importance of audiovisual media services for societies, democracies, education and culture justifies the application of specific rules restricting the functioning of the domestic market. It follows from the articles of the Directive that other interests are at stakes such as the protection of minors, the right of persons with visual or hearing impairments to access the media and the diversity of television programs. The revised Payment Services Directive (PSD2) weighs up the free movement of payment services against the protection of individuals (data protection). The directive opens the market for payment services but simultaneously improves consumer protection, although there are doubts as to how effective this protection is. In its public procurement law, now, after the round of revisions, the EU provides contracting authorities with more opportunities to incorporate environmental and social aspects into the award criteria.

In light of the conflicting data based on macrodata, it may be comforting that company-level studies provide a more optimistic outlook with a stronger ICT impact on productivity. The ICT, Growth and Happiness Chapter indicates that firms using ICTs have higher productivity growth than other firms, and growth rates are often high in ICT industries. Some studies show that the direction of causation is a problem: ICTs can increase productivity and growth at the firm level, but ICT use can be endogenous, so causality can also go in the opposite direction.

4 Results

Based on the above suggestions, we finally assume that digitalization broadens the choice of market management structure compared to the hierarchy by adding a digital network as a third option, depending on whether companies are implementing digital SMNC technologies or specific company resources, such as human capital abroad. Buckley and Strange (2011: 461) note that the theory of internalization is associated with the exact configuration of the internal architecture of the firm; that is, its governance structure (Buckley and Strange 2011: 462). The choice of management structure,

i.e., the institutional context in which transactions occur (Williamson 1979), refers to the external, market and internal, hierarchical organization of the firm (Buckley and Strange 2011). This multi-choice management structure is consistent with studies noting that firms use a combination of foreign entry modes (Benito et al. 2019; Hashai et al. 2010). For digital companies, the governance structure involves creating rules that determine how open the platform should be to outside parties (Parker and Van Alstyne 2005). Thus, digital networks are a hybrid control choice: the platform creates a market mechanism for matching supply with demand, then internally managed by a service multinational corporation with varying degrees of centralization. Digital companies may have more or less centralized control over the network and database, depending on how open the platform is and how important the company's specific in-house resources are for the competitive advantage of the digital service multinational corporation (Eisenmann et al. 2009, 2011).

We believe that creating an institutionally favourable environment such as an Internet platform is a technological advantage. For example, Uber has a convenient user platform that includes a digital interface and software algorithms for geolocation, driver guidance, workload distribution, payment calculation, maintaining reputation, etc. The advantage of owning access to information relates to the possibility of creating a system or institutional environment for training and improving order fulfilment and cost optimization using machine learning, which reduces transaction costs in the transport market due to the accumulated experience in working with a digital network. Increasing returns or network effects make the user base, usually the number of subscribers in the network, the main factor determining the cost structure of the service, its ability to develop new ideas and identify potential barriers for new participants. Thus, as firms move from products to ecosystem platforms, digitalization allows firms to internationalize through digital networks with foreign partners (Evans and Gawer 2016; Pammni 2017) and take foreign trade to a new level.

Digital networks differ from traditional strategic alliances in several essential ways. Network research in international business has focused primarily on relationships in the physical space that require direct, tangible interaction (Holm et al. 1996, 1999; Powell 1990). Conversely, members of digital ecosystems benefit from an expanded set of relationships due to a larger set of complementarity of partners based on different roles of partners: hubs, suppliers, complements, users, etc. Thus, relations in digital networks are at the level of a role or a group of actors, unlike offline spaces, which is a fundamental shift from the usual way of analysing the institutional environment, building a spectacular economy of the country and improving partnerships between countries (Jacobides et al. 2018: 2265). In addition, while traditional alliances focus on reducing risks in partnerships, digital networks also seek to maximize ecosystem value (Jacobides et al. 2018; Strange and Humphrey 2019). For users to use network effects, they must join, subscribe to a digital network, while users do not need to do this when purchasing products or services from traditional alliances in the physical space (Jacobides et al. 2018).

Our analysis raises three important paradigms for internalization theory in the digital economy. First, digitalization challenges the definition of a unified protocol for the interaction code, which traditionally calls the investment of physical assets abroad a critical indicator of multinationality. Instead, new digital technologies allow

multinational corporations to exchange information and enter foreign markets through digital networks. Thus, in the digital age, multinational corporations can appear digitally by simply providing consumers around the world with access to their products and services through online applications and expanding them digitally by introducing digital ecosystems in their host countries. The concept of place shifts from physical, territorial attributes to digital characteristics based on the information flow (Kobrin 2017). The firm is also no longer an independent entity (Dunning and Wymbs 2001). Should international business research then rename the MNC to DNE, i.e. a digital network ecosystem, shifting the unit of analysis from the firm to a common ecosystem?

Secondly, digitalization also challenges the key core role of the market: pricing. Before digitization, consumer preferences tended to be oversimplified and reduced to a price due to information processing restrictions in the analogue economy (Schonberger and Ramge 2018). Digitalization is changing the market concept from a common physical space for buyer-seller interactions driven by a pricing mechanism to a data-rich environment that buyers and suppliers collaboratively create using new digital technologies (Sambamurthy et al. 2003; Schonberger and Ramge 2018). Platforms with a large amount of data provide firms with the opportunity to characterize their consumers not only based on price preferences but also based on personal taste, convenience, etc. (Thornhill 2018). Since the marginal cost of copying and transferring digital goods with large amounts of data all over the world is practically zero, their pricing is due not so much to marginal costs as to increasing costs for users on the network (Schonberger and Ramge 2018; Thornhill 2018).

Third, while we are still in the early stages of transforming markets into a data-rich environment, the social implications of digital technology are already being discussed (New York Times 2014). With the growth of digitalization, it is not just about how digitalization affects technology management and the specific characteristics of human capital. Digitalization takes this analysis a step further by showing that digital multinational corporations can use their technology-specific intracompany features instead of their particular human capital characteristics, which in turn can increase income inequality and unemployment.

5 Conclusion

Digital networks are likely to become the dominant organizational form and the key feature of building the institutional environment for interaction between partner countries and a multinational corporation to establish foreign trade. As digital companies become a spatially distributed organization, jointly creating value with global partners, data and information become even more important. Digitalization not only reduces information costs using communication technologies but also portends a more efficient way of coordination within the network, depending on the type of company-specific features, technology or human capital, that the company uses for its internationalization. Our study paves the way for analysing how transnational corporations become centres of a digital network not only of their subsidiaries in different countries but also of their global ecosystem partners, specializing in instant communication of buyers with sellers through digital platforms. International business as an industry

should be ready to see more asset-based internationalization through digitalization, opening up collaborative and collaborative global networks.

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E-education as a Means of Increasing Specialists' Competitiveness in Digital Economy

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Abstract. Purpose: The authors consider the features of e-education, modern e-learning tools and their role in improving the competitiveness of graduates of modern educational institutions.

Design/methodology/approach: The author touches upon the competence characteristics of the teacher involved in implementing the electronic system of higher education. We consider diverse e-learning resources and their types, their advantages and disadvantages that can turn education into a more or less productive process, as well as the perspective of their use taking in the account the educational subject.

Findings: The motivation of the specialist is proven significant. Potential competitiveness depends not only on the educational and cognitive motivation that drives the learning process and allows the specialist to acquire the maximum amount of knowledge and skills, but also on the professional one which provides profile orientation.

Originality/value: The social significance and prospect of realization of e-education in the Russian reality, especially in the conditions of economic, geographical and social inequality, are deduced in the article. Elements of e-education, adequately integrated into the system of vocational training, can provide increased competitiveness and adaptation of the specialist in the framework of digital economy.

Keywords: Technologies · E-education · Competitive environment · E-learning resources · E-learning tools

JEL Code: A19 · A22 · I18 · I230 · O10 · O390

1 Introduction

The educational system has undergone a number of significant changes that have affected all its aspects: methodological, economic, regulatory, technological, etc. In the regulations, provisions and orders governing the constituents of the Russian educational system, for example, in the RF Law “On education” and the National doctrine we can find the components associated with e-learning systems for remote or distance education (DE), various electronic educational resources (EER) and various forms of

their integration into educational process within educational institutions of different levels and types for both average students and students with a certain level of needs (Korshunov and Kroytor 2019; Rodyukov 2019). Such changes, in turn, relate the intensified speed of digitalization in the economic sphere of the Russian Federation, which entails irreversible, to a certain extent, modifications of the educational environment, approaches to training economically competitive specialists, productive ways of mastering professionally significant skills, as well as the globalized industrial environment (Shugurov 2019; Vikharev et al. 2018).

The above-mentioned electronic educational resources (EER) denote certain educational materials reproduced by controlled electronic and digital devices. For that purpose, an educational institution can attract any resource in electronic and digital format, multimedia resources, diverse Internet content, specialized and universal educational software, simple and complex multimedia electronic textbooks.

Modern scientific and educational areas of academic institutions and centres are almost fully equipped with interactive, multimedia and three-dimensional (from English 3D = 3-dimensional) the technical equipment which allows the teacher and the student being in an unusual situation to reach the classroom regardless space and time or the teacher to integrate the necessary context into educational class. Of course, progress forges ahead and is now declaring 4D and 5D products, but it is impossible to note the proportional increase in the number of Ds and the efficiency of their use. The boldest representative of commercial products claimed 12D, including all sorts of ideas and feelings, but there is hardly any clear explanation in the commercial annotation, which suggests some groundlessness of D. Although sometimes the failure of a potentially successful product can depend on the adequacy of the application in a particular industry (Matova 2019).

The teacher in the XXI century does not only have a general idea about the typical forms of implementing EERs in educational, methodical and scientific research environment, their positive didactic importance and potential negative impact on the educational process or even a critical risk due to inadequate or excessive use of funds, but is also able to integrate these funds into their creative work, maximize their potential and achieve certain effectiveness. As practice shows, the circumstances of the real situation are much simpler and less effective because the teacher is always aware of the existence of EER but much less able to apply them and specially to apply effectively modern means. It should be identified that EER presupposes the availability of educational and scientific-methodical materials in electronic and digital form, i.e. diverse and thematically oriented multimedia resources, necessary Internet content, educational software, virtual textbooks and teaching AIDS (Cebeci and Tekdal 2006). Didactic and functional potential of EER in training a competitive specialist is determined mainly by its original qualities, such as multimodality, interactivity, communicativeness, the ability to build computer models for the study of a specific subject area, support and automation of certain educational and pedagogical actions. We should note the importance to form the ability to operate EER, which follows from the fact that these skills appeared in the list of qualification characteristics of various humanitarian specialists (Zeer and Symanyuk 2005; Verbitsky 2010). Such specialists now include a teacher who, by definition, has no real direct relationship to digital information technology, mathematics, engineering, computer science, information systems, computer science or programming.

2 Materials and Methods

Digital economy is now an object of management, which in turn determines the need to find adequate approaches. These approaches ensure the implementation of the Russian strategy for the development of a modern system of professional education in the digital economy context (Buyanova and Rasskazov 2019; Inshakova and Popkova 2017). The specifics of the current context include restructuring vocational education. The ongoing diversification of educational institutions entails changes in a hierarchical system of specialized education.

The study demonstrates the clear need of modern society for specialists who are able and ready to actively and seamlessly adapt to the conditions of the modern digital socio-economic system: professionally and geographically mobile, having a significantly high level of ability to master the required and non-standard professional competencies, to build a professionally-oriented cognitive trajectory in accordance with the changing economic environment, resource-intensive production and technological conditions, accelerating socio-economic development of the surrounding environment (Ergunova et al. 2017).

Since Russia is actively involved in the global trend of modernizing and developing the contemporary educational system in order to enter the modern world educational space and make the Russian education recognised as equivalent to the European one, there is a certain need to conceptually revise the scientific and pedagogical approaches to providing professional training of economically competitive and information-driven professionals in the digital economy (Ferreira et al. 2017).

Currently, the Russian Federation is actively generating prospects for adequate and effective integration of digital educational technologies to ensure timely adaptation of trained professionals to the modern technology-driven market of professional activity. Despite a certain level of success and scientific achievements in the theory and practice of pedagogy and teaching methods, there are still insufficiently mastered areas of knowledge:

- designing the trajectory of continuous learning and training with a focus on the availability of vacancies and candidates in the market of professional activity;
- increasing motivation and integration of students in scientific and production process, in real production and economic relations between the employer (enterprise) and the employee, formation and support of professionally-oriented interests, skills and individual style of activity of a specialist, teaching him/her to actively adapt to the labour market;
- arranging and supporting adequate organizational and pedagogical conditions to ensure the cooperation between a professional educational institution and its social partners, continuity of stages of professional education;
- ensuring continuous cooperation between educational subjects and its coordination taking into account changeable dynamics of regional development (unemployment, financial, ecological and geographical divergence, dynamics of youth groups, etc.).

3 Results

One of the innovative digital educational tools is a specialized mobile hardware and software complex, which is basically an independent set of components united by a common program, or one tool with a set of functional programs, for example: mobile 3D demonstrator and a set of programs based on MEER (<http://hoper.ru/about.shtml>). The technology of multidimensional representation of reality (MEER) includes multidimensional electronic educational resources, specialized software based on modern information and communication technologies (ICT) (hypermedia, augmented reality, virtual reality) and providing stereo-metric representation of the object of study/research and in-depth immersion in the cognition process with the possibility of personal perception of the scale and regardless time or geography (Politsinskaya et al. 2019). The use of modern MEER allows the trainee and the trainer to mutually immerse themselves in a virtual environment or augmented reality when studying; simulate realistic direct interaction between the researcher with the objects of secondary reality; helps to painlessly define an individual trajectory of communication with virtual reality and contactlessly control its elements (Tarakanov et al. 2019). The main disadvantage of such a system is the bulkiness of the equipment and the cost of components and software. Not every educational institution is ready to invest financially in such a complex, provided that the equipment naturally requires periodic updating and optimization of both hard- and software. Moreover, the cost of the latter exceeds the technical counterpart. However, it is such systems that make many processes, which are difficult to replenish and repeat, possible. These include operations, disassembly of an engine or an explosive device.

Another convenient means of increasing mobility, multimediality and interactivity of education while reducing the cost of equipment are portable interactive systems like ePresenter by the company "SKT", Mimio Xi Interactive, E-Note Board by JSC NPF "Everest" (<http://e-note.pro>, production is now suspended), eBeam Projection, Smart chalk, incorporating a simplified set of components: a webcam-receiver, a laser or infrared stylus-pointer and the corresponding control software from the manufacturer. They are capable of using any fairly flat surface as a working surface: screen, dry-erase board, wall, curtain, floor, table, sofa seat, etc. Unfortunately, Russian manufacturers are quickly losing interest in such products because the consumers of their services are mainly small companies or even individuals, i.e. individual teachers. This is due to the complexity of public procurement, the fear of losing small parts (as opposed to bulky interactive whiteboards), unwillingness to study their configuration (each change of location requires certain, though simple, recalibration), personally configure, as well as support and supervise such a small technical device which is not fixed permanently in a specific area.

Electronic textbooks are becoming increasingly popular with spreading digitalization. Initially, electronic books were mainly considered to be published in the form of electronic PDF-documents filled with hypertext and hyperlinks. This format is still relevant today because of its efficiency, simplicity, compactness and versatility. However, software creation of electronic interactive textbooks and task books is now popularized. Inner navigation is achieved through active hyperlinks, routers, interactive

buttons, accompanied by animated or real characters-interlocutors/teachers (Anisimova et al. 2019). You can also find textbooks in the format of an electronic database, which function as a standalone product or serve as a supplement to the text or multimedia sections and paragraphs of existing textbooks. They are adaptively integrated into the structure of sites, local libraries, creating a hierarchical structure with thematic sections. To deploy the site-database programmers use special software or technical tools.

The latest generation of EERs are predominantly open modular systems (OMS). The main advantages of open educational modular multimedia systems include the absence of significant content and technical limitations, the presence of several versions of electronic educational modules, full integration of new pedagogical tools that combine multimedia capabilities, communicative interactivity, modelling and the possibility of wide distribution in global communication networks. Using this opportunity, the teacher can build an original author's scientific and educational course and form an individual educational trajectory of the student (Lizunkov et al. 2015). OMSs allow you to choose a combination of e-learning modules, optimal for a particular situation on a particular subject. It should also be noted that the system, despite the autonomy of each module, remains open, respectively, OMS has an unlimited life cycle.

Cloud platforms or cloud sub-services such as Google App Engine (<https://appengine.google.com/start>) or Amazon Micro Instances (<http://aws.amazon.com/free>) offer the user a full range of services on a non-commercial basis for an unlimited time or a relatively limited functionality during the demo period, after which the free functionality is cut by at least half or is already offered by subscription. The use of such products in a business environment or for a mass user usually requires commercial access.

The main part of educational institutions and teachers place their materials and ensure the implementation of the educational process through distance learning systems (iSpring, Mahara, Moodle, etc.). The predominance belongs to the Moodle system, a free mass virtual learning environment used to manage training courses (www.moodle.org). Moodle is a free web application possessing enough tools to create websites for online learning. The advantage of Moodle, which attracts the educational community and ensures its competitiveness, implies the variety of modules and add-ons that provide variability and adaptability of the created training course. Today it finds use in creating an electronic portfolio base. The Mahara system has been popular for a long time, however, due to the complex management resource lost its position in the popularity ranking. Although it could be called a full-featured PLE (Personal Learning Environment), which can assist in organizing the electronic portfolio of students and teachers on the Internet, personalized learning content, managing the subjects of courses, providing communication between users in the environment directly and within groups. Comparison of systems can be obviously seen on the website <http://ra-kurs.spb.ru/2/0/4>.

Paid software iSpring Suite is designed to create interactive tests and surveys, e-courses and presentations in PowerPoint environment. ISpring Suite includes iSpring Pro (allow building professional training courses with audio and video accompaniment, built-in YouTube and Flash videos, as well as project presentation tools), iSpring QuizMaker (allow developing interactive tests, questionnaires and surveys) and iSpring Kinetics products (provide information in an interactive form in the classroom, allow

scrolling through a realistic e-book, independent exploring the catalogue or timeline, finding answers in the database of frequently asked questions). However, the unprecedented generosity of the developer provides as many as 2 (previously 3) products for free with limited functionality. However, it is not easy to find them on the developer's website. In the original version, a free license was supplied for 3 regular products to be installed for 20 workplaces (Tarakanov et al. 2019).

4 Conclusion

It is obvious that the above-mentioned EERs have a lot of advantages, which, however, do not reduce the disadvantages present. The obvious advantages assume creation of immersion into the educational context, increase in the educational, cognitive and professional motivation of the educational subjects. The mass character and openness of online education are of high social importance as they ensure the quality of EER, reduce or neutralize economic and geographical inequality, equalizing the opportunities of economically independent subjects, subjects from remote regions and subjects with disabilities to get high-quality educational content.

The analysis of local and international studies has shown that most publications designate complexity of graduates' adaptation in professional educational institutions in the labour market, contradictory character of managing adaptation of young professionals at the municipal, city and federal levels. Much fewer works are devoted to the specifics of networking between universities and social partners.

The combination of the above-mentioned advantages of OMS is important to expand its use and improve its effectiveness using active forms of education. OMSs initiate wide prospects for the use of mass digital educational technologies, new forms of classroom and independent learning, including distance learning.


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On the Development of Digital Technologies in Agriculture of the Russian Federation Federations: Legal Aspect

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Abstract. The work aims to study the global trend of digital technologies in agricultural production, which has characterised the last decade. The methodology of work consisted of materialist dialectic, historical, logical, functional and systemic methods, as well as formal legal and comparative-legal approaches. Based on them, the theory and practice of digitalisation of agriculture in Russia and the leading foreign countries of the world are analysed. The result of the analysis is a justification for proposals to amend existing legislation to consolidate the results achieved and create conditions for the development of digital agriculture in the future. There is a need to create economic incentives for digital developers, infrastructure development measures that promote digital technologies, develop the market for such technologies, financial support for rural producers et al. Institutional issues include streamlining the use of uncrewed vehicles, mapping of rural areas and preventive measures to combat unemployment. The conclusion contains recommendations to optimise the implementation of activities in the field of digitalisation of agriculture. It is justified that along with financial and organisational costs, the implementation of the Digital Agriculture project will require the involvement of the business community, which will provide software development, including applications to smartphones, manufacture of agricultural robots, drones, sensors, et al.

Keywords: Digitalisation · Agriculture · Technology · Trade · Products · Economy · Competitiveness

JEL Code: K200 regulation and business law: general

1 Introduction

The development of the modern economy implies the transition of the state and business to fundamentally new digital technologies, which allow to give impetus to the development of electronic business, increase the quantity and quality of produced electronic goods and services. Every year, the digital economy becomes an objective reality in Russia, which requires adequate and timely legal regulation of the problems that arise. In the Russian Federation, several steps have been taken in recent years to develop the digital economy. Thus, on July 28, 2017, by Order of the Government of the Russian Federation No. 1632-r, the Program “Digital Economy of the Russian Federation” was approved. The main activities of the national program Digital Economy are aimed at the implementation of the following key directions of economic and social transformation: Formation of a new regulatory environment of relations between citizens, business and the state, arising from the development of the digital economy, Development of modern high-speed data storage, processing and transmission infrastructure, ensuring its stability and security, Formation of a training system for the digital economy, support for the development of promising “end-to-end” digital technologies and projects for their implementation, Improving public administration and delivery of public services through the introduction of digital technologies and platform solutions. The implementation of the Digital Economy Program, according to its authors, will create an incentive for the development of all spheres of social and economic activity.

However, what should be understood by the “digital economy”?

The analysis of many doctrinal and regulatory sources on issues of the digital economy suggests that the digital economy is an economy of innovation “developed through the effective introduction of new information technologies. Moreover, within the framework of the concept of “digital economy,” it is necessary to understand intensive, innovative development, that is, not any new technical and technological solutions, but only solutions aimed at significant efficiency growth” (Pilgun et al. 2018).

According to several analysts, digitalisation of the economy will increase Russia’s GDP by 4.1–8.9 trillion rubles by 2025. The transition to remote work and the use of artificial intelligence technologies should lead to breakthrough changes and will maximise the positive effect of digitalisation in trade, transport, banking, agriculture, education and health care (Smirnov and Hubulava 2019).

The envisaged goals and objectives can be described as a “digital revolution,” and their implementation will allow Russia to make a technological leap (Inshakov, Inshakova 2018; Tarakanov et al. 2019). This is necessary to catch up with the leaders of the “digital race,” including the United States, China, and the European Union, where the digital economy accounts for about 10% of GDP. In Russia, this share is about 3%. Now Russia’s lag from the leading countries of digitalisation is about 5–8 years.

If no effort is made, this gap will quickly widen, and every year it will be increasingly difficult to reduce. This circumstance requires research into both ways of developing the digital economy in the Russian Federation as a whole and specific areas of activity. Under conditions of import substitution, agriculture becomes such an important area.

2 Methodology

The methodology of work consisted of materialist dialectic, historical, logical, functional and systemic methods, as well as formal legal and comparative-legal approaches. They analyse the theory and practice of digitalisation of agriculture in the Russian Federation, as well as, in some leading foreign countries of the world.

3 Results

The world's population is expected to be close to 10 billion by 2050, double what it was thirty years ago in 1989. The increase in the use of land, water and other resources for the growing population is directly related to the capacity of agriculture to feed these people. Russia will inevitably participate in the solution of this problem. As of January 1, 2018, the area of the land fund of the Russian Federation according to the data of Rosreestra amounted to 1712.5 million hectares, of which the area of agricultural land is 383.2 million hectares (22.4%). One way to increase the efficiency of the use of this territory is to develop digital agriculture technologies in Russia.

There is no common understanding of digital agriculture in modern Russian scientific literature. Its definition as a combination of “economic activities seems most successful (Including financial support) for the cultivation, production, processing and storage of agricultural products, raw materials and food, as well as the provision of services in these areas based on the application of science and technology (Innovative technologies, platform solutions, automation and robotics of production processes and management procedures) For the purpose of qualitative transformation of the productive forces of the agrosphere, optimisation of intersectoral and institutional ties, multiple growth of labor productivity with significant reduction of costs, improvement of quality and reduction of cost of agricultural products, ensuring labor safety and achievement of ecological safety of agricultural production” (Soldatenko et al. 2019).

The Russian agricultural sector of the economy is already gradually introducing fundamentally new and breakthrough business models and technologies, including the use of robots and the development of Internet of Things technologies. Already, several works in agriculture are carried out through computer programs. In particular, in crop production, it is spraying and treatment of soil, application of fertilisers, regulation of plant nutrition and microclimate in a greenhouse, and in livestock - maintenance, milking and feeding of animals, control of technological processes in poultry houses. New technologies control the process of potatoes and vegetable storage, estimate the economic efficiency of production. However, there is an increasing question of the side effects of the digitalisation of agriculture, including the unemployment of rural residents (Popova 2018).

Despite the existence of the first steps to introduce digital technologies into agriculture, a broad range of opportunities for their further development remain. One such possibility is to develop an open electronic database on unscrupulous food producers held accountable for the production and circulation of food that does not meet the requirements of quality and safety. This measure is envisaged as one of the tasks of ensuring the quality monitoring of food products. Therefore, “the creation of

information bases about violators of certain legislative acts is one of the trends in the process of informatisation of public administration - in particular, since 2018 there has been a unified Register of Information on Officials Dismissed Due to Loss of Trust, also implemented in electronic form” (Mokov 2019).

The Ministry of Agriculture of the Russian Federation, which has developed a departmental project “Digital Agriculture,” plays a significant role in the development of digital agriculture. For the implementation of this program, a road map has been adopted, including such sections as “Effective hectare,” Smart contacts, “Agro-project from field to port,” Agro-solutions for agribusiness, “Electronic educational system” Land of knowledge. Thus, the “Effective Hectare” program will allow modelling export flows of agricultural raw materials in real-time. Integration with the bases of Roshydromet and Agrochemical Centers will make it possible to make an accurate forecast of crops and cleaning terms. The forecast yields will be linked to the rolling stock of Russian Railways for the expansion of “bottlenecks” taking into account the restrictions of goods and cargo nodes. By 2021, 100% of products for export will be accompanied by a paperless field-to-port system. At the same time, it is planned to implement residential complex digital agricultural solutions for enterprises of agro-industrial complex: Smart Farm; “Smart Field”; “Smart Herd”; “Smart Greenhouse”; “Smart Recycling”; “Smart Warehouse”; “Smart agroophis.”

With smart greenhouses (sensors, devices, and remote greenhouse management software), “operational savings are achieved through more efficient consumption of fertilisers, chemicals, and water. The technology also optimises the amount of staff needed to care for crops and reduces the loss caused by the human factor. Smart farms (sensors, devices and monitoring software) will improve animal productivity and product quality. According to market experts, automated feeding systems, milking and monitoring of livestock health can increase the pressure by 30–40%” (Medvedev and Kuzicheva 2018). According to the developers of the program, its implementation will allow introducing intelligent industry planning in 85 constituent entities of the Russian Federation (100%) by 2021 on the principle of growing the most profitable crops taking into account the transport arm to the place of processing or consumption of products.

Thus, the implementation of the program of the Ministry of Agriculture of Russia should lead to digitalisation of all processes in the agro-industrial complex, however, “for the success of this project it is necessary to consolidate efforts, both from the government and management structures on the ground, the scientific community, producers of digital equipment and software, but first of all the desire and capabilities of the agricultural producers themselves” (Savonina 2018).

Opportunities and prospects for digitalisation of agriculture become more apparent than if we turn to the international experience of the introduction of digital technologies in the agricultural sector. The world’s first fully machined sowing culture, behind which man never entered the field, was assembled in 2017, an essential milestone in the development of digital agriculture. At present, one of the directions of digitalisation of agriculture is the extensive use of robots.

Along with this, satellites have long been used for precision farming, But additional data provided through the Internet of Things now allow more food to be grown with fewer resources on less land. Through digital technologies, farmers can use a drone to release useful insects into the problem floor. The farmer is only able to maintain the

purity of groundwater by fertilising the right sites. Yield increases without loss, thanks to precise irrigation management.

Aerial photographs play a vital role in this process. Drones, aircraft, and satellites provide images that help manufacturers make reasonable decisions in agricultural land management. Sensors provide information about climate, soil conditions, and other data. This data collection and extensive analytics capabilities enable the manufacturer to manage problem zones while increasing production in other fields. Except for steep slopes, mechanical cleaning provides a more environmentally friendly fit. The tractor's satellite navigation uses permanent wheel wheels to maximise production, minimising lost time and fuel.

The combination of sustainable agricultural practices with technological advances makes it possible to increase the number of products produced and to preserve the ecological state of the planet. More sensible crop rotation, accurate application of pesticides and fertilisers, the creation of field maps and weed sensors are just some of the achievements farmers will see in the coming years. New agricultural business models will yield revenue growth 15–25% higher than the industry average (Kern 2017).

Modern digital platforms offer three critical variables for analysis to foreign rural producers. First, it is an analysis of environmental data: Soil condition, precise soil temperature, weather and water volume in the floor. Any pathogens and other harmful factors such as fungi are important, Insects, spiders, worms, weeds and other pests. How they are affected by the first two variables, including, How a particular plant responds to pathogenic microorganisms, what its water or fertiliser needs are. Now researchers have a difficult task to find out exactly how these areas interact with each other. For this purpose, it is necessary to launch several computational models to find out. This is the only way to provide farmers with accurate recommendations (The Networked Farm 2019).

As promising directions of digitalisation of agriculture, foreign experts also call the use of their electricity by farmers to feed new tractors, without emissions and practically without noise. In general, in Europe, autonomous harvesting machines have already become a reality in agriculture: The machine processes the information independently and takes at least partially autonomous decisions, while the farmer predominantly performs control functions.

More than half of Germany's agricultural companies surveyed already use digital applications, including intelligent agricultural machines and farm management software. A paradigm shift in agriculture has long occurred. There are opportunities for efficient and in many respects, even sustainable management of farms. Despite all this progress, it should not be forgotten that natural soil biology should not be destroyed, and soil compaction and erosion should never arise from the correct use of technology, especially in vast agricultural areas (Giesler 2019).

The implementation of these technologies already poses issues in European countries and the United States, which will inevitably arise in Russia as digital technologies are introduced into agriculture. Among them are the development of the Internet, the provision of high-speed broadband systems to rural residents, the development of programs and applications for smartphones, the development of online

courses to train young farmers in the use of new technologies, including the creation of their own business models for the sale of grown agricultural products through the Internet.

Addressing these and many other challenges will require (along with measures to implement the provisions of government and ministerial programmes) changes to existing legislation to consolidate the results and create conditions for the development of digital agriculture in the future. It is necessary to consolidate economic incentives for digital developers, measures to develop infrastructure that promotes digital technologies, develop their market, measures of financial support for rural producers et al. (Inshakova et al.). Institutional issues include streamlining the use of uncrewed vehicles, mapping of rural areas and preventive measures to combat unemployment.

4 Conclusion

The development of international agriculture has passed several stages: the stage of primitive agriculture, the stage of traditional agriculture and the stage of modern agriculture. The last stage is characterised by the use of information technologies, biotechnologies, nanotechnologies, et al. It is at the last stage that technologies of intelligent (digital) agriculture are emerging, which allow optimising the use of complex agricultural systems thanks to information technologies. The use of such technologies allows agricultural producers to make better decisions, both in terms of soil treatment and fertiliser application and harvest.

The implementation of the departmental project “Digital Agriculture” envisaged by the Ministry of Agriculture of Russia will allow to carry out the digital transformation of agriculture through the introduction of digital technologies and platform solutions to ensure a technological breakthrough in the agro-industrial complex and achieve productivity growth. Along with financial and organisational costs, this project will require the involvement of the business community, which will have to provide software development, including applications to smartphones, manufacture of agricultural robots, drones, sensors, et al.

Implementation of the digital agriculture program will achieve the following results: automation of agricultural machinery; Reduce costs and demand for manual labour; remote satellite data and sensors on site will improve accuracy and reduce costs of monitoring crop growth and land and water quality. Tracking technologies and digital logistics services can optimise agri-food supply chains and provide reliable information for consumers.

The development of satellite technologies will improve the quality of environmental monitoring, increase the efficiency of environmental supervision of agricultural producers. Thus, the improved use of digital technologies in agriculture will meet the growing global demand for food, nature protection and sustainable agricultural production.


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Protest Communication as the Instrument of Political Priority Building for Achieving Qualitatively New National Goals

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Abstract. Purpose: The purpose of the article is to analyze Internet technologies (in particular, the political blogosphere) used by specialists to express protest in the Internet communication for destabilizing political situation and introducing new political stereotypes into the public consciousness.

Design/methodology/approach: The authors analyze modern information technologies in protest communication as a manipulative instrument to achieve political goals according to the concept of digital democracy. The researchers consider political protest to be one of the directions of social activity of citizens. They pay special attention to the characteristics of the online blog as a genre of protest communication, investigate its possibilities and risks in the election campaign, determined the distinctive features of the political blogosphere.

Findings: The article presents the results of the study of the relevant use of the blog as a platform for protest statements during election campaigns, which have a huge potential for the formation of opposite, protest models of worldview. The authors conclude that the political blog today is an alternative and independent information resource, which is a place of creating various institutional intentions where political protest intentions get the greatest activity. The paper identifies discursive peculiarities of the protest in the named genre of electronic democracy.

Originality/value: The stated problem is the subject of lively discussions in the modern scientific world. A comparative method of researching the determined issue represents the analysis of protest communication as a modern form of online participation of citizens in political public life. The conducted research paper reflects a controversial assessment as an actual communication form between the government bodies and citizens imposed by the new possibilities and jeopardy of digital democracy.

Keywords: Internet-technologies · Information resources · Protest communication · Political blogosphere · Digital democracy · Election campaign

JEL Code: B50 · B52 · I18 · I28 · I38 · Z18

1 Introduction

In recent decades, in modern society, the technologies of political Internet communication have become a powerful lever of influence on political regimes and are actively used by both politicians and states in the processes of their foreign and domestic policy. We are talking, first of all, about the latest forms and opportunities that modern Internet technologies provide for destabilization of the political situation and change of political regimes in those countries that become the target of information invasion (which is clearly demonstrated by examples from Eastern Europe, Africa, Arab States).

Today the Internet performs not only informative, communicative, entertaining functions, but also is a global platform with unlimited resources for information and freedom, for political expressiveness of citizens, their active participation in matters of state and public life, as well as for the confrontation of various political forces.

“Since public opinion in modern societies is largely an opinion created by the media, changes in the media environment, namely the introduction of digital technologies, are critical to the success of political protests” (Baringhorst 2009). The Internet opportunities do not only increase the chances of subjects with limited resources for publicity but also contribute to raising public awareness, promoting social and political participation through interactive means of communication, promoting democratization.

The latest information technologies are actively used to break up traditional national values, symbols, culture, to form and introduce new political myths and stereotypes that have a direct impact on the stability of existing political regimes into the public consciousness. “The Internet is a means of communication for the protest movement, for their preparation and coordination, for the study of discussion material, the exchange of strategies, opinions, goals and information” (Fuchs 2007).

A large percentage of all protests are political protests in which citizens protest against negative social or political circumstances. During political protests they actively participate in political events to be heard at a higher level. A common practice of modern protest communication is a combination of online and offline communications. Protesters apply not only to peaceful forms of protest – the creation of petitions, blogs, etc., but also to non – traditional forms of participation – demonstrations, boycotts, blockades.

Political protests occur most often when parliamentary parties do not hear protest requests and do not support them. The protesters, trying to attract like-minded people to their cause, apply to non-traditional forms of participation, because they do not see the possibility in the current system of government that their demands will be heard.

Being in opposition to institutional policies protesters seek to address issues or interests in the political process that often go unnoticed by the general public and require attention.

But the main purpose of political protest is criticism and contradiction which ultimately lead to resonance between the political, economic or social establishment. Since the protesters themselves are not involved in the political decision-making process they need more than representatives of the “political class” to talk about their problems, achieve certain goals and win demands. Therefore, protest is always a communicative action aimed at the political community.

In this case the Internet technology is a “time bomb” which is the main component of modern political governance in the processes of retention, conquest and redistribution of political power and is actively used to influence the structure of the political order.

If in the previously entrenched political space the expression of opposition sentiments was usually realized in the form of street actions and informal communications, with the advent of the Internet there have been huge opportunities for expressing opposition political interests, values and ideas in the public space leading to the emergence of new mechanisms of public pressure on the state and the national political system.

2 Materials and Methods

The authors conducted the research on the material of political blogs posted on Russian and German platforms. The analyzed genre of protest communication is a modern form of political online participation of citizens in public life having high media resources; it causes a controversial assessment as an actual format of communication between the authorities and citizens dictated by the new opportunities and risks of digital democracy.

3 Results

The study of the principle of interactive online political communication showed that, in general, it is still in its infancy but it is already possible to distinguish two main participants who adhere to the purposeful communication of the parties – “from above” promises come from politicians, as well as effective political online activity of citizens “from below”. For both parties, external communication via the Internet plays an important role in achieving their campaign goals. Especially as during election campaigns it became a fashionable tendency to hold regular chats with participation of politicians.

If you look at the online discussion proposals from government agencies, it is clear that the demand and the reality of political and institutional action for e-democracy often diverge. Despite the fact that civil discussion of political issues has increased and the intensification of mutual political communication between politicians and citizens, the desired development of events is still far away and many online discussions on websites seem politically counterproductive.

Originally conceived concept of digital democracy was indirectly focused on the deliberative “theory of democracy”, a prominent representative of which was the German philosopher and sociologist Habermas (1992, 1996).

The normatively assessed theory assumed that rational public discussion of political issues in which the pros and cons of certain positions are specified with arguments, would be crucial for digital democracy. Close attention to the discussion of state and political problems should have a positive effect on the central problems of modern democracy. In practice, everything was much more prosaic.

On the one hand, high expectations and hopes for a favorable outcome of events are in the balance, on the other hand – disappointments from the practical implementation of policy statements since citizens' questions about the problems of social and political life are often ignored as the moderator filters political chats based on the needs and interests of a certain politician (Eltanskaya et al. 2019).

Nevertheless, we believe that effective competition in today's global network space, as well as effective confrontation with political opponents in the information struggle is impossible without appropriate systematic work in the Internet space and the development of appropriate online instruments (Shamne et al. 2019).

Having a reputation as "independent" sources of information, these instruments have a potential for a broad and effective impact on public consciousness and their graduated nature allows to achieve the desired effect in the manipulation of propaganda content and therefore traditional approaches to blocking the dissemination of information become useless and ineffective (Kuznetsov 2002).

In our opinion, blogs are now such an information medium for online dialogue between politicians and citizens due to their socio-technical and cultural characteristics.

We consider blogs powerful alternative and independent information resources, a platform for the expression and formation of public opinion, which, due to the absence of strict limits on the published material has sufficient potential to generate internal information and generate their own discourses or public opinion.

The blogosphere (as a concrete network culture) promotes interactive dialogue between politicians and citizens. The key to understanding the advantages that a blog offers over other Internet practices lies in the specific form of personalization of communication that is characteristic of political blogs. The main characteristic of the political blogosphere is a high degree of internal structuring and growing importance for the political life of the country.

The role of blogs in the election campaign, their impact on changing the political situation in the state is very high. The main goal of any election campaign is to maximize the vote and all goals are good for that. Thematic campaigns try to convey key messages from parties; to present candidates in the right light, to influence in the short term an unbiased attitude to voters. At the same time, a politician faces the problem of forming an opinion in a more unsophisticated audience, which is sometimes skeptical about his election program. Because publicly advertised, stereotypical postulates of the program can interest voters only to a limited extent.

This approach has several advantages in terms of pre-election campaigning: it allows a personalized election campaign to assess the facts and candidates of the party objectively.

The use of political blogs in the election campaign, thus, gives a number of advantages as blogs provide an opportunity to react very quickly to dynamically changing topics and events, to answer questions of a flexible election campaign. In voting with daily campaign planning a politician-blogger can directly respond to comments and statements of the opposition, give links to events, participate in public discourse.

For active bloggers links to other online sources must be included so that users can work interactively. Blog commentators are politically interested in a fairly high involvement of the user base.

Blogs should have a huge potential and a large empirical base for the presentation of the party's program, its leadership qualities, to form an opinion about themselves throughout the blogosphere and at the same time stimulate political debate outside the Internet.

As part of a negative campaign blogs can do a disservice by using direct quotes or explicit links to "opponent" material. It should be borne in mind that criticism in relatively clear, accessible and credible language contributes to the credibility of the facts and reduces the risk of a reputation for dishonest propaganda. In this case, the blogosphere will create a favorable basis for negative campaigning in the election.

In addition to these opportunities the spread of the topic in the blogosphere also carries risks. From the perspective of the electoral strategist fighting for control, the formation of opinion depends, because, expressing a certain intention, the author of the message always proceeds from his own goals to effectively influence the addressee and get the expected effect. The critic may act at risk without the necessary investigation and lack of scientific analysis. This trend is especially true of blogs of opposition politicians.

4 Conclusion

Our analysis of the political blogosphere allowed us to draw the following conclusions.

It is an indisputable fact that political blogs are an important innovative instrument in the context of election campaigns. They promise to be in interpersonal contact with the political leader, to provide motivated information on the Internet, to publish pluralism of opinions on various issues. In addition, with more appropriate personal and therefore more interesting published content the blog gains a wider readership. Blogs, as a rule, in some popular search systems also attract the attention of users who search the Internet for suitable political content.

It is necessary to explore the possibilities and challenges of blog proposals for politicians. The current practice of online political communication between the state and its citizens can be qualitatively changed, especially compared to those formats that have already been used for a long time (especially online forum and chat). So it's about the relevance of a blog to a particular practice – an online dialogue between a politician and citizens within a particular field of application.

The formation of alternative protest models of worldview and behavior, the substitution of moral and social values show pressure on the existing political regimes in the States breaking up the stability of their functioning, which is one of the main challenges to the system of modern political governance.

As a result of such influence and in the absence of adequate counteraction in most cases the initiators of information and communication aggression achieve their goals.

As Ponomareva notes in her article, today "the organization and conduct of a coup d'état do not require the direct presence of interested parties in any country: the overthrow of the regime is possible remotely, through the transmission of information through various networks" (Ponomareva 2012)

Thus, the Internet as a space of political communications will continue to have an increasing influence on the modern political world, determining the parameters of the




functioning of political regimes, and therefore, to minimize the dangerous consequences and effective counteraction requires the creation of its own management and analytical infrastructure.

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Development of the Institute of Public Procurement in Modern Russia: Between Blockchain and Administration

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Abstract. *Purpose:* The purpose of the work is to analyze the transitional state in which the institute of public procurement in modern Russia, what is expressed in the full introduction of electronic procedures for state (municipal) tenders, further improvement of their information security with the priority use of new digital technologies: mining, bitcoin, blockchain, distributed registers, technology of common use of property, crowdfunding, etc. They need comprehension and research of modern world experience of their application taking into account national Russian specifics. *Methodology:* The article uses philosophical and general scientific principles and approaches, methods of modeling, extrapolation, formal legal. *Results:* A number of factors: significant territorial and geographical scales of the Russian state, peculiarities of its Federal organization, complexity, multilevel nature of public administration, etc. determine the inadmissibility of the absolutization, both the methods of centralized administration in management of information resources of government procurement, and methods for decentralized, autonomous information security of procurement activities via alternative, including blockchain technologies. The institute of public procurement requires an integrated approach. *Conclusion P:* respects for the use of blockchain technologies in the field of public procurement can be more exactly and clearly determined after the generalization of the practice of application of new legislative model first admitting from 01.10.2019 limited use of the principles of the blockchain in public procurement.

Keywords: Public procurement · Unified information system · Electronic playground · Administration · Blockchain · Electronic procedures of tenders · The unified register of contracts

JEL Classification: K10

1 Introduction

The development of the information society needs of breakthrough technologies: electronic justice (Gavrilova et al. 2019), electronic notaries (Smirenskaya et al. 2019), digitalization of the legal business education (Inna et al. 2019), etc. To their number recently with good reason considers blockchain-technologies and methods for

distributed storage of information. Blockchain is a technology of recording and storing data in blocks by sequentially attaching one block of data to another, which in addition to its own content accumulates information about the previous block using a special encryption hash key. Another key feature of blockchain technologies is the possibility of subsequent simultaneous copying and storage of the transaction register by each user in accordance with the «consensus protocol». Keys, i.e. digital (software) symbolic codes, can be many. But all of them are divided into public (open) and private (closed). Hence, the flexible combination of transparency and confidentiality drew attention to this technology and guaranteed a huge increase in its popularity in the modern digital world, comparable to integrated General-purpose information technologies (Frolov et al. 2018).

Assessing the potential of blockchain technologies, it can be distinguished three major positive moments:

- (1) provision of electronic registration of contractual and economic activities facts in the network of distributed registers, which are considered to be recognized in the identical interpretation and indisputable;
- (2) simplification and unification of record of the relevant transactions and deals by means of a digital code;
- (3) acceleration of asset turnover and reduction of economic conflicts in business (Kalinina et al. 2019).

However, the application of blockchain technology associated with certain risks and challenges. The analytical materials of the Central Bank of the Russian Federation identify five their types:

- (1) «safety;
- (2) scalability and speed of work;
- (3) information management;
- (4) regulation;
- (5) standardization of financial assets» (The Central Bank of the Russian Federation 2017).

What features of blockchain technologies are revealed in the process of their application to the public procurement system? The analysis can be carried out in three main areas:

- (a) information security of public procurement;
- (b) conduct of electronic tenders procedures;
- (c) the procedure for concluding contracts and their registration in the Unified register of state (municipal) contracts of the Russian Federation.

2 Results

The First Direction According to article 4 of the Federal Statute from 05.04.2013 No. 44-FZ «On contract system in procurement of goods, works, services for state and

municipal needs» (further – the Statute) the information security of government procurement is carried out by creating and maintaining a unified information system interacting also with electronic platforms on which tenders are held (further – UIS).

The article 4 of the Statute (as amended by Federal Statute from 31.12.2017 No. 504-FZ) is supplemented by parts 13 and 14 on the creation of a special state information system of accounting and control, called «Independent Registrar» (further – IS «Independent Registrar»). This system is created and functions in order to monitoring of the availability (operability) of the UIS and electronic platform; fixing, including video, in real-time (not later 2 h) of the actions and inactions of all participants of the contract system in the UIS and on the electronic platform; collection, processing, storage and use of information received in this process.

According to this norm, in the Decree of the Government of the Russian Federation from 28.07.2018 No. 881 were approved the requirements for the operation of IS «Independent Registrar», the order of formation, storage and use of the information contained therein (further – the Requirements). The data integrity control in IS «Independent Registrar» is provided, including with the use of the algorithm of a continuous sequential chain of blocks organized as a distributed database (point 3 of the Requirements). The information contained in IS «Independent Registrar» is stored, including as a distributed database based a continuous sequential chain of blocks (point 11 of the Requirements). The document takes effect from 01.10.2019.

Meanwhile this innovation, noticed only by experts, has not changed the general approaches in the administration of public procurement. In accordance with the Decree of the Government of the Russian Federation from 13.04.2017 No. 442 Federal Treasury appointed by the authorized federal body of executive power responsible for the creation, development, maintenance and service of UIS, but in accordance with the Decree of the Government of the Russian Federation from 26.04.2019 No. 518 – also assigned by operator to exploitation and development, provision of information and user services of IS «Independent Registrar».

It should also be noted that the access of the supervisory bodies of the procurement's field to the information in IS «Independent Registrar», processed within blockchain principles, is carried out through the personal cabinet (point 5 of the Requirements), i.e., again using the method of administration. Perhaps this is debated, since in accordance with the basics of blockchain technologies all peer-to-peer system of control and accounting: Federal Treasury, Federal Antimonopoly Service, Audit Chamber of Russia, etc., should have a copy of this information, and it testifies the mixed and raw approach of the legislator to this new regulation.

We agree with the argument that «in the ideal blockchain system and its application in the process of public procurement management and control, there are many problems. The volume of the blockchain database will constantly grow, in the future it may cause a problem of data storage and speed of access to them. Procurement processing should be carried out by authorized network participants (for example, the Federal Treasury), and not by all network participants, this will cause some centralization in the system, which contradicts to the basic principles of technology...» (Guz et al. 2018).

It is noteworthy that the characteristic for the blockchain technology the scalability problem of work that is associated with the increasing amount of information storage in IS «Independent Registrar», is solved by introducing in point 12 of the Requirements

standard her life no less 3 years. Obviously (due to the lack of regulation of this issue) after 3 years the information array should be subjected to archiving and backup on spare server capacities, which is typical already for a centralized data management process. This frees up space for new volumes of information in the framework of blockchain technologies used in IS «Independent Registrar».

The presented model of information management and protection in the system of domestic public procurement looks, in our opinion, optimal for the current time. This is a centralized regulation of the main stages of a multistage state procurement process and limited by the qualifying phrase “including...” application of blockchain technology in the monitoring and fixing system of the history of their conduct, wherein a proper technical condition and safety of the IS «Independent Registrar», as a separate regulatory system, to ensure easier than completely to «blockchaining» UIS.

As correctly noted in the literature, it can be accepted a timeliness and usefulness of the concept of «blockchain» for a service delivery sector, but at the same time noted the presence of some defects: the impossibility to identify users in an open (anonymous) systems of distributed registries, the problem of erroneous input of «primary» data, etc., that taking into account available technical capabilities (significant amounts of electricity, the high cost of computing equipment, time consuming) means that the «cavalry charge» of the blockchain on the state sector of the economy can lead to hasty, rash decisions and clearly premature (Novoselova 2018).

The Second Direction. From 01.01.2019 all state procurement conducted through electronic procedures on the electronic platform and provided by the operator of an electronic platform selected for these purposes according to order established by the Government of the Russian Federation (part 1 of the article 24.1 of the Statute). The exchange of information between the operator of the electronic platform and the participants of the contract system is carried out in the form of electronic documents signed by a strengthened electronic signature of the authorized person (parts 5 and 6 of the article 24.1 of the Statute). The operator of an electronic platform is obliged to ensure the confidentiality of information about participant of purchase and the contents sent by them information and electronic documents before the summarizing the results of such purchase (part 9 of the article 24.1 of the Statute). The operator of the electronic platform is obliged to ensure the continuity of electronic procedures, the reliability of the functioning of software and hardware, equal access to participation in electronic procedures, the invariance of documents signed by a strengthened electronic signature (part 13 of article 24.1 of the Statute).

And here we see that the state still leans mainly on the method of centralized regulation of state procurement, where the operator of the electronic platform acts as the responsible administrator of the conducted tenders. From 01.01.2019 to 31.12.2019 the bidders shall register in the UIS and re-accredit on the relevant electronic platforms for a period of 3 years (part 6 of the article 24.2, parts 47 and 48 of the article 112 of the Statute). For an ensure of the participation in the procurement the participant of the contract system enters the personal account on the server of the electronic platform by typing the login and password and activates the user account. Submission of bids and documents attached to them, provision of security of the bids for participation in

procurement, price proposals during the tenders are carried out exclusively through a centralized information resource of the electronic platform (articles 44, 51 and other articles of the Statute).

Such legislative model of public competitive tenders, taking into account the need to ensure information security of the modern Russia, seems correct. Therefore, the researchers' proposals to amend the Statute «where the legislator would oblige to carry out the conducting of the state procurement procedure strictly using blockchain technology» seem quite controversial (Kirnosov and Chiragov 2017). The marked symptoms of misconduct in the field of state procurement: a single IP address of the different affiliated bidders, committing spelling errors by the drawing up bids, incomplete composition of bid, etc. successfully identified and in the existing centralized architecture of solutions. On the server of the electronic platform maintains an electronic log of committed transactions as the log file and also the options for the introduction of arbitrary information when filling out web forms in the display interface are severely limited by the requirements of specific data formats.

It is also impossible to agree with the opinion of some authors about the possibility of preventive blocking of the actions of procurement participants by the supervisory authorities, for example, the Bank of Russia (Kuznetsov and Morozov 2017). The concept of «suspicious actions» of the participant of the contract system is subjective and evaluative, in the absence of clear legal criteria may lead to arbitrary application of the Statute. In addition, it is one thing to block the illegal transfer of budget funds at the stage of execution of the contract, and another – to block the entire procedure of procurement, which can lead to unjustified interference in contractual relations and violation of the constitutional rights to engage in business.

Commenting on the above, we note that the absence of a legal field is often called as the negative aspects of blockchain technologies. However, as noted above, the first steps to legalize the use of blockchain in IS “Independent Registrar” have already been made. The problems associated with the insufficiency of the regulatory framework of the blockchain in state procurement may well be solved via the principles of modern civil law and their actual interpretation, in what the Volos's position can be supported (Volos 2018).

If we recognize the introduction of blockchain into the process of electronic trading can be supported, in our opinion, it is permissible only at the level of legal experiment in any «pilot» municipalities, where there is a relatively small number of customers and suppliers (performers) who can be familiar and trust each other. At the same time expanding of the scope of the «procedural» blockchain for all state procurement seems less productive, and it is much more effective, we think, a preservation of the centralization and administration of these processes as a common approach and a certain territorial localization of procurement built on blockchain platforms.

The Third Direction. The issue about a concluding of state contracts after the results of conducted electronic procurement procedures is associated, of course, with the problem of scientific interpretation of the concept of «smart contract». In the modern civil literature on the legal essence of the smart contract, there are two fundamental positions. Some scientists are convinced that a smart contract is a special civil contract in electronic form on the basis of automated execution of the program code contained in

it, in a certain order upon occurrence of the legal facts specified in it (Savelyev 2016). Other scientists believe that a smart contract is only a technical way to fulfill the obligations under the contract (Safargaleev 2019). However even those authors who adhere to the technical and instrumental interpretation of the smart contract recognize that Russian legislation and practice will get only benefit from the legalization of smart contracts. Henceforth, before the legalization of this concept a smart contract should be considered not separately, but together with the main agreement, as an addition to a simple written form of a civil contract (Mitrofanova 2018 and Osipov 2019).

Today the state contract is concluded in the personal offices of the customer and the winner of the tenders on a centralized server by sending each other and signing electronic documents: the draft contract, the protocol of disagreements, documents confirming the enforcement of the contract (Art. 83.2 of the Statute). As regards the agreements (contracts) up to 300 thousand rbl. (paragraph 4 of part 1 of article 93 of the Statute), the great abuses with the purpose of circumventing the tenders on this direction have already been fixed by legislative restrictions in 5% of the total annual volume of purchases of the customer. Therefore at the level of legal experiment in the «pilot» regions, in our opinion, we can propose to conclude these contracts in a simplified order by the model of a smart contract. For the contracts more than 300 thousand rbl., it is appropriate for now to conclude them by the method of administration on a single centralized portal.

3 Conclusion

The institute of state procurement in modern Russia has a complex legal nature, combining elements of public and private law regulation. For this reason it needs a comprehensive approach to the regulation of the contract system due to the optimal combination of administration and blockchain methods. It needs a constant monitoring of the application of the new legislative model with limited action of blockchain technologies in state procurement. This will determine the prospects for their further use in order to adequately respond to the challenges of digital reality.

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Use of Convergent Technologies in Education as an Essential Prerequisite for Neo-Industrialization of Russia

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Abstract. Purpose: The purpose of this study is to review the use of convergent technologies in education, to assess the results of their use in the training of specialists who are able to function effectively in the context of neo-industrialization and globalization.

The idea of convergence of knowledge, technologies and methods in modern science is considered by representatives of various fields of knowledge: political scientists, sociologists, biologists, information technology specialists, psychologists, economists, educationalists, etc. Convergence is becoming a trend of scientific thought, the priority orientation of the educational process. Convergence is considered as a synthesis of different theories and practices, a complex phenomenon of interpenetration and interaction of different subject areas.

Against the backdrop of significant changes in the institutional, structural and technical aspects of the economy, there is a need to train highly qualified specialists capable of solving innovative problems. In this regard, the need for convergence of different approaches, convergence of traditional and innovative methods of education and training also arises in the education system.

Methodology: The proposed study is based on the descriptive method, including elements of review, interpretation, comparison and description.

Findings: The relevance of the study is justified; definitions of the key concepts are given; the basic principles of a convergent approach are listed; it was determined that convergent approach allows making the learning process practice-oriented, contributes to the formation of the necessary competencies for the successful implementation of professional activities, the development of intellectual and creative potential, competitiveness and mobility of future specialists in the context of neo-industrialization.

Keywords: Neo-industrialization of Russia · Education · Convergent technologies · Convergent training · Competence · Competency

JEL Code: A19 · A22 · I18 · I21 · I22 · O10 · O33 · Z18

1 Introduction

Currently, attempts to modernize the economy on a large scale are being made through the introduction of various innovations and a wide range of information technologies.

The country faces a number of unsolved problems, the scale and nature of which allow us to speak about the neo-industrialization of the economy. An essential prerequisite for new industrialization is large-scale changes in the institutional, structural and technical aspects of the economy, contributing to its competitiveness on a worldwide basis (Tarakanov et al. 2019).

Analysis of the aspects that determine the development of the country's economy in the long term, allows us to identify the following complexes: management; natural resources; technological development; medicine; military-industrial sector; transport infrastructure; social infrastructure; investment Fund; education, etc. Thus one of the key priority sectors aimed to form a new quality of the economy and society as a whole is education, in the course of which training, spiritual and moral upbringing, formation of personal culture and socialization of the population are carried out.

Therefore, the development of neo-industrialization processes in Russia requires significant changes in educational systems at different levels: municipal, regional, Federal. Such changes are systemic and provide a phased transition to a competence-based approach in education, updating the structural and content-related aspects of education, courseware actualization necessary for the formation of a new educational environment capable of providing new quality of education.

The relevance of the research topic is that in the context of neo-industrialization of the country, the educational sector is entrusted with the task of forming an intellectual, professionally competent person who is ready to cope with professional tasks and be responsible for their implementation. In this regard, there is a need to update the structural and content aspects of educational approaches and the integration of various educational methods and formats. Thus, convergent education, being one of the integral fields of knowledge, occupies a leading position of scientific, technological and economic development.

Nowadays, interest in the use of convergent technologies in education has grown significantly, as evidenced by numerous works considering this phenomenon. In modern studies on convergent education, convergence is considered as a complex phenomenon (Koval'chuk 2019; Baksanskij 2014); from the standpoint of application at different levels of education: school education (Feshchenko and Shestakova 2017), secondary vocational education (Milovanova et al. 2018), higher education (Demenenko and Shevchuk 2016); (Eltanskaya et al. 2017); from the standpoint of socio-cultural aspect (Arshinov 2010), etc.

In this paper we will focus on the consideration of convergent education as one of the key components of sustainable development in the context of globalization, modernization and neo-industrialization.

First of all, we consider it necessary to define the key concepts of the proposed study: convergence, convergent training, convergent technologies, convergent-oriented educational program, competence, competency, competence-based approach in education.

Convergence is considered as a complex phenomenon of interpenetration and interaction of different subject areas. Convergence can be considered as a coherent strategic task, the successful solution of which can advance many of the fundamental socio-economic interests of society (Kalinina et al. 2019).

Convergent training is a new format of interdisciplinary educational environment within the framework of educational and extracurricular activities, contributing to the perception of the world as a whole, as opposed to the study of separate subject disciplines; a process aimed at the formation of competencies necessary for successful professional and household activities in the context of convergent sciences and technologies.

Convergent technologies are considered as a combination of information and communication technologies, biotechnologies, nanotechnologies, social and cognitive technologies.

Convergent-oriented educational program is a basic educational program, which is based on the development of the key principles of convergent education.

Competence is the ability to apply knowledge and skills aimed at effective performance of professional activities and successful solution of assigned tasks. Among the core competencies are the following: political competence, social competence, intercultural competence, information competence, personal competence and other listed competencies contribute to the implementation of special **competencies**.

Competency is a demonstration of competencies in real life, the ability to solve professional tasks, based on the acquired experience, knowledge and competencies.

Competence-based approach in education is a complex phenomenon which is considered as a set of general principles, including: setting educational goals, determining the quality of specialists training in concrete subject areas, organization and structuring of the educational process, as well as assessment of educational results.

The following principles are among the basic principles of the considered approach:

- the educational result (competency) meets the general purpose of education - to form the ability of future professionals to cope with professional tasks; to train professionals ready for active social adaptation, the beginning of effective work, continuing professional education, seeking self-education and self-improvement;
- this approach contributes to the integration of acquired skills, abilities, knowledge and emotional and value experience of students, which meets modern requirements for the content of education;
- the content aspect of education is considered as a didactically adapted social experience aimed at solution of various problems: cognitive, moral, social, economic, political, etc.;
- there is a significant change in the content of education, mastery methods, and consequently, the organization of the educational process as a whole. In this regard, the organization and structuring of the educational process is aimed at creating favorable conditions for the formation of the ability to solve various problems independently: cognitive, communicative, organizational, ideological, etc., forming the content aspect of education;
- the basis for the results and quality assessment of the educational process is the analysis of the acquired competencies levels. Core competencies are divided into

three main categories: 1. Instrumental competencies are the competencies responsible for the formation of effective functional units in modern business and production world. The list of instrumental competencies includes cognitive abilities, the ability to analyze, synthesize and manage information, the ability to effectively schedule and organize time, design training strategies and decision-making tactics, IT skills, computer literacy, communicative competence. 2. Interpersonal competencies—competencies that form the individual educational trajectory of students and the program of social behavior in general. The list of interpersonal competencies is based on the correlation of actions and events with accepted ethical principles; knowledge of moral values and norms; tolerance; ability to self-criticism, social adaptation, interaction and cooperation; identification of the moral aspect of behavior; orientation in the social structure of society and interpersonal relations. 3. System competencies are competencies formed through a combination of three key components of the educational process: understanding, attitudes and knowledge. System competencies provides an opportunity to understand and evaluate the value of each component in the system; to apply knowledge in practice, to learn, to adapt to unfamiliar situations, to generate new ideas (creativity), to work autonomously, to demonstrate research abilities, to show initiative.

Results should be understood as a set of competencies, including knowledge, understanding and skills of future professionals. The most significant changes in assessing the quality result of education occurred in the system of higher professional education. An essential prerequisite for assessing the quality and formation of competencies is the creation of a convergent educational environment that allows conducting the educational process under the conditions and requirements imposed by external factors: political, economic, social, etc.

2 Materials and Method

The authors use a descriptive approach to review published studies on the use of convergent technologies in education in the context of neo-industrialization; review, interpretation, comparison and description of scientific papers considering this phenomenon.

3 Results

Trends analysis of modern education shows that it reflects the processes of globalization, convergence and fundamentalization, aimed at personality development as a cultural and historical subject, capable of effectively processing and turning acquired knowledge and skills into certain socially and professionally valuable qualities (competencies). This phenomenon is due to the fact that modern education is entrusted with new roles and tasks. Thus, the primary goal of education is the building of new social relations in response to the rapid development of the global economy, information technologies, intercultural dialogue, internationalization and neo-industrialization of various life spheres.

4 Conclusion

In this context, there is a need to change the general nature of education, its orientation, goals, objectives, content component, etc. Such changes are aimed at independent development of future specialists, their creative initiative and independence. It should be noted that such results can be obtained by integrating different types, methods, techniques, formats and approaches of training. One example of such integration is the convergent approach, which helps to solve a number of key problems of modern educational activity: integration of personal and professional training; unity of education and upbringing processes; results-orientation; formation and development of intellectual and creative potential of future experts; formation of abilities to apply the gained knowledge in practice; formation of universal competences. Therefore, the convergent approach in education objectively corresponds to social, political and economic expectations in education.

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Civil Legal Relationship as a Means of Realization of Interests on the Internet

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Abstract. Purpose: The purpose of the article is to show on the example of judicial practice, as well as from the point of view of science the similarity of legal regulation of relations in the network with the relations of traditional civil turnover.

Design/methodology/approach: In the legal literature, it is believed that relations on the Internet are the least regulated along with other public relations, and special legislation is at the initial stage of its development. Attention is also drawn to the lack of an effective legislative framework in this area.

Findings: On the basis of the analysis of the current civil legislation and judicial practice it is shown that the relations which purpose is satisfaction of property interest, have the specificity, however, despite it, there are no fundamental differences in legal regulation, in comparison, for example, with regulation of the relations of traditional civil turnover.

Originality/value: The value of the study is that the results obtained can be used in the regulation of civil relations arising from the use of the Internet. The findings can also be used in the construction of legal norms and law enforcement practice. With this in mind, the results of the study allow us to develop various areas of legal regulation of relations on the Internet.

Keywords: Civil legal relationship · Subjective law · Exercise of law · Legal relations on the Internet · Internet law · Legal instrument

JEL Code: O17

1 Introduction

In the virtual space, goods are purchased, various kinds of services are provided (information, intermediary, advertising, publication, etc.); payment systems are being formed and electronic money is being circulated. With the development of society, the interests of a great many private individuals are realized using the global Internet. Realization of private interests requires regulatory ordering. And the civil legal relationship is used in this process along with such important regulatory means as norms, legal acts, etc. The civil legal relationship, as we know, basically contains the idea of

satisfying any vital need or interest. In turn, satisfying such a need or interest as a life relationship requires recognizing it in society as a legal relationship (Sinaisky 2002). The aforesaid allows recognizing civil legal relations as the main regulatory legal means, as well as on the global Internet.

Recently, legislative acts pay particular attention to the need to improve the regulation of legal relations arising through the global Internet. So, at the level of Decree of the President of the Russian Federation dated 09.05.2017 No. 203 “On the Strategy for the Development of the Information Society in the Russian Federation for 2017–2030”, it is established that a number of measures must be taken to develop the Internet and the information infrastructure of the Russian Federation, including the development of standards that affect Internet security, as well as sustainable development of the network itself. In this case, the legislator draws attention to the issues of jurisdiction of regulation and concretization of subjects of legal relations, taking into account the principle of equal participation in the management of the global information environment and its resources.

In the legal literature, attention is drawn to regulatory gaps in the regulation of legal relations arising through the use of the global Internet. The authors, analyzing the special legislation of the Russian Federation regulating legal relations in the network, note that it is at the very beginning of its development. Very often they even talk about the absence of an effective mechanism for legal regulation of relations in this area. At the same time, the presence of general norms of constitutional and civil law, as well as norms of other legislative acts (Glushkov 2007), is not taken into account. Moreover, it is indicated that the absence of normative acts in this area has a negative impact on the development of public relations (for example, relations arising from copyright and (or) related rights, relations related to personal data, Internet commerce, etc.) (Mikaeva 2016). And in order to improve regulatory regulation, it is even proposed to supplement it with non-regulatory (for example, illegal self-regulation, economic regulation) (Lessig 1999). As a particularly problematic area of legal regulation, the sphere of contractual relations is called, for example, hosting relations, relations between providers and consumers of services (Kozlov 2016); it is said that there is no proper legal regulation of gratuitous relations of an informational nature (Abdualilov 2016). It is noted that there are problems of concluding contracts on the Internet, problems of responsibility for the quality of information provided by the seller in the framework of electronic commerce (Mikaeva 2016). The question of the need to regulate the inheritance of electronic payment accounts (Kirillova 2017), etc.

As you can see, firstly, we are mainly talking about the legal regulation of the sphere of private interests, that is, those whose satisfaction is possible through civil legal relations. Secondly, when speaking about the problems of legal regulation of public relations arising on the Internet, legal means of legal regulation are practically not given any importance, and the general problematic of insufficiency of legal regulation is considered mainly, which seems to be not entirely correct.

It is known that legal regulation is a special form of the impact of law on public relations through a system of special legal means (Karelina 2008). And in general, theoretical terms, legal means should be understood as objectified substantial legal phenomena with fixed properties that allow to realize the potential of law, its strength (Alekseev 1987). Also, legal means are characterized as legal phenomena, expressed in

instruments (establishments) and acts (technologies), by which the interests of the subjects of law are satisfied, and socially useful goals are achieved (Problems of the theory of state and law, 2001). It is also believed that means are tools by which, using which in the process of activity, a particular subject achieves the goal and result, but not the activity itself (Gubin 2005).

The legal regulation of public relations, including relations regarding the satisfaction of private interests, is carried out by a certain set of legal means. G.F. Shershenevich noted that any legal relationship arises about any interest. The object of a legal relationship is that which, with the help of law, can serve as a means of carrying out interest. The scientist relates to such means: firstly, things; secondly, the actions of other persons. At the same time, when things are the object of the legal relationship, then the relationship is called real; when the object is the actions of other persons - the obligation (Shershenevich 2005). The means of legal regulation of the implementation of a private interest should primarily include a civil relationship, because through a civil relationship, the behavior of participants becomes functionally suitable for satisfying such interests in connection with their streamlining by objective law (Chegovadze 2004).

Content civil relationship is a set of subjective civil rights of the parties to the relationship and legal obligations. It is given by its participant with the aim of establishing a measure of individual behavior that is acceptable from the point of view of the norms of objective law in the process of establishing and implementing subjective opportunities and obligations within the framework of a legal construction.

With regard to the regulation of public relations arising through the Internet, it seems that there are no fundamental differences between the legal regulation of relations in this sphere and the regulation of traditional civil circulation. On the contrary, many emphasize that the information relations existing on the Internet relate to the subject of civil law (Malakhov 2001) and, therefore, should be regulated accordingly in a similar way. So, M.S. Dashyan considers legal relationships on the Internet as public relations formed on the basis of the use of the global Internet or other information technologies. The author considers such technologies software between network access service providers or information providers and specific Internet users, which are formed on the basis of mutual recognition by these subjects of freedom and formal equality (Dashyan 2007). In turn, A. Abdujalilov considers the relationships of individuals in the global network as a type of civil legal relationship in connection with the fact that they arise in a virtual space, and suggests understanding by them the volitional relations of legal entities endowed with mutual rights and obligations regarding property or personal non-property benefits that arise, develop and cease only in the virtual space of the Internet, participating in circulation only through the electronic exchange of information (Abdujalilov 2014). The cipher of relations arising through the use of the Internet is predetermined only by a special form of expression—through electronic information exchange, which in no way affects either the legal basis for their occurrence or their legal content. Moreover, there are other civil law relations, possessing similar specifics and, for example, EA Kazantsev rightly points out that the use of electronic devices when concluding and executing an agreement objectively determined the allocation of a new groups of civil legal relations complicated by an electronic element, which are civil legal relations generated by an agreement between two or more persons using various electronic devices to perform legally significant actions (Kazantsev 2007).

2 Material and Method

The study is based on the logical method, technical and legal method, which determined the interpretation of the rule of law and legal modeling. In the analysis of legal relations arising, a systematic approach was used, which is a general scientific method of cognition.

3 Result

Thus, the interaction of participants in satisfying (realizing) private interest through the use of the Internet is subject to regulation by exactly the same legal means as the relations of participants in other property and personal non-property relations, namely, the establishment of a civil legal relationship. This is confirmed by the introduction by the Federal Law of March 18, 2019 No. 34-FZ “On Amendments to Parts One, Two and Article 1124 of Part Three of the Civil Code of the Russian Federation” of provisions on digital rights, which should be understood as obligations and other rights, contents and conditions the implementation of which is determined in accordance with the rules of the information system that meets the criteria established by law. Implementation, disposal, including transfer, pledge, encumbrance of digital rights, in accordance with the law, are possible only in the information system without contacting a third party. Thus, the legislator, while improving the foundations of legal regulation, acts by consolidating new types of subjective civil rights and claims (Chegovadze 2018), the emergence and implementation of which also takes place in the civil legal system.

The next task seems to be the need to select a legal structure suitable for regulating relations on the Internet. This is impossible without their correct classification, which pursues practical goals: clarification of the rights and obligations of the parties, the definition of a group of legal norms, the application or use of which is necessary in the process of occurrence, implementation and termination of legal relations. And it seems that here we should agree with the opinion that social relations arising through the use of the global Internet are the same in their social and legal content. At the same time, the technical characteristics of electronic networks do not matter either for their substance or for their legal qualifications. These relations have a single set of features and a single legal and terminological apparatus is applicable to them. It should be recognized that there are also relationships in the network where a product, the quality of which is primarily information, is acquired and transmitted on the Internet itself (Malakhov 2001). Also, one cannot fail to admit that relations on the Internet are specific, for example, according to the method of concluding the contract, there are features of the rights acquired under the contract. At the same time, regardless of how and where the legal relationship arose, and why it arose, in fact, it always carries the legal regulatory potential, containing subjective rights and obligations.

So, take for example, advertising on the Internet. It is generally accepted that obligations to provide advertising services are a special kind of obligation to provide services on a fee (Pyatnitsky 2005). The situation does not raise questions when an agreement on advertising a particular product is concluded directly with an advertising agency. It is noted that, by its legal nature, an advertising contract is a contract agreement, although it can carry the features of other contracts, in particular, contracts for the creation and use of copyright objects (Baranova 2010). However, if relations of advertising arise through the Internet, in practice sometimes difficulties arise in qualifying them. So, for example, citizen Yu went to court with a demand to recover from citizens M. and T. (defendants) unjust enrichment received as a result of fulfillment of obligations on rendering advertising services on the Internet, citing the fact that defendants have obligations related to the provision of these services were not performed. Considering the dispute, the court noted that subjective civil rights and obligations arise from the grounds provided by law, as well as from the actions of subjects of civil law, which, although not provided for in the law or other legal acts, give rise to civil laws by virtue of general principles and the meaning of civil law rights and obligations (the strength of paragraph 1 of article 8 of the Civil Code of the Russian Federation). The court further indicated that the relationship between the plaintiff and the defendants had developed as a contractual relationship. But then he did not qualify these relations as obligations for the provision of services for a fee (chapter 39 of the Civil Code of the Russian Federation), referring to the fact that upon conclusion of this agreement there was no written agreement, including that posted on the Internet, specific conditions: the scope of the services rendered, the timing of their implementation and cost, etc., were not agreed upon, and during the execution of the agreement, no acts on the adoption of the defendants' work under the agreement were drawn up and signed (Decision of Mozhaisk City Court of Moscow region on May 29, 2018 in the case №2-348/18). And it is clear, that this is not about the insufficiency of civil law regulation of relations on the Internet, but about the low professional level of implementation of those legal opportunities that are provided by law.

The insufficiency of legal regulation is also indicated by A. Abdujalilov. He writes that gratuitous provision of information services on the Internet is not a rare phenomenon and such a concept is at variance with the position of the legislator on the cost-based nature of the services provided (Abdujalilov 2014). However, this does not mean that such relations do not have legal ordering. Nevertheless, judicial practice proceeds from the fact that relations are developing as contractual, and therefore as civil law. Therefore, it is hardly possible to agree that relations established through the Internet are poorly regulated in Russian law. Rather, it is necessary to allow the possibility of judicial participation in this issue, especially since such relations are formed in the private law sphere, and, as you know, "in the private law sphere, judicial discretion has long been recognized by most states" (Chegovadze 2018). Of course, it is necessary to assume that some relations remain factual and have no legal settlement. S. Asknazy wrote about such relations, that in the course of social development certain production relations take shape, which initially remain not legally fixed. And when one side or other deviates from the normal implementation of such an attitude, the interested party cannot turn to the assistance of the state authorities (for example, the court) in order to achieve what has actually become normal for relations of this type. These

relations, at least in the early stages of their existence, are devoid of a legal nature, they remain only factual” (Asknazy 2008). An example of such relations at the present stage of development of society is operations with cryptocurrencies in the financial market. The Bank of Russia, given the high risk of cryptocurrency circulation and use, believes that the introduction of cryptocurrencies or any other financial instruments nominated or related to cryptocurrencies that can be used in trading and in the settlement and clearing infrastructure in the Russian Federation to service cryptocurrency transactions and derivative financial instruments on them is premature (Information of the Bank of Russia dated 04.09.2017 “On the use of private “virtual currencies” (cryptocurrencies)”). Thus, the named relations do not fall under legal regulation, do not have legal means of regulation and remain actual and, therefore, especially risky.

4 Conclusion

Thus, realizing their private interest through the Internet, the subjects act in the field of civil law, and their relationship develops as a civil law and is accordingly subject to regulation by civil law. Of course, such relations have some specificity, for example, the grounds for their occurrence and the form of expression. However, despite this, there are no fundamental differences in legal regulation, compared, for example, with the regulation of relations of traditional civil circulation. And this conclusion seems fundamental, since a different approach creates difficulties in law enforcement and the development of the legal regulation itself. In this regard, it is logical to conclude that the civil legal relationship remains a reliable means of legal regulation of relations that arise between entities operating on the Internet. It is through the establishment of a civil legal relationship that the behavior of participants becomes formally defined, has its own legal limits due to the establishment of specific subjective rights and obligations of its participants and the civil law security of their implementation.

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Legal Regulation of the Legal Aspects of Computing Circulation in the List of Measures to Increase the Competitiveness of the Russian Economy in the Information Society

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Abstract. Purpose: The purpose of the article is to study digital rights as a new object of civil rights, which has been legislatively enacted with amendments to the Civil Code of the Russian Federation by Federal Law No. 34-FZ, which entered into force on 01.10.2019.

Design/methodology/approach: Based on the analysis of the new concept of digital rights, the author reveals the shortcomings of the legal definition, which may complicate the full introduction of this object into civilian circulation.

Findings: The analysis of the concept of digital rights contained in article 141.1 of the civil code showed that it does not meet the needs of the modern information society, as it is referential in nature and is based on the need for the existence of digital rights within the information system. At the same time, the only available legal definition of the information system specified in the Federal law “On information, information technologies and information protection” does not allow to fully take into account the specific nature of digital rights, reflecting a significant contradiction of the conceptual apparatus of information law with the Civil code of the Russian Federation and causing the need for further improvement of legislation in this area in order to increase the competitiveness of the Russian economy in the information society.

Originality/value: The article provides a detailed analysis of the new object of civil rights, which did not exist before. The identified gaps in the amendments to the Civil code of the Russian Federation introduced by Federal law No. 34-FZ, establishing the legal status of information rights, allow to determine the ways of its further improvement of the current Russian legislation regulating the circulation of information rights, in accordance with the needs of the information society.

Keywords: Digital rights · Information society · Information system · Information · Civil circulation · Objects of civil rights

JEL Code: K41 · O38 · L86

1 Introduction

Russia entered the era of the digital economy, this was stated in the Strategy for the Development of the Information Society in the Russian Federation for 2017–2030, published on the website of the Security Council of the Russian Federation on December 13, 2016, and this gave rise to the need to build a system of legislative regulation of new civilian objects generated by modern digital technology (Inshakova 2018).

Digital assets are intangible and do not need to materialize in the real world (Kazachenok 2017a, b). Historically, things dominated property circulation, i.e. objects of the material world. The appearance of an electronic form for some traditional objects of civil rights, for example, money, securities, results of intellectual activity, posed new challenges to the law. The legal regulation of such objects has long been built by analogy with the regulation of objects having a similar legal nature and possessing the attributes of a thing (Sannikova and Kharitonova 2018).

You can not agree with Andreev claiming that digital law certifies the right to all objects of civil rights, with the exception of intangible goods, i.e. not only other property, but also the results of work or the provision of services, the protected results of intellectual activity and the means of individualization equated to them, digital rights as an object of civil rights must correspond to a special object – a thing whose existence and circulation are made using electronic and other technical devices (Andreev 2018).

Attachment to a material object would limit the very concept of digital law, preventing its further development based on the rapidly transforming realities of the new digital society. The legal definition of a new object of civil rights cannot only ascertain the reality prevailing at the time of adoption of the law, but must contain the prospects for its further evolution.

2 Materials and Method

The problems of the legal regulation of digital rights in modern civil circulation, as well as ways to solve some problems in this branch of law and the prospects for the development of digital rights in the Russian Federation are considered in this article on the basis of a complex of sources: the federal law was studied in detail by the author of the Russian Federation laws dated July 27, 2006 No. 149-FZ “On Information, Information Technologies and the Protection of Information”. The scientific basis of this article was formed on the basis of the scientific works of such Russian scientists as Andreev (2018), Amelin (2017), Dolinskaya (2010), Gromova (2018), and others.

The scientific research to which this article is devoted was carried out on the basis of the universal scientific method of theoretical research. Such general scientific methods of cognition were used as hypothetical-deductive and dialectic methods, generalization, induction and deduction, analysis and synthesis, empirical description, classification. The study also used private-scientific methods: legal-dogmatic, comparative-legal, structural-functional.

3 Results

On October 1, 2019, the new version of the Civil Code of the Russian Federation enters into force, introducing digital rights in the legal field as a new object of civil rights.

Now a draft law that contains amendments to the Civil Code of the Russian Federation is under discussion. It implies the introduction of two key categories of digital law - digital rights and digital money, each of which is defined as a set of electronic data (digital code or designation) that exists in a decentralized information system (in a distributed registry), to which its participants have unique access. The difference between them was assumed that digital rights confirm the rights of their holder to objects of civil rights, while digital money does not possess this property and is used for the purposes of settlements (Bychkov 2018). However, in the end, only amendments related to digital rights were adopted, which indicates that the legislator is not ready to accept the final formulation of the concept of digital money.

Please note that cryptocurrency is mentioned in the draft law on digital financial assets.

The new edition of Art. 128 of the Civil Code of the Russian Federation also finally put an end to the question of the legal nature of cashless funds, including them in the category of property rights, whereas earlier the Civil Code of the Russian Federation classified them as other property.

Digital rights are understood to mean liability and other rights specified as such in the law, the content and conditions for the implementation of which are determined in accordance with the rules of the information system that meets the criteria established by law. Implementation, disposal, including transfer, pledge, encumbrance of digital law in other ways or limiting the disposal of digital law is possible only in the information system without contacting a third party.

Legally established **signs of digital rights** are:

1. **Direct recognition of the status of the corresponding type of digital rights in the law.** The concept of digital rights, adopted in the new edition of the Civil Code of the Russian Federation, is of a reference nature. Not all rights can be recognized as digital, but only those types that are directly named in the law. At the moment, there are no indications in the existing legislative acts on the types of digital rights, however, several draft laws regulating this area are currently at different stages of the legislative process and are actively discussed by both the scientific and the business community. The President's website has published a list of instructions for the implementation of the Address to the Federal Assembly, among which there is a need to adopt laws on cryptocurrency, smart contracts and ICOs in the spring session of 2019 (URL: <http://www.kremlin.ru/events/president/news/59863>).
2. **The existence of digital rights in the framework of the information system.** The concept of an information system according to the logic of the legislator has become systemically important for the recognition of information rights as an object of civil circulation.

According to the definition contained in Art. 2 of the Federal Law "On Information, Information Technologies and the Protection of Information" (the "Law on

Information”), an **information system** is a combination of information contained in databases and its processing of information technologies and technical means. It is the fixing of law in this kind of system that leads to increased confidence in records about it, simplified legitimization of the owner of the right and the procedure for its transfer. The technology in this case informs the object of law a new quality that has legal consequences (Guznov 2018).

Compliance of the Information System with the Criteria Established by Law. The most significant impact on the legal regime of the information system is provided by the legal regime of the information processed in it (the information resource of the system). This is due to the fact that the purpose of creation and operation, the purpose of any information system is associated with the formation and delivery of information (Amelin 2017).

Information systems are divided into state, municipal and others. The Law on Information contains an insignificant list of mandatory requirements for state and municipal information systems, among which is the placement of technical equipment in the Russian Federation, the intended use, compliance with the legislation on technical regulation, etc. Regarding other, that is, non-state and non-municipal, information systems it is indicated that the procedure for their creation and operation is determined by the operators of such information systems.

An analysis of the Law on Information allows us to conclude that the concept of an information system formulated in it does not fully correspond to the task of forming the concept of digital rights through it (Kazachenok 2017a, b).

In determining the main content of the information system in the Law on Information, we are not talking about information rights, but only information, which indicates the need for legislative consolidation of the broad interpretation of the concept of an information system, amending the Law on Information and establishing criteria for distinguishing between information and information rights.

In relation to information, the subjects of information relations are shared: producers or creators of information; information holders; consumers (Dolinskaya 2010).

Article 141.1 of the Civil Code does not take into account that information systems can be either centralized, or partially or fully decentralized.

The Law on Information, indicating that the operator of the information system is the owner or lessee of the technical means used to operate it, restricts the legal regulation of centralized information systems, while information rights arise in decentralized information systems. This once again confirms that the wording of the reference concept of digital rights in conjunction with the conceptual apparatus that has developed in information law does not allow us to reflect the real specifics and properties of digital rights that appear and already exist in civil circulation.

The inclusion of digital rights in Art. 128 of the Civil Code of the Russian Federation means that they can be alienated on the same conditions as other objects, including in the manner of universal succession (inheritance, reorganization of a legal entity) or in another way, if they are not limited in circulation.

Legal Opportunities for Concluding Smart Contracts During the Circulation of Digital Rights. The possibility of free and active circulation of digital rights is extremely demanded by the subjects of the information market, which makes it

necessary to expand the list of opportunities for concluding and executing civil law transactions using new technologies.

Part one of the Civil Code of the Russian Federation is supplemented by the condition that the written form of the transaction will be considered complied with if the transaction was completed using electronic or other technical means.

At the same time, agreements concluded in electronic form should be distinguished from smart contracts, which, despite the similarities, taking into account the fact that the conclusion of these transactions is verified by an analogue of an electronic digital signature, have significant differences.

A smart contract is a larger and more complex phenomenon than just a classic contract in electronic form. The smart contract algorithm provides the opportunity for independent decision-making on the fulfillment of obligations under the contract when certain conditions are met, for example, to automatically debit funds from the counterparty's account or to terminate the lease in case of delay in making the rent. In the conditions of agreements concluded in electronic form, the parties shall, by their own efforts and their actions, ensure the fulfillment of their obligations. Moreover, the scope of smart contracts has so far been limited to the blockchain registry, the legal status of which is also not determined, despite the wide distribution in the implementation of information systems (Gromova 2018).

In order to regulate the performance of obligations existing in the form of a smart contract, in Art. 309 of the Civil Code introduced an amendment. According to it, the terms of the transaction may provide for the fulfillment by its parties of obligations arising from it upon the occurrence of certain circumstances without the separately expressed additional will of its parties aimed at fulfilling the obligation through the application of information technologies determined by the terms of the transaction.

After identifying users in the system, their further behavior is subject to the algorithm of the computer program that organizes the network, and a person buying a particular virtual object (digital law) will receive this object automatically upon the occurrence of the circumstances specified in the user agreement.

The use of smart contracts has become an objective reality even before amendments to the law. One of the first organizations that announced the massive use of smart contracts to automate the sale of airline tickets in Russia in 2016 was S7 Airlines (URL: <https://www.s7.ru/home/about/news/s7-airlines-i-alfa-bank-vpervye-v-rossii-proveli-sdelku-akkreditiv-s-ispolzovaniem-blokcheyn>). The opening and execution of a letter of credit were executed in the form of a transaction on the basis of two "smart contracts" in the Ethereum system: the TIN of the customer and the contractor, type of work, transaction amount, date of opening and closing of the contract were recorded on the blockchain. One smart contract was used only to open a letter of credit, and the second – to close. The presence of two smart contracts interacting with each other made it possible to reduce the likelihood of errors in the code, thereby protecting the interests of participants in the transaction and increasing its transparency.

As some scientists note, the prospects for the use of smart contracts are not clear, and therefore their application remains in question. So far, the existing mechanisms for legal regulation of smart contracts have not been created and, accordingly, there is no judicial practice on this issue (Savelyev 2017).

4 Conclusion

This study shows that now has been created only the basis for regulating legal relations in the digital economy. This was achieved by fixing the basic norms for regulating the circulation of digital rights, making and executing transactions with them, requiring further legislative work both in the formation of the conceptual framework and the limits of the turnover of the objects under consideration.

Moreover, formulated in Art. 141.1 of the Civil Code of the Russian Federation, the concept of digital rights, which includes the need for their existence only within the framework of an information system, is in apparent contradiction with the Law on Information, Information Technologies and the Protection of Information. This necessitates the introduction of appropriate changes to the categorical apparatus of information law, including measures to further formulate the legislative framework for the full inclusion of digital rights and other digital objects in civilian circulation.

Changes made to the Civil Code of the Russian Federation by Federal Law No. 34-FZ are focused on the field of concepts and do not fully contain the legal certainty necessary for the market, the necessary level of legislative regulation of the rights and obligations of the subjects of the considered legal relationship. Their main goal was the formation of a new regulatory environment that provides a favorable legal regime for the emergence and development of modern technologies, as well as for the implementation of economic activities related to their use in the digital economy.

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The Current State of Electronic Digital Enforcement in the Criminal Process in Russia and Some of the EAEU Member Countries

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Abstract. Dealing with this problem the authors aimed at analyzing the current state of electronic digital enforcement in the criminal proceeding in some member countries of the Eurasian Economic Union (EAEU), in particular Russia, as well as the Republic of Kazakhstan. The main methodology of the work is the dialectical method of cognition, which allowed to reveal the goal of the study. To solve the tasks of this study, the authors used various private/particular methods of cognition. The results of the study indicate that most of the EAEU member countries are only beginning the transition from the written model of criminal proceedings to the digitalization of criminal procedure enforcement. The criminal proceeding in Russia continues to be kept in a written form, which is largely outdated and does not reflect the development of public relations in the age of the fourth technological revolution. Naturally, the paper analyzed the adoption of modern digital technologies in the Moscow City Court and 35 district courts of Moscow by implementing the project of the Integrated Information System of the General Jurisdiction Courts. The successful experience of the Republic of Kazakhstan, the member country of the EAEU along with Russia, sets a pattern of success in digitizing criminal process. The work resulted in concluding that a digital model of pre-trial proceeding could be used for building a type of electronic digital justice in Russia and the Eurasian Economic Union (EAEU) member-countries.

Keywords: Digitalization · Russian criminal proceedings · The Eurasian Economic Union (EAEU) · Digital application in the criminal process of Kazakhstan

JEL code: K40 · K41

1 Methods

The present study is based on the dialectical method besides The complex, systemic and informational approaches were used, general scientific and such particular methods of cognition as synthesis, analysis, deduction, system-structural, system-functional, formal legal, comparative legal were applied for tackling the objective.

2 Introduction

The Eurasian Economic Union (EAEU) is an international organization of regional economic integration with international legal identity established by the Treaty on the Eurasian Economic Union. The EAEU provides freedom of capital and labor mobility as well as transportation of goods and services, and the implementation of the coordinated and single policy in the branches of economy. The EAEU is aimed at comprehensive modernization, cooperation and increasing the competitive power of national economies and creating conditions for stable development for raising the living standards in the member countries, currently, Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia.

One of the most currently important challenges is the inevitable digitalization of all criminal proceedings in the EAEU member countries. In our opinion, the digitalization of criminal proceedings should be considered as a digital method of communication, recording and transmitting the data by the means of digital devices in investigating and examining criminal cases. Naturally, an analysis of the current state of electronic-digital application in the criminal proceeding in Russia and some the EAEU member-countries shows that most of them are only stepping the path of transferring from paper to digital form in this sphere.

It has to be ascertained that a Russian lawmaker is not in a hurry to digitalize criminal proceedings. Code of Criminal Procedure of the Russian Federation, as before, retains a written (paper) model of pre-trial procedure in the criminal case. It seems that the initiative to develop and implement regulatory laws on the issue of criminal proceedings in electronic format should be entrusted to the office of the General Prosecutor of the Russia Federation. However, for example, “The concept of digital transfiguration of bodies and organizations of the Prosecutor’s Office of the Russian Federation till 2025”, adopted by the Office of the General Prosecutor of the Russian Federation on September 14, 2017 No. 627, does not imply a transition to electronic criminal proceedings in the course of their implementation. It declares only that, between 2018 and 2020, a monitoring and registrating system will be introduced for reporting all decisions from registrating an incident (crime) to lawsuit sentencing, as well as control over the transfer of criminal cases between the constituent entities of the Russian Federation.

For many years, there have been discussions in the scientific literature on criminal proceedings and criminalistics regarding the optimization of the work of the investigator and the improvement of the pre-trial investigation. Nevertheless, this problem is still relevant (Perekrestov and Milikova 2018).

O.S. Kapinus points out that “the existing information systems and services of the General Prosecutor’s Office of the Russian Federation, other state bodies, information

exchange systems of law enforcement agencies, information and analytical systems of the Supreme Court of the Russian Federation are a prerequisite for building an electronic criminal case. Thanks to such technologies, the interaction between participants in the criminal proceeding should be carried out in the framework of a single virtual environment, rather than simple information exchange between separate databases. However, some difficulties related to the lack of an internationally recognized standard for the construction of a system of electronic documents forming a criminal case arise in realizing this concept. Despite the fact that the technical solutions to this problem have already been put into practice, they are separate in character and not connected with other standards of presenting and storing information” (Kapinus 2018).

As a result of the inevitable implementation of the digital pre-trial criminal process, all decisions of the prosecutor during a pre-trial investigation will be in electronic form. In order to ensure the legality of the criminal prosecution, the prosecutor will have access to electronic criminal case materials through a single electronic criminal case module. This will ensure that the prosecutor is immediately informed about the bodies’ of inquiry and preliminary investigation procedural decisions and help to check the validity of the procedural decisions of the criminal prosecution authorities. In the future, a matter would be brought into court by the prosecutor through the integration with the computer based data analytics platform of the law enforcement agencies, for example e-justice or the integrated data system of general jurisdiction courts. The last-mentioned project has already been operating in Moscow and the judicial system officials and experts suppose it to be replicated nationwide (Ishmuratova 2016).

The Integrated data System of the Courts of General Jurisdiction is a joint project of the World Bank and the Russian Federation “Support for judicial reform” with a total funding of \$ 172,4 million. The contractor is CROC Company. The beneficiaries of the project are the Constitutional Court of the Russian Federation, the Supreme Court of the Russian Federation, the system of courts of general jurisdiction, the High Court of Arbitration of the Russian Federation and the system of arbitration tribunals. The integrated data system was adopted in the Moscow City Court and 35 district courts of Moscow. The system is based on the complex consisting of 12 adjunct systems, 8 app and 4 support systems. It comprises the web-site for citizens and government departments, the non-public collaborative portal for court officials, the sub-systems for inter-level and interdepartmental cooperation, and the audio and video recordings of court sessions, videoconferencing with the pre-detection centers of Moscow, systems “Online case”, “Online filing”, data analytics system, data processing center etc. Besides, the integration with 12 government departments is supposed. The performance of the integrated data system of general jurisdiction courts is provided by the single data processing center compiling information previously stored in the district courts and the Moscow City Court. According to the reliability and security requirements, about 100 physical servers have been installed, and more than 300 virtual servers are also used for information storage. The operating memory capacity is 24 terabytes, the total volume of the storage is about 2 petabytes. The equipment of more than 50 manufacturers from 20 countries was used for developing the data processing center. It is daily replenished with 1 TB of data. The system of inter-level interaction enabled the employees of the Chancellery of the Municipal Courts to reduce the registration time of appeal cases from the district courts of Moscow significantly. The connection of 438

judicial magistrate's districts to the inter-level interaction sub-system of the integrated data system allowed to avoid the double manual input of information and, if necessary, to obtain access to electronic copy of the case. The system of audio- and video recording of court sessions made it possible to reduce the number of complaints of the documents filed during the hearing. The Moscow City Court and the district courts of Moscow obtained the opportunity to exchange electronic materials with various Moscow agencies (the subsystem of interagency interaction) such as the Ministry of the Federal Penitentiary Service, the Federal Treasury in Moscow, the Moscow Prosecutor's Office, the Post of Russia and others. This cooperation resulted in less time spent on forming and sending mail, a complete transition to electronic order enforcement communication between the courts and the Federal Bailiff Service of the Russian Federation. Officials of the Moscow Prosecutor's Office, by passing, obtained the possibility of electronic exchange of documents with the courts and remote access to these data bases for reporting on registered and reviewed cases.

V. Ermolov points out, "The most important tool of the Integrated system of the general jurisdiction Courts is "On-line case", which represents a digital warehouse of all current cases. Each electronic case has its own unique number in a centralized database, which allows court officials and judges to keep to the enquiry in the data analytics system. The most important advantage of the Integrated Information System is its technical structure. The various program components are implemented independently: the interface, the repository for storing documents and a number of other services. This radically reduces the risk of the system collapse and breach of the database. Moreover, such architecture of the "on-line case" site guarantees the possibility of operative scaling: it is possible to increase the individual components, to satisfy the requirements of the users according to the load, the number of documents and other characteristics". (Ermolov 2017).

The experience of Kazakhstan as the member-country of the EAEU is the successful example of electronic and digital application in the criminal proceeding. In 2016 the program "E-criminal case" was developed by the General Prosecutor's Office of Kazakhstan without additional budget expenses. The program covers the entire criminal process: reporting a crime, its investigation and the execution of a sentence. As noted, the "E-criminal case" has only positive characteristics (Ajtubaev 2017).

According to Art. 42-1 (Form of criminal proceedings) Criminal Proceeding Code of the Republic Kazakhstan, criminal proceedings are conducted in paper and (or) electronic formats there. The official conducting criminal proceeding is responsible for the criminal proceedings in electronic format after motivated discerning. If there are any problems preventing from keeping to the electronic format, the person conducting the criminal process switches to the paper format on passing the resolution.

The General Prosecutor of the Republic of Kazakhstan is responsible for the development and adoption of regulatory legal acts on criminal proceedings in the electronic format (part 6 of article 58 of the Criminal Proceeding Code of Kazakhstan).

In accordance with Art. 42-1 and with p. 6 Article 58 of the Criminal Proceeding Code of Kazakhstan "The Instruction on Conducting Criminal Proceedings in the Electronic Format" was developed approved by the Order No 2 January, 3 2018 of the General Prosecutor of the Republic of Kazakhstan. The document determines the procedure of conducting criminal pre-trial proceedings in electronic format.

The following concepts are used in this document:

- (1) A unified register of pre-trial investigations is an automated database of data that contains information about the results of the initial pre-trial investigation, listed in the part one of the article 180 of the Criminal Proceeding Code of Kazakhstan, adopted procedural decisions, actions undertaken, the status of criminal proceedings, the applicants and participants of the criminal proceeding;
- (2) the “Electronic Criminal Case” module (hereinafter - the online case) - the updated functionality of the “Unified Register of Pre-Trial Investigations” information system, etc. for organizing the preparation, maintenance, administration, receipt, and storage of an electronic criminal case;
- (3) electronic criminal case - a special proceeding conducted by the body of criminal prosecution of one or several criminal offenses in electronic format by means of the function module online case;
- (4) electronic digital signature - a set of electronic digital characters created using electronic digital signature and confirming the authenticity of the electronic document, its accessory and non-changeability content;
- (5) Information System “Unified Register of Pre-Trial investigations” user (hereinafter referred to as the user) - a person competent to use the system to perform specific functions;
- (6) electronic document - a document in which information is provided in an electronic digital form and verified by means of e-signature;
- (7) PDF-document - this is an electronic version of paper document or material, identical to the original, to be attached to an electronic criminal case, converted by scanning in a digital format PDF and certified by e-signature;
- (8) media files—video, photo, and audio materials that, by decision of the official conducting the criminal proceeding, must be attached to the electronic criminal case;
- (9) a signature-pad is a specialized peripheral device consisting of a graphic tablet and a writing pen (stylus), which allows creating a digital analogue of a written signature of its owner;
- (10) biometric reader - a specialized peripheral device for authentication of the system user by biometric parameters of the fingerprint;
- (11) SMS-notification - the function of the Unified Register of Pre-trial Investigation, which allows to send text messages to the participants of the criminal proceeding for notification via mobile communication and (or) electronic mail;
- (12) “Public sector” - the function of the Unified Register of Pre-trial Investigation, which allows participants of the criminal proceeding to receive remote access to electronic criminal case materials, to file a lawsuit through the Internet with the observance of information security requirements.

The process of conducting electronic court proceedings consists of pre-trial court proceeding in electronic format is exercised by entering an electronic document or an attached PDF document in the Unified Register of Pre-trial Investigation, based on the official in charge of the procedural decisions and actions, as well as the completion of the required requisites of electronic information accounting documents, signed with e-signature. The order of filling in the required details of electronic forms is determined

by the Regulations of admitting and processing applications and the Unified Register of Pre-Trial Investigation approved by the decree of the General Prosecutor of the Republic of Kazakhstan on September, 19, 2014 No. 89.

The conduct of criminal proceedings at stages of pre-trial investigation in the electronic format is exercised in the online case module on the basis of the Unified Register of Pre-Trial Investigation by:

- completing the required accounting information and requisites of electronic forms in the Unified Register of Pre-Trial Investigation;
- creating electronic documents on base of existing templates and PDF-documents;
- signing electronic documents by the participants of the criminal proceeding with e-signature or tablet of signature;
- sending an SMS-messages to notify or summon participants of the criminal proceeding;
- electronic interaction with the court in order to ensure the processes for considering criminal cases and materials in electronic formats;
- electronic interaction with experts, specialists for the implementation of procedures of examination and obtaining conclusions in the electronic format or converting paper materials into electronic format;
- functions of the “Public Sector” for access to participants in the process of electronic criminal case materials, filing complaints, petitions and obtaining the results of their consideration.

3 Results

The official dealing with the criminal proceeding and entrusted with the implementation of the pre-trial investigation, chooses the format (electronic or paper) of conducting criminal case. After a statement is made in the online case module within twenty-four hours, an automatic notification to the supervising prosecutor is formed. The electronic criminal case is maintained using the electronic templates of the criminal documents contained in the Unified Register of Pre-Trial Investigation. The official conducting the criminal proceeding uses the templates available in the Unified Register of Pre-Trial Investigation, but forms the text himself. The signing of procedural and other documents, compiled in electronic form, is carried out by the participants of the criminal proceeding by verifying the e-signature and by means of a signature pad. Media files relating to the criminal proceedings, must be attached to the online case module. The authorised participants of the criminal proceeding obtain access to the relevant materials of the electronic criminal case by means of the “Public sector” function of the Unified Register of Pre-Trial Investigation. The access to the Internet, the e-signature and registration in the “Unified Register of Pre-Trial Investigation Public Sector” are required.

Every interrogations room in the criminal investigation bodies in Kazakhstan is planned to be equipped with video cameras. Constant on-line broadcasting of actions through a separate channel to the prosecutor’s office will allow to prevent the facts of impermissible methods of investigation, including torture. Officials leaving the office

for detaining purposes or seizing physical exhibits will be equipped with video recorders. The role of prosecutors of the day in the Interior Ministry buildings is increasing. Their rooms are equipped with necessary information bases to study all the circumstances of the case and immediately respond to violations (Kozhamkulov 2017).

4 Conclusion



Thus, the analysis of the experience of the Republic of Kazakhstan in the digitalization of the criminal proceeding allows us to conclude that the use of digital technologies solves a lot of problems in the implementation of criminal procedural activities, especially within the new type of electronic digital justice. In addition, we believe that it is necessary to pay attention to a positive implementation of the project of the Integrated Information System of the General Jurisdiction Courts in the Moscow City Court and 35 district courts in Moscow. In the most successful experience in this area is advisable to be used it in the Russian criminal proceedings, as well as the criminal procedural application in other member countries participating in the Eurasian Economic Union (EAEU).

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Civil Law in the Digital Economy: Analysis of Doctrinal Adaptation Trends

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Abstract. The research objective of the prepared article is to identify the central attitudes characteristic of the understanding of digital phenomena within the framework of civil law and to problem them. It is proved that these installations include the following: (1) Civil law as an automatic reflector of economic processes; (2) The need for a legislative settlement of all newly emerging social relations; (3) Decisive role of state programs and concepts in civil law policy; (4) Technological conditionality of civil law regulation; (5) The idea of a smooth and timeless normative order. It is concluded that civil legislation is not a mechanical reflection of the state of the digital economy, at least for the simple reason that the latter has a trend towards rapid transformations, and if the pace of change in the law corresponds to them, the stabilizing function of law is merely impossible. Digital technologies applicable in the field of law can equally affect both the form and content of the relevant legal relations. As a general rule, if changes relate only to the appearance of social phenomena, this is not a sufficient reason to change the relevant legal norms. If any economic or technological innovation potentially or effectively threatens the rights and freedoms of citizens, it is necessary to verify what branches of industry have the necessary means of protection, whether they fall within the sphere of civil law or, for example, whether sufficient measures can be taken at the level of public law. Where economic dynamics objectively require changes in regulations, it is not appropriate that such innovations be added to existing provisions without taking into account the global system of civil law. It is justified that the additions to Russian civil legislation made by Federal Law No. 34-FL of 18 March 2019 “On Amendments to Parts One, Two and 1124 of Part Three of the Civil Code of the Russian Federation” do not yet have the normative potential that would

make it possible to actually increase the level of protection of the interests of civil legal entities.

Keywords: Digital economy · Civil law · Civil regulation of the digital economy · Civil legislation · Policy acts · Civil law system · Civil legal designs · Binding relations · Protection of civil rights

JEL Classification: K41 · O38 · L86 · K10 · K15 · K24 · E65 · K15 · O14 · O25 · O33

1 Materials

The basis of the normative framework of the study in the sphere of one of the first branches of law responding to the digital modernization of society in a doctrinal way - civil law was the Civil Code of the Russian Federation (hereinafter referred to as the Civil Code of the Russian Federation), Federal Law No. 34-FL of 18 March 2019 “On Amendments to Parts One, Two and Article 1124 of Part Three of the CIVIL.” Based on the provisions of the Civil Code of the Russian Federation, existing provisions of civil legislation were studied, including general rules on obligations, on the conclusion of a contract for the free provision of services, on the form of transactions, et al.

As policy documents of a strategic and advisory nature devoted to civil law in the digital economy, the Doctrine of Information Security of the Russian Federation (Ed. Decree of the President of the Russian Federation of 05.12.2016 № 646); Strategy for the Development of the Information Society in the Russian Federation for 2017–2030 (Ed. Decree of the Russian President of 09.05.2017 No. 203); State Program of the Russian Federation “Information Society (2011–2020)”; Resolution of the Government of the Russian Federation of 15.04.2014 № 313); Program “Digital Economy of the Russian Federation” (Ut. Order of the Government of the Russian Federation of 28.07.2017 No. 1632-r, et al.).

The doctrinal positions that formed the theoretical basis of the study have been studied thanks to scientific works devoted to the phenomena of digital (electronic, virtual, network) development, which has become part of everyday reality and is rapidly spreading as practices of social interaction on the basis of universally recognized values, which are mediated by law (Tarakanov et al. 2019).

Objective factors and prerequisites for the formation of the need to create an independent neoclassical law of this direction, which uses not only prestigious institutions and legal constructions of private or public law - digital law have been studied based on the works of Kartshiya (2019).

The influence of the digital economy on the state of civil law in general and civil law doctrine was studied in the works of such authors as: Gorodov and Yegorov (2018), Kartshiya (2019), Tarakanov et al. (2019), Kolodub (2018), Rodionova (2018), Sannikov and Haritonov (2018), Somova (2018), et al.

The tasks of civil law in the context of the introduction of e-business and e-commerce were studied thanks to the works of Kolodub (2018).

The role of civil law in the process of ensuring economic processes was analyzed through the writings of Engels (1961).

As “digital assets” (digital assets) authors considered the concept of ensuring the stability of a property circulation through the establishment of a legal regime for such objects, on the example of works.

The problem of electronic money in civil law and the possibility to recognize them as a form of cashless money was studied on the example of the works of Kazachenok (2019).

The amendments proposed by scientists to the civil legislation on virtual obligations and binding legal relations in the virtual space were considered based on the works of Abdudzhililov (2016).

The impact of the technological factor on social relations, as well as the processes of transformation of established state and public institutions through the development of digital technologies, were studied thanks to the works of Talapina (2018). The connection of technology and culture in the process of digitalization of law, adaptation under their influence of legal institutions, including civil law institutions, were analyzed in the works of Kartshiya (2019).

The idea of a smooth and timeless normative order was studied on the example of scientific research in the field of the legal regime of crypto on the example of the works of the Gorodov and Yegorova (2018), as well as the legal regulation of transactions executed in an automated manner and their legal protection on the example of the works of Somov (2018). Problems of protection of rights of civil turnover entities based on transactions with digital rights, As well as issues of expansion of their scope of application in general in the digital environment were analyzed based on the works of Sitdikov and Sitdikov (2018).

The processes of formation of civil-legal structures, as well as their correlation with already established and well-justified elements of the mechanism of civil-legal regulation, were considered in the works of Rodionova (2018).

2 Methods

The study based on such methods as structural and functional analysis, which allows to differentiate and detail the elementary composition of doctrinal concepts of digital aspects of civil law, as well as the method of hermeneutics, which identifies the world-view attitudes present in the studied texts.

3 Introduction

The phenomena of the digital (electronic, virtual, network) world have already become firmly part of the daily reality of a vast number of people, and as such, they inevitably come into contact with a right known to mediate the most standard and common practices of social interaction based on universally recognised values (Tarakanov et al. 2019).

Of course, the specific objectives, directions and means of regulating the relevant relations still need to be considered. However, it can be noted that sound science has already begun to make some efforts to do so.

Depending on the specifics of regulated phenomena, the digital sphere may refer to the subject matter of both public law branches (constitutional, administrative, criminal law, et al.) and private law.

Given the close adunation of digital reality and economic activity, associated with the market value forms, that are interrelating with digital technology, it is natural, that one of the areas of civil law becomes one of the first branches of law doctrinally responding to these innovations.

At the same time, there are more and more radical statements, the meaning of which is that the emergence of the technologies under consideration not only requires consideration in the sphere of civil law but can fundamentally change the very appearance of civil law. Thus, for example, experts note that “at present, there is a need to create an independent neoclassical law of this direction, which uses not only prestigious institutions and legal constructions of private or public law. It is, in fact, a matter of “formatting” in the very near-term of digital law in a broad legal sense, not limited to class civil law, the private-legal doctrine” (Kartshiya 2019).

Although the term “digitalization” in a relatively short period has already become practically universal in law science, closer analysis shows that this word refers not to some single phenomenon or process, but several, and differing from each other in a rather significant way, namely:

- The relocation of some traditional legal institutions to a virtual space where they continue to perform their normal functions;
- The formation, together with existing legal phenomena, of their digital “twins,” having more or less changed characteristics;
- Finally, the emergence of qualitatively new legally significant objects or actions specific to the digital environment.

Issues of influence of the digital economy on the state of civil law in general and civil law doctrine, in particular, were considered in the works of such authors as O.A. Gorodov, M.A. Egorov, A.A. Kartshiya, A.O. Inshakov, G.V. Kolodub, O.M. Rodionova, L.V. Sannikov, R.I. Sitdikova, E.V. Somova, Y.S. Kharitonov, et al.

4 Results

Although, as already noted, a holistic concept of civil regulation of digital relations does not yet exist, many doctrinal judgements have already been made on specific aspects of this problem.

In this work, we will try to identify some of the attitudes of civilised community that, in our view, are showing themselves in the discussions on the topics identified.

1. *Civil law is an indicator of economic processes (automatic reflector).*

The following expression can be an example: “the actual existence of partners of the software for implementation of goods, services and services. However, the Russian

space and, first of all, legal, in the aspect of our interest as which civil law acts, is not ready for implementation of electronic business and electronic commerce. One of the removable spaces of Russian civil law knowledge is the categorial system of private law. A large number of elements of the specified system needs adjustment of content, a part — significant updating, some — radical withdrawal pains, and the most important, the available spaces cannot be eliminated due to commenting since it is required to develop and implement new legislative provisions” (Kolodub 2018).

“Digitalization” is a subject of scientific reflection has updated the long-standing, unresolved and unable to be solved a theoretical question about the nature of civil law, which served as a stumbling block in Soviet civil law science.

On the one hand, Marxist philosophy was based on a completely unambiguous, repeatedly confirmed by the classics of historical materialism and a seemingly utterly unopposed notion, according to which law in general and civil law, in particular, is only a way to consolidate those social relations that have already been objectively established and need to be recognized. According to F. Engels, the role of civil law “essentially boils down to the fact that it authorizes existing, under the circumstances, normal, economic relations between individuals” (Engels 1961).

On the other hand, the term “regulation” is already, gradually getting into the language of civil law, but bore other sense: precepts of law influence on particular the corrective, the administrative effect on those processes, first of all economic, which belong to a subject of this industry.

It is curious that the phenomena of “digitalization” with their innovative nature, in essence, revived in civil science quite Marxist moods, if not in respect of open legal ideology, then in the way of a reasoning: so far as in economic life events of a particular sort take place, that civil law has to be changed according to them (and not vice versa). So, experts note that “now in Russia, as well as around the world, there is a process of digitalization of economy connected with active use of new technologies and which caused the emergence of new objects of a property turn which received the general name “digital assets” (digital assets). For ensuring the stability of a property turn establishment of a legal regime for such objects — or by adaptation of existing rules of the civil legislation, or by the creation of new rules is required” (Sannikova L. V., Kharitonova Yu. With, 2018).

2. *The need of legislative settlement of all, again arising public relations.*

As a rule, the very existence of new practices of the “digital” type is considered by legal scholars as a sufficient basis for amending civil legislation.

Thus, legislative reform is seen as a preferred option over other logically acceptable possibilities:

- Some of the innovations may not be in the legal sphere at all;
- Several social relations, even if unknown before, it may be objectively subject to existing legal norms;
- Finally, in the absence of relevant regulations, the institutions of law analogy and analogy of statute can be applied.

For example, there is the problem of electronic money in civil law. Thus, there are views that electronic money cannot be recognized as a form of cashless money, as it is

not in a bank account. The basis or mandatory condition for the occurrence of cashless funds is the agreement of the bank account (deposit), while the basis for the occurrence of electronic funds is the agreement with the operator of electronic funds (Kazachenok 2019).

It seems logical, first of all, to answer the following question: is the difference in the name of the contract an essential sign of electronic money? In other words, does it fundamentally affect the legal nature of this means of payment? Given the answer to this question, there are no real obstacles to extending the regulations on cashless money to electronic money, by an analogy of the law.

A similar course of thought is possible for virtual commitments. In the literature, for example, it was proposed to supplement civil legislation with the following provisions: “General rules on obligations apply to binding legal relations in the virtual space of the Internet, with the exceptions provided for in this Code. Services in the virtual space of the Internet can be provided free of charge if this is derived from the provisions of the contract between the Internet company and users” (Abdudzhaliyov 2016). However, there is virtually no normative content in this novella, which would not derive from existing provisions of civil law, since the validity of the general rules on obligations goes without saying, and the possibility of concluding a contract on free provision of services is initially assumed by virtue of article 421, paragraph 2, of the Civil Code of the Russian Federation, which allows the parties to conclude a contract, both provided for and not provided for by law or other legal acts (Part One of the Civil Code of the Russian Federation of 30 November 1994 No. 51-FL).

Finally, Federal Law No. 34-FL of 18 March 2019 “On Amendments to Part One, Part Two and Article 1124 of Part Three of the Civil Code of the Russian Federation” Article 160 of the Civil Code of the Russian Federation reads as follows: “A transaction in writing must be made by drawing up a document expressing its content and signed by or duly authorized by a person”.

The written form of the transaction is also considered to have been complied with, in the event that the person performs the transaction by electronic or other technical means allowing the content of the transaction to be reproduced on the material medium in an unchanged form, and the requirement of a signature is considered to have been fulfilled, if any method is used to determine the person who expressed the will reliably. The law, other legal acts and agreement of the parties, may provide for a unique method of reliable determination of the person who expressed the will “(Federal Law No. 34-FL of 18 March 2019).

However, such an edition of article 160, paragraph 2, paragraph 1, of the Civil Code of the Russian Federation, in fact, it did not require amendments to the Code, since the concept of “document” initially present in the text does not allow for the electronic form of expression, as to the interpretation of the signature as any way of reliably confirming the identity, that conclusion could equally well have resulted from the application of the law by analogy, as well as from formal or informal interpretation.

3. A critical role of government programs and concepts in civil law policy.

Almost no study on civil law in the digital economy is without references to programme and ideological acts, and they are seen as an additional reinforcement of the need for specific legislative changes (most often such documents as the Doctrine of

Information Security of the Russian Federation (Vol. Decree of the President of the Russian Federation of 05.12.2016 № 646); Strategy for the Development of the Information Society in the Russian Federation for 2017–2030 (Ed. Decree of the Russian President of 09.05.2017 No. 203); State Program of the Russian Federation “Information Society (2011–2020)””; Resolution of the Government of the Russian Federation of 15.04.2014 № 313); Program “Digital Economy of the Russian Federation” (Ut. Order of the Government of the Russian Federation of 28.07.2017 No. 1632-r), et al.).

However, government concepts, programmes and strategies are not known to have the power of official sources of law. They are created in order to draw attention to a subject potentially or relevant to a sphere of activity of the State and to identify possible approaches to the construction of the public policy, including at the level of law.

In other words, the policy instruments of a State are adopted, among other things, to justify the need for legal regulation, but their very existence cannot in any way argue in favour of such regulation.

4. *Technological conditionality of civil regulation.*

Experts note that “at the present stage it is impossible to limit itself only to stating the impact of the technological factor on public relations - digital technologies transform established state and public institutions” (Talapina 2018).

Here we are once again dealing with an idea close to Marxism. As is known, from historical materialism, the link between productive forces and industrial relations is at the heart of the law, and in this “tandem,” the leading role was assigned to productive forces, which were primarily understood as technical means of production.

Similarly, the relationship between technology and culture is most often thought of in the construction of the digitalization of law: electronic devices and their application are not seen as tools for achieving specific social goals and values, but rather as an autonomous force that, on the contrary, is able to change the nature of human behaviour and, therefore, its legal basis. Thus, scientists note that “digital technologies form a new technological environment in which a social phenomenon such as law operates. Moreover, digital technologies are beginning to dictate their conditions, legal institutions, including civil law institutions, need to be adapted to them” (Kartshiya 2019).

5. *The idea of a seamless and timeless normative order.*

As a rule, the argument for legal innovation in the digital economy is the possibility (and often fact) of difficulties in law enforcement.

For example, O.A. Gorodov and M.A. Yegorov believe: “It is necessary to solve the issue of the legal regime of crypto. Is the currency an item, payment or exchange? Until these issues are resolved, there will be problems in law enforcement everywhere” (Gorodov and Yegorov 2018). E.V. Somova notes: “Courts in the countries of the Romano-German legal family face difficulties in analysing transactions executed in an automated manner. Often, parties entering into such transactions do not receive adequate legal protection due to the absence of relevant provisions in the legislation” (Somova 2018).

Such reasoning is freely or unwittingly based on the fact that the problem of protecting the rights of civil traders is a temporary circumstance that can be overcome

through legislative regulation. Thus, researchers write that “it is necessary to agree with the developers of the Bill that the normative legalization of the considered relations will allow to streamline them, facilitate transactions with digital rights, as well as expand the scope of their application in the digital environment as a whole” (Sitdikova and Sitdikov 2018).

However, it is clear that gaps and conflicts of a normative nature, as well as practical difficulties in the judicial and any other protection of individual rights, are not only not eliminated by new legislation, but usually only increase after that.

5 Conclusion

1. Civil law is not a mechanical reflection of the state of the digital economy, at least because the latter has a tendency towards rapid transformation, and if the pace of change in the law is consistent with it, the stabilising role of law cannot be fulfilled.
2. Digital technologies applicable in the sphere of law can affect both the form and content of the corresponding legal relations. As a general rule, if changes relate only to the appearance of social phenomena, this is not a sufficient reason to change the relevant legal norms.
3. If any economic or technological developments potentially or effectively threaten the rights and freedoms of citizens, it is necessary to verify what branches of industry have the necessary means of protection, whether they fall within the sphere of civil law or, for example, whether sufficient measures can be taken at the level of public law.
4. Where economic dynamics objectively require changes in regulations, it is not appropriate that such innovations be simply added to existing provisions without taking into account the general system of civil law; As O.M. Rodionova correctly notes, “the structures formed should be related to the already established and well-justified elements of the mechanism of civil-legal regulation” (Rodionova 2018).
5. Additions to the Russian civil legislation made by Federal Law No. 34-FL of 18 March 2019 “On Amendments to Parts One, Two and 1124 of Part Three of the Civil Code of the Russian Federation” do not yet have the normative potential that would allow to actually increase the level of protection of interests of subjects of civil legal relations.

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Digital Economy Crimes (Criminal Law and Criminological Aspects)

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Abstract. The right of a citizen to have property and to possess, use and dispose of it both individually and jointly with other persons, as well as the right to use abilities and property for entrepreneurial and other economic activities not prohibited by law, is enshrined in the Constitution of the Russian Federation, the basic law of the state (articles 34, 35).

The **aim** of the work is to analyze the state of crime in the economic sphere, in the digital economy in particular and to identify methods of criminal law and criminological nature that ensure the safety of society. **Results:** the work analyzes the state of crime in the field of economics, the methods of criminal law and criminological nature that ensure the safety of society, citizens and organizations. The classification of crimes committed using digital technology is presented. The issues of the criminal law regulation of the illicit trafficking of special technical equipment designed to violate the protection of digital information systems are discussed. **Conclusions.** The implementation of electronic (digital) economy concept, which appeared at the end of the twentieth century and is rapidly gaining modern forms, is due to the transfer of economic relations to the Internet. Of course, this circumstance obliges the state to develop mechanisms for ensuring the security of intellectual property and schemes for the interaction of economic structures, whether it be public or private segments. One of such mechanisms is the legal (criminal law especially) protection of economic interests, which requires the improvement of legal norms that determine the criminal liability of persons eliminate legislative and law enforcement gaps.

Keywords: Digital economy · Economic crime · Internet · Information and telecommunication networks · Economic security

JEL-Code: K1

1 Methodology

The study is based on general scientific and private methods, specially the formal legal method, methods of system analysis and synthesis.

2 Introduction

Modern economic relations are obviously related to the field of digital technology. The economy is becoming digital. Undoubtedly, the expansion of the use of digital technologies obliges the state to develop mechanisms for ensuring the security of intellectual property (Begishev 2010) and economic schemes for the interaction of partners, whether it be a public or private segment. In general, the digital economy is a commercial relationship implemented through communication and information technology. Since the information sphere is actively socialized, the digital economy, business transactions, business contacts are under threat of criminal invasion.

3 Results

Economic crimes depending on the scope of economic activity are classified into following groups: business and other economic crimes; monetary crimes; competition crimes; crimes in the circulation of currency values; crimes in the circulation of money and securities and the payment of taxes; crimes in the implementation of foreign economic activity (Lopashenko 2009; Gravina 2016). Given the digitalization in economic relations, it is reasonable to single out crimes in the field of the digital economy as an independent group, including in this classification not only crimes in the

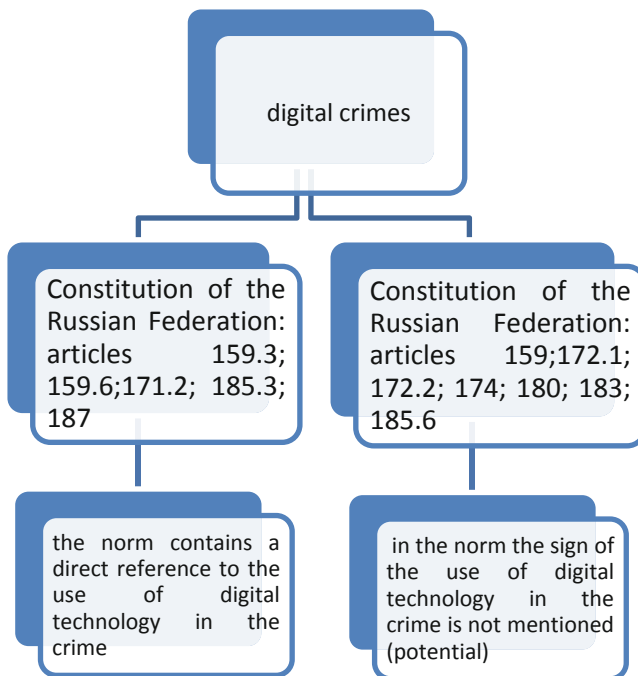


Fig. 1. Digital Crimes

field of economic activity, but also crimes against property, as they are an integral part of economic crime. But it is actually impossible to clearly determine the acts that are committed using electronic information tools, because technical capabilities, as well as methods of committing crimes, are constantly being improved and transformed. Nevertheless, if we try to classify crimes where the article's disposition indicates or is hidden, but an element of using electronic means of payment, telecommunication and computer technologies is potentially possible, then the classification will look as follows (Fig. 1):

The analyzed crime groups very often form a combination with the acts provided in article 272-274, the so-called "computer crimes". These formulations criminalize the creation, use and distribution of malicious computer programs (Gladkih 2014; Russkevich 2017). But recently, the subjects of criminal activity for the commission of such acts as the selection of passwords, information hiding use electronic devices of a different kind than those provided, for example, Art. 273. This circumstance causes difficulty for the law enforcer in qualifying the acts. In order to avoid these difficulties, we believe that it is advisable to introduce an article in the Criminal Code of the Russian Federation providing for liability for the illegal trafficking of special technical equipment designed to violate digital information protection systems.

A specific feature of digital crimes is their multi-episode nature. In this regard, the law enforcer raises the question of the qualification of acts on the totality of crimes or as a single criminal act (Zenkin 2016; Kalinin 2016). We believe that in this case one should take into account the circle of victims (one or several of them) and the time interval between the acts. If the victim alone and the subject committed criminal acts within a short period of time (for example, a lot of illegal money transfer operations from the owner's accounts per day), then the act is qualified, in our opinion, as a single crime.

The objective side of this group of crimes is a complex alternative. So, fraud in the field of computer information, that is, theft of another's property or acquisition of the right to another's property, involves entering, deleting, blocking, modifying computer information or information and telecommunication networks as signs of an objective party (Bespalov 2019). Clarification of the highest judicial instances of the Russian state helps in determining the essence and content of these signs to the law enforcement officer. So, in one of the explanations, it is noted that, in the meaning of the article on computer information fraud, interference with the functioning of storage, processing or transmission of computer information or information and telecommunication networks is recognized as the targeted impact of software and (or) software and hardware on servers, tools computing equipment, including laptops, tablet computers, smartphones equipped with appropriate software, and for information and telecommunications network that gives the specified processing, storage, transmission of computer information (Resolution of the Plenum... 2017; Ermakov 2016).

The arising question is: under what conditions the multi-subject economic relations discussed above go into the sphere of criminal law? Firstly, given the transnational nature of electronic information exchange and the large number of intermediaries between partners, the procedure for establishing the legal status and bona fide participants who are involved in this process is difficult; secondly, the risk of becoming a victim of scammers, for example, using double sites for the purpose of fraud and

inaccessibility for identification; thirdly, there is a danger of making a bulk transaction, which is recognized as null and void and, in addition to civil law consequences, may entail criminal consequences.

The main motive for committing digital economy crimes is the enrichment motive and selfish purpose. It seems that, given the digital sphere of relations, the game motive should not be ruled out. The motive of revenge is more characteristic of crimes against the individual. But in times of crisis and competition, some entities encroach on the organization's information resources and pass on trade secrets to competitors for reasons of revenge. Material benefit in this case is of secondary importance.

Analyzing the characteristics of digital economy crimes, it is necessary to note a high level of victimization, i.e. the propensity of many individuals to become a victim of crime. This is primarily due to the widespread use of electronic devices, Internet resources, and payment systems. With this abundance no one can feel safe. At the level of organizations providing economic services, preventative prevention can be built using digital security risk management methods.

4 Conclusions/Recommendations

Thus, digital economy crimes can be divided into groups on the basis of direct or indirect indication in the disposition of the norm. The objective side of these acts is expressed by alternative actions, methods of committing a crime and is complex. In this regard, it is difficult for a law enforcer in some cases to give a legal assessment and determine the essence of an attribute. In some cases, clarifications of the Plenums of the Supreme Court of the Russian Federation may help. In addition, the analyzed group of crimes often forms an aggregate with computer crimes. The complexity of the issue is due to the use by subjects of crimes of devices of a different kind than those provided for in Articles 272-274 of the Criminal Code. In order to avoid qualification difficulties, we consider it appropriate to introduce an article in the Criminal Code of the Russian Federation stipulating liability for the illicit trafficking of special means designed to violate digital information protection systems.

The main goal in committing digital economy crimes is the selfish purpose and motive of enrichment, but the digital motive and the motive of revenge should not be ruled out.

The widespread use of electronic devices, Internet resources (Razgeldeev and Krepica 2017), payment systems determines the tendency for citizens and organizations to become a victim of crime. In this regard, preventive measures carried out by organizations providing economic services, in our opinion, will increase the vigilance of customers and, as a result, reduce the level of crime in the digital economy.

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Civil Law Concert Activities Regulation in the Russian Federation in the Era of the Economy Digitalization

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Abstract. The purpose of the publication is to establish the integral essence of civil regulation of concert activity, due to the current state of the Russian economy. To achieve this goal it is necessary to solve two problems: (1) to define the concept of “civil regulation of concert activity”; (2) determine the levels and properties of the studied regulation.

The research methodology is based on the use of dialectical, logical techniques and methods of scientific knowledge, as well as the method of civilistic interpretation of the terms being studied, which, along with analysis and synthesis, allows us to formulate definitions of the concepts being studied in relation to the corresponding system of legal regulation.

Results: In the article we formulated definitions of the concepts of “concert activity” and “civil regulation of concert activity”, established the legal characteristics and levels of the regulation under study in modern conditions of civil circulation, due to the digitalization of the economy.

Conclusion: Now there is no single approach to the concept of “civil law regulation of concert activity”, and its levels and legal characteristics are not adequately studied by modern civil law. The current situation, along with the lack of a proper analysis of taking into account the achievements of digital technologies, impedes the realization by participants of a civil turnover of their rights and creates certain problems in the field under study. The authors of this publication believe that their resolution is seen in determining the essence of the desired concept, identifying the legal nature of the regulation in question, developing a classification of its properties in accordance with the dynamics of modern socio-economic relations.

Keywords: Civil regulation · Concert activity · Classification · Level of regulation · Legal characteristics · Deal · Digitalization of the economy

JEL: Код · K 32

1 Introduction

According to the Constitution of the Russian Federation (Article 44), the creative freedom of citizens, which is the basis of concert activity, is one of the fundamental constitutional rights of a person and a citizen, the implementation of which in modern conditions of civil circulation is possible in a system of sustainable civil law regulation.

Now in Russia, state and other holidays, significant events of the Russian Federation constituent entities or of local self-governments, as well as events in the lives of citizens and organizations, are not complete without concerts.

Apparently, therefore, the President of the Russian Federation, in his Address to the Federal Assembly of the Russian Federation dated February 20, 2019, notes the society's high request "for a rich cultural life" that requires comprehensive and "substantial support", and also sets the task of "creating a new legal environment" for the digital economy, including the possibility of "concluding civil transactions" (Putin 2019). It seems that the identification of the essence and characteristics of the civil law regulation of concert activity, which is an invariable integral part of culture, will be the measure of support that can be implemented by means of civilistic science.

The need to determine the nature and characteristics of civil law regulation of concert activity exists because of its adaptation to the current civil circulation. Moreover, the content and quality of legal regulation depend on the state of socio-economic development of the country, which is reflected in the structure of social relations taking shape in the corresponding field of regulation. In this regard, civilists note that at present "the processes of socio-economic transformations of the Russian state" are closely related to "digitalization of the economy and the electronization of all spheres of social life of a modern socialized person" (Inshakova 2018). At the same time, Russian scientists are drawing attention to the fact that a complete digitalization of the economy becomes impossible without interaction with law (Tarakanov et al. 2019). Of course, these aspects should also be adequately reflected in the sphere of organizing concert relations.

It should be noted that in loose meaning of the word concert activity is a process of exercising civil rights, the legal regulation of which has not been adequately studied by means of private law science. There were obstacles in the exercise by individuals and legal entities of their constitutional and civil rights in this area due to the lack of a uniform understanding of the essence of the studied regulation, ignoring its legal characteristics and the degree of impact on the ordered relations taking into account the process of digitalization of the economy.

2 Results

To solve the first task of the work, it is necessary to define the concept of "civil regulation of concert activity". We will use the civilistic methodological method proposed by the Russian jurist Vaskovsky (Vaskovsky 2002). Its essence lies in a consistent verbal and legal interpretation of the constituent parts of the studied term: "civil law regulation", "concert" and "activity".

To determine the legal nature of the term under study, we turn to the dissertations performed by means of civilistic science, the names of which contain the term that interests us. And, moreover, which somehow relate to the study of the field of culture in general and concert activity in particular. It should be noted that among this group of works there are no dissertations that simultaneously contain in their names the terms “civil law regulation” and “concert activity”. In connection with this circumstance, we will consider works studying cultural activities and various aspects of the digital economy.

So, in the title of the dissertation of N. A. Chernyadieva “Civil regulation of museums in the Russian Federation”, regulation refers to the following aspects: (1) civil law provides a legal opportunity for “participation of the subject” of cultural activity “in the socio-economic space”; (2) the object of culture (museum) is considered as a “specific object of civil rights”; (3) to protect the objects of the cultural sphere (for example, “cultural property”), methods of protecting civil rights can be used; (4) organizational and legal forms of legal entities in the field of culture (“museum organizations”) are provided for by civil law and are non-profit organizations in the form of a “fund” and (or) an “autonomous non-profit organization” (Chernyadeva 2005). Thus, civil regulation is a systematization of the work of museums in the context of their participation in socio-economic relations as relevant subjects of civil relations and objects of civil rights, with the possibility of using civil law methods of protection.

Golovizin, studying the civil law regulation of the “circulation of cultural property”, considers under it a social interaction relations system in the economic sphere of society that appear “as a result of the acquisition, use and transfer of goods” in the form of cultural property with civil law forms and regulated by “civil law” (Golovizin 2006).

Krasikova examines the process of civil regulation in the context of the implementation of “electronic transactions”, acquiring their relevance as a means of legal regulation of legal relations in the context of the digitalization of the economy. In this regard, the author presents civil law aspects through: (1) legal consolidation of the “single concept of electronic transaction” both in the text of the Civil Code of the Russian Federation and through the adoption of the relevant law; (2) translation of information on the legal status of participants in civil turnover in electronic form, including their signatures; (3) introduction of the “Internet insurance” procedure into civil circulation based on modern electronic-digital technologies; (4) the creation of an “electronic notary” capable of certifying electronic transactions and other electronic documents (Krasikova 2005).

The results obtained by A. V. Krasikova will certainly find application in the field of civil regulation of concert services. For example, they can be demanded in terms of the prompt receipt of information necessary for the proper conclusion of a contract for the provision of concert services and other contracts in the field under study, to minimize the risks associated with forgery of documents, they will increase the level of security of personal data of participants in concert-concert relations.

Mefodyeva proposes to include “digital data” in the list of objects of civil rights (p. 128 of the Civil Code of the Russian Federation) and consider them in a “narrow and broad sense” (Mefodeva 2019). At the same time, a “broad” understanding of these data allows you to cover “already recognized objects of civil rights, including digital objects of intellectual property” (Mefodeva 2019), which, of course, may be in demand in the process of performing concert activities.

At the same time, all the above studies, despite the emphasis made by the authors in the civil law regulation of relations similar to concert activity, do not adequately determine the concepts that interest us, and do not determine the levels and types of regulation sought.

In the literature on civil law, one can find various approaches to the essence of civil law regulation. For example, Belov believes that the named process does not constitute ordering of the relevant relations, but is their “civil law assessment”. The scientist considers the essence of regulation not “in the impact on public relations”, but in their assessment of compliance with one or another standard of civil law (Belov 2016).

According to Ryzhenkov, the idea of the regulation in question was in demand by modern Russian science from the “Soviet theory of civil law”, based on “Marxist materialistic philosophy”. The scientist identifies two aspects of civil regulation: firstly, the “superstructure”, that is, depending on the basis – economic relations (currently these are the relations of the digital economy – author’s note); secondly, regulativity, that is, the ability to influence social relations (Ryzhenkov 2017).

Moreover, another position of Ryzhenkov regarding possible options for the regulation should be considered: (1) power-normative regulation; (2) power-individual (law enforcement) regulation; (3) self-regulation through transactions (Ryzhenkov 2019). The scientist’s conclusions about planning the behavior of civil circulation participants, which is nothing more than the “regulation” process itself, his conclusions about various types of regulation under consideration, including descriptive and prescriptive regulation and about the form of regulation are no less important (Ryzhenkov 2019).

In the verbal sense, the adjective term “concert” comes from the word “concert”, which means “public performance of musical works” (Ozhegov 1989).

In order to determine the legal content of the term “concert,” let us turn to the scientific research carried out in the field under study and to the sources of legal regulation of the relations under study.

At present, there are no dissertations written in legal specialties in Russia whose names directly contain the term “concert activity”. At the same time, in modern Russian science, in particular, in pedagogy, there are dissertation studies, one way or another affecting the studied field of activity. For example, in the work of O. N. Lysakova it is noted that the “concert performing activity” is largely based on the “creative abilities” of the performer, in general terms representing the totality of his “motivation ..., special creative personality traits, ... giftedness” and other qualities artist (Lysakova 2010). Therefore, the essence of concert activity is the “creative ability of a person” performing any kind of creative work.

It should be noted that the legal content of the term “concert” is not actually disclosed in the sources of legal regulation of the activity under study. Moreover, in the Civil Code of the Russian Federation (hereinafter referred to as the Civil Code of the Russian Federation), this term has not been properly interpreted in the context of its legal characteristics and is used only once as one of the types of public events (subparagraph 2 of Part 1 of Article 152.1). A similar trend is observed in other legislative sources. In particular, in the Federal Law dated 13.03.2006 No. 38-ФЗ “On Advertising”, “concert” refers to the type of events that constitute one of the objects of advertising (Article 3). Since according to Part 7 of Art. 3 of the Civil Code of the Russian Federation, civil relations can be regulated by acts of federal executive bodies,

then we consider the Order of the Ministry of Culture of Russia dated 05.05.2014 No. 763 “On approval of the lists of positions and professions of employees of federal state institutions subordinate to the Ministry of Culture of the Russian Federation, classified as core personnel by type of economic activity”. In this document, the term “concert” is identified with the actions that take place on stage, in other words, these are “stage performances” (Appendix 12).

In the lexical interpretation, the word “activity” is identified with the word “act”, that is, “perform actions, be in action.” In turn, “action” means “the manifestation of some energy, as well as the activity itself, the functioning of something” (Ozhegov 1989).

The legal interpretation of the term “activity” is disclosed in specialized scientific studies. For example, L. A. Chegovadze claims that the civil law effect of an action lies in the degree of its certainty depending on the “goal set by the subjects and the circumstances of their interaction” (Chegovadze 2012). In the context of the ongoing research, such a goal is the organization or performance of concerts.

The analysis carried out in this article allows us to formulate a definition of the concept: “Concert activity is the organization or commission of legitimate actions by participants of civil circulation aimed at obtaining a beneficial effect that does not have a materialized result (absorbing materialized result). The actions are based on the creative abilities of individual and artificial bodies in the performance by them of musical or other creative performances performed in a fixed place and at a fixed time, based both on a paid and free basis.”

We give additional arguments in support of the components of this definition.

In the context of civil circulation, concert activity is qualified as the process of exercising civil rights, the object of which is the provision of the corresponding type of service. Consequently, the studied type of activity is also characterized by specific legal characteristics of concert services, which are the realization of the creative ability of the service provider (service provider) and their spiritual perception by the service recipient (service customer), having a pronounced focus on achieving the benefits of their provision, having an inseparable process of providing services from their executor, having an intangible nature and committed only in place and at the time established by the customer of the services.

The presumption of the concert services provision is their paid contractual basis. At the same time, the social character of the country (conditioned by Article 7 of the Constitution of Russia) also justifies the free provision of the services aimed at meeting the needs of those people who find themselves in a “difficult life situation” (Barkov 2008).

Having summarized the conclusions made in this publication about the essence of the concepts of “civil law regulation” and “concert activity”, we can obtain the following scientific result: “Civil law regulation of concert activity is the planning (modeling) of the behavior of participants in concert activity by establishing their civil rights and obligations on the basis of the power requirements of the law and (or) through transactions stipulated by the organization and (or) the commission of lawful actions (the totality of actions) aimed at obtaining a beneficial effect that does not have a materialized result (absorbing a materialized result), based on the creative abilities of individuals and legal entities to perform musical or other creative works performed in a specified place and at a specified time, based on a fee and free of charge”.

The scientific results obtained in this study allow us to solve the second problem of publication – to determine the levels and characteristics of the studied regulation.

Civil law regulation of concert activity is carried out at the vertical and horizontal levels. At the same time, the vertical level is based on power regulation and includes normative and individual (law enforcement) regulation. In turn, the horizontal level is an independent regulation of concert relations by their participants through various types of transactions (contracts).

The formulated definition of the concept of “civil law regulation of concert activity” allows us to identify its characteristics, the consideration of which will allow civil circulation participants to increase the effectiveness of regulation in the context of extracting the useful qualities of concert services. The authors of this publication propose to classify the characteristics of the sought regulation on the following grounds: (1) by assessment: estimated and non-estimated regulation; (2) by the nature of the impact on the legal relationship: descriptive (descriptive) and prescriptive (prescriptive) regulation; (3) in terms of persons: normative (for an unlimited number of persons) and individual (for certain persons) regulation; (4) in the form of: regulation with the use of acts of state and municipal bodies or self-regulation through transactions by participants in civil turnover; (5) regulation based on the use of the achievements of the digital economy and regulation without the use of digital technologies.

3 Conclusion

Summarizing what was said in the publication, it is necessary to point out that the formulated definition of the concept of “civil regulation of concert services”, the established legal characteristics of the studied regulation and their classification are aimed at strengthening the basis of the constitutional system of Russia on the free movement of services (part 1 of art. 8 of the Constitution of the Russian Federation). Moreover, they are aimed at the process of realization of constitutional rights and freedoms of citizens, at solving state problems of “substantial support” of culture, at creating a “legal environment for the new digital economy” and at increasing the efficiency of the process of exercising civil rights through concert activities under the conditions of the “new modern technological reality” (Putin 2019).



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Digital Citizenship: Implementation in the Modern World

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Abstract. Purpose: The article is devoted to the study of digital citizenship, the legal status of a digital citizen. The authors expressed their vision on these concepts and implementation on the example of some states.

Design/Methodology/Approach: The findings of the study are based on personal observations and legal experiments conducted by the authors on the effectiveness of some of the powers of a digital citizen.

Findings: In the course of the study, it was determined that the ability to maximize one's own capabilities, including in the digital environment, is an important criterion for a person's competitiveness both in the labor market and in everyday life. A significant part of citizens actively interacts not only with each other, but also with the state through digital forms.

Originality/Value: Digital citizenship provides a person with certain rights and obligations in relations with the state. The most important advantage of digital citizenship is the ability to exercise the human right to receive certain services without a personal visit to social structures. Of course, this is quite convenient, since it is not necessary to significantly strain yourself on trips to state and municipal institutions, many state and municipal services can be obtained without leaving your home, via the Internet, using blockchain technology.

Digital citizenship is essential to a democratic environment. The authors expressed their position on how to determine the degree and prospects for the development of digital citizenship.

Keywords: Digital citizenship · Cybercitizen · E-Citizen · Electronic government services · Electronic identity card · Digital citizen competence

JEL classification: K24 · K33 · K38

1 Introduction

Information technology is constantly evolving now, while the boundaries between the real and virtual worlds, between “online” and “offline” are erasing faster.

The active interaction of people through digital content is the basis for the inclusion of the state in this process. It is important to learn to use all the features of such a

product. When receiving certain government services in digital form, a certain activity and competence is required: you need to register, confirm your identity in a certification center. A non-initiative and incompetent person will not be able to obtain the so-called “digital citizenship” and the benefits associated with it. Every day, due to the fact that more and more people interact with digital content, the concept of digital citizenship is becoming increasingly relevant.

The term “digital citizenship” originated as a concept that gives an idea of what knowledge and skills information technology users must possess in order to apply them appropriately. In the educational sphere, as a rule, digital citizenship is identified with digital health, digital ethics.

Digital citizenship is defined as a combination of “standards of appropriate, responsible behavior regarding the use of technology”, “self-controlled participation, reflecting the relationship with all members of the community”, “the quality of human interaction with society” (Ribble and Bailey 2007), “the opportunity to participate in society online” (McNeal et al. 2001), “quality of response to membership in the digital community” (Heick 2018).

We will try to determine whether the concept of “digital citizenship” can be attributed not only to pedagogical, but also to legal terms.

Marshall described the concept of citizenship as “giving all members of the political community certain civil, political and social membership rights, including “the right to fully participate in the social heritage and live the life of a civilized being according to the standards prevailing in society”, “a certain relationship between individuals and the state”. The British sociologist also pointed out: “The responsibility for empowering individuals should be directly and openly vested in the shoulders of the state. Citizenship is not a way of life that grows out of a person’s inner world, but what comes to him from outside.” (Marshall 1964).

The indicated characteristics of citizenship indicated by T. Marshall emphasizes that citizenship is inextricably linked with the state. Any state of citizenship, including digital, depends on the state, state and legal regulation, as well as on the development of civil society.

Citizenship, as a legal category, is a stable legal relationship between a person and the state, expressed in the aggregate of their mutual rights and obligations. The scope of rights of a person, including the issues of regulating the Internet space, is largely determined by state and legal regulation.

Proceeding from this, digital citizenship, as a legal category, can be defined as a stable legal connection of a person with the state, carried out through digital forms, blockchain technologies and expressed in the totality of mutual rights and obligations.

One should also agree with the thesis that “digitalization makes citizenship much more complicated than just a stable legal relationship” (Ribble and Bailey 2007).

Citizenship is not static, but a dynamically developing legal and social institution: from citizenship to post-national, global, supranational, environmental and digital citizenship.

Along with the term digital citizen, others are sometimes used: cyber citizen (Hill and Hughes 1998; Larkin 2001), E-Citizen (electronic citizen) (Farjad et al. 2011; De Stefano et al. 2019; Hodson 2014). We believe these terms are synonymous.

In the works of Russian scholars in the field of jurisprudence, one can also find the use of the term “digital citizenship” (Antonov 2016).

Does the status of a “digital citizen” imply that a person who possesses it should possess additional practices and competencies?

A digital citizen is a person who, in our opinion, should have the necessary knowledge and skills to effectively use digital technologies to communicate with other people, participate in society, interact with government institutions, and to create and consume digital content.

Digital citizens must have extensive skills, knowledge, access to the Internet and technology, and schools should direct students to digital citizens. Factors necessary for the establishment and development of digital citizenship traditionally include: digital literacy, digital law, digital rights and obligations, digital security, digital access, digital etiquette (Isman and Gungoren 2013). In our opinion, this list is not closed and can be expanded, including due to the citizenship of the user, his initiative. The level of digital citizenship is influenced, among other things, by individual characteristics, Internet skills, and psychological characteristics (Choi et al. 2018).

Radical technological innovation is determined by whether it creates a new activity or only facilitate the implementation of already existing institutions (Inshakova et al. 2018).

The state program “Digital Economy of the Russian Federation”, approved by order of the Government of the Russian Federation of July 28, 2017 No. 1632-r (expired), emphasized that “an increasing number of citizens of the Russian Federation recognize the need for digital competencies ... and there is a serious gap in digital skills between different populations.

2 Methodology

Etymological and system analysis allowed us to determine the meaning of the terms “digital citizenship”, “digital citizen”. The formal legal method was aimed at revealing the regulatory component of the implementation of digital forms of interaction in society. The paper analyzes scientific developments on the provision of digital services, digital citizenship, the provisions of international treaties and regulatory legal acts.

3 Results

Estonia was the first country to introduce digital citizenship open to all, mandatory for citizens over 15 years of age.

December 1, 2014, the Estonian Act on Amendments to the Law on Identity Cards and the Law on State Fees (Isikut tõendavate dokumentide seaduse ja riigilõivuseaduse muutmise seadus (Publisher: Riigikogu); RT I, 10.29.2014, 1 (<https://www.riigiteataja.ee/akt/121032014002>)) digital citizenship was regulated in detail.

According to the new edition of subsection 1 of § 201 of the Estonian Identity Documents Act (Isikut tõendavate dokumentide seadus) (Publisher: Riigikogu); RT I 1999, 25, 365; RT I, 03/13/2019, 66 (<https://www.riigiteataja.ee/akt/113032019066>)

digital identity card (digital document) has become an identity document. Such a digital identity card is issued to an Estonian citizen and a foreigner who has previously been issued with an identity card or residence permit or applies for an identity card or residence permit at the same time as the identity card (clause 2 §201). Section 202 of the Estonian Identity Documents Act establishes that the digital data entered on a digital identification card includes: information that allows digital identification and information that allows digital signature to be entered on a digital identification card. Since 2018, digital ID has been issued for up to five years. A digital identification card in the form of Mobile-ID is a digital identification card, a digital identification certificate and a digital signature certificate which is associated with the SIM card of a mobile phone.

On the basis of the Estonian Law “on Amendments to the Law on Identity Cards and the Law on State Fees”, adopted on December 1, 2014, the right to receive digital citizenship (E-residendi digitaalne isikutunnistus Digi-ID) was granted not only to citizens of the state, but also to foreign citizens and stateless persons. E-Residence (electronic/digital citizenship) is a system of remote establishment and business management in Estonia that makes it possible to use the full range of electronic services, existing in Estonia, including digital signatures. The introduction of digital citizenship for foreigners is primarily aimed at attracting businessmen and foreign capital to their own economy. Digital citizenship of Estonia, which can be obtained by a wide range of people, provides access to a wide variety of digital services: registration legal entities, opening accounts in some Estonian banks electronically (you must first check with the bank if this is possible); access to electronic options of the tax and customs departments, with the possibility of electronic submission of documents and declarations; the possibility of using digital signature of documents, which greatly simplifies the signing of contracts or other documents (digital signature in Estonia is legally equal to traditional); access to any other services and databases in Estonia where electronic identification of a person is possible; the possibility of using a personal tax number.

An e-resident is a foreigner who, on the basis of the identity of the state of nationality, Estonia has given the opportunity to create an electronic digital identity and issued a digital identity card - digi-ID of an e-resident (§20⁵ of the Estonian Identity Documents Act). An e-resident digi-ID is a digital document used only in the Estonian electronic environment to identify an e-resident's identity and affix an electronic digital signature. The e-resident's Digi-ID allows a foreigner to participate in public and private legal proceedings, regardless of their physical location. An E-resident can register a company on the Internet within one day, manage it online from anywhere in the world without having to have a manager in Estonia, use electronic banking services, declare taxes, sign documents and conclude contracts on the Internet using a digital signature.

The e-resident Digi-ID does not give the right to reside in Estonia. An e-resident Digi-ID can be issued to a foreigner who has connections with the country or a reasonable interest in using electronic public services in Estonia. Digi-ID is not issued: to foreigners who have a valid residence permit or the right to reside in Estonia; foreigners who have been issued with an identity card or residence card by the Police and Border Guard Board, or those who are in Estonia based on the International Military Cooperation Act.

In Estonia, for several years now, one can vote in elections to parliament or local governments without leaving your home - just log in to a special site via the Internet using a personal ID card.

In Russia there was an analogue of the Estonian ID-card. According to Art. 22 of the previous edition of the Federal Law “On the Organization of the Provision of State and Municipal Services” dated July 27, 2010 N 210-FZ (the article ceased to be valid with the adoption of the Federal Law dated December 28, 2016 N 471-FZ) the universal electronic card was a tangible medium containing a fixed on it in visual (graphic) and electronic (machine-readable) forms information about the user of the card and providing access to information about the user with the card used to certify the rights of the card user on the floor ix state and municipal services, as well as other services, including the commission in the cases stipulated by the Russian legislation, legal acts in electronic form. The user of a universal electronic card could be a citizen of the Russian Federation, and in cases provided for by federal laws, a foreign citizen or a stateless person. The universal electronic card provided for the possibility of using federal electronic applications that provide: (1) user identification with a universal electronic card in order to obtain access to state and municipal services and services of other organizations when using it; (2) obtaining public services in the system of compulsory medical insurance (compulsory medical insurance policy); (3) obtaining public services in the system of compulsory pension insurance (insurance certificate of compulsory pension insurance); (4) obtaining banking services (electronic banking application).

This universal card is not widespread and has been canceled. A new model of digital card with more features is being developed.

In the passport of the national program “Digital Economy of the Russian Federation” (approved by the Presidium of the Presidential Council for Strategic Development and National Projects on December 24, 2018 N 16), it is planned to create a resource for remote registration of legal entities and individual entrepreneurs and opening credit accounts for them organizations using technology protected using cryptographic tools, based on new-type documents containing personal data of a citizen, including I biometrics, as well as a reinforced qualified electronic signature of said data; creating an infrastructure for collecting biometric data of citizens and issuing documents of a new sample containing an enhanced qualified electronic signature and biometric data of a citizen in the territory of all constituent entities of the Russian Federation; - creating new services for citizens guaranteeing the protection of their personal data.

The legal capacity of a person with digital citizenship is expanding due to new digital forms of realization of human rights. Currently, for example, in the Russian Federation, a significant number of services can be obtained if the applicant is required to authorize in a single identification and authentication system using information and communication technologies.

The Unified Portal of State and Municipal Services (<https://www.gosuslugi.ru/>) and related services are successfully operating in Russia. Currently, a person registered on this portal and received a verified account has the opportunity to receive a significant number of state and municipal services in electronic form. The authors of this article have repeatedly received some government services in electronic form and were satisfied with the quality of the services provided.

In 2019, Russian citizens for the first time received the right to submit electronic applications through the government services website about the possibility of changing the polling station and received the right to vote in person at digital polling stations. Of course, this turned out to be a popular option of digital citizenship. In the framework of the experiment on the organization and implementation of remote electronic voting in accordance with the federal law dated 29.05.2019 No. 104-ФЗ “On amendments to certain legislative acts.

4 Conclusion

More and more citizens of the Russian Federation are recognizing the need for digital competencies. A reasonable proposal is to measure the level of digital citizenship with a digital citizenship index, which consists of certain indicators: a list of the rights and obligations of a digital citizen, a level of access to information technology, a list of public services provided in digital form, digital citizenship of a user, etc. Having conducted a comparative analysis of the legal status of a digital citizen. In Estonia and Russia, it can be concluded that the rights and obligations of these persons, as well as the possibilities for their implementation, are fairly close. Of course, I would like to expand the list and limits of the services provided through digital forms, and, as a result, expand the legal capacity of a digital citizen. It should be noted that digital citizenship will allow many people with disabilities to feel full-fledged participants in public life, for them it is a life-saving beacon that will make it easier to bear the hardships of life associated with health restrictions. For the concept of “digital citizen,” the vector of development is the further enrichment of status, not only with rights, but also with the content of the “digital citizen – state” relationship: from the layman to a person who has a stable legal connection (including digitally) with a state that has full legal status, high index of citizenship and owning sufficient competencies in the field of ICT technologies.

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Specifics of Electronic and Digital Law Enforcement in Crime Investigation

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Abstract. The article deals with the problematic issues of crime investigation in connection with the transition to electronic and digital law enforcement in criminal proceedings: - the authors analyze the ideas proposing to abandon the investigative standard of evidence formation and the investigation report as a source of evidence in the criminal procedure; - the researchers reveal the peculiarities of electronic document management in crime investigation including the use of the information system “Electronic passport of criminal case” concerning investigated, suspended criminal cases with indictment sent to the Prosecutor; - the paper explores the possibilities of electronic digital law enforcement associated with collecting and examining evidence in the investigation of crimes.

The article is intended for scientists, practitioners and all those who are interested in the issues of electronic and digital law enforcement in crime investigation.

Keywords: Investigation of crimes · Electronic-digital law enforcement · Electronic passport of criminal case · Collection and verification of evidence

JEL-код: K40 · K42

1 Methods

The methodological ground of the research is the provisions of materialistic philosophy based on the dialectical view of the order and conditions of social development, interconnectedness and interdependence of social processes aimed at applying the achievements of electronic and digital law enforcement in the investigation of crimes.

2 Introduction

Issues of law enforcement in the investigation of crimes are caused by the need to use such a mechanism of legal regulation, which could ensure the correct solution of the criminal case and prevent arbitrariness on the part of state bodies and officials with powers in the field of criminal proceedings.

The meaning of the mechanism of legal regulation is that it allows to reveal the process of translation of legal requirements into real lawful human behavior (Lazarev 2000).

The basis of law enforcement is a legal fact, which is the basis for moving the interests of potential and real participants in criminal proceedings in the field of law.

Only a law enforcement body or official can ensure the enforcement of the rule of law, pass an act that will mediate the link between the norm and the result of its action, will form the basis for the further development of public relations, clothed in procedural form (Mal'ko 1999), by which the necessary rule of law is implemented.

Therefore, the content of criminal procedure is a procedural form, which serves as a guarantee of observance of the established procedure for the investigation of crime and crucial to the proper solution of the criminal case, because form deviation in conditions of digital and remote enforcement significantly increases the possibility of violation of the principle of legality.

The development of technologies related to the widespread computerization and informatization of our society is due to the need of implementation such reforms of criminal justice, which could make fundamental changes in the procedural form transferring it to the sphere of electronic and digital law enforcement in the investigation of crimes.

To understand the necessity of electronic and digital law enforcement in criminal proceedings, it is necessary to understand the meaning and concept of "digitalization" represented by the transition from analogue forms of communication to digital. And since analog information is perceived consistently by the person himself, then the person can influence it, changing it at his discretion. Digital (discrete) information is created and processed by computer technology, and therefore the possibility of influencing the change of this information by an official is estimated as extremely low. The advantage of electronic and digital law enforcement is a small probability of the impact of state bodies and officials to make changes in the real component of the collected information in the criminal proceedings, but if this happens, there is a real possibility of establishing this fact by means of technical means.

The transition to electronic and digital law enforcement in criminal proceedings is stipulated by the interests of the parties, as well as state guarantees related to material and time savings in crime investigation and the solution of criminal cases.

Alexandrov, Bychkov, Butenko, Veprev, Vlasova, Golovko, Ivanov, Solovieva and other researchers devoted their scientific works to the issues of electronic and digital law enforcement in criminal proceedings.

Theoretical developments of these authors are important due to the necessity of improving the procedure of investigation and use of information system "Electronic passport of criminal case" related to investigated, suspended criminal cases with indictment sent to prosecutor.

The above circumstances determined the objective of the work aimed at formulating proposals on the possibilities and forms of electronic document management within electronic and digital law enforcement in the investigation of crimes, as well as in exercising control and supervision over the procedural activities of inquiry and preliminary investigation.

According to professor Alexandrov the digital era of the state is caused by its democratization including reforms in the field of criminal justice as a rejection of the “functional investigator”, of the investigation report as the main source of evidence, because the subjects of investigation may be the police authorities, private persons and intelligent agents that will collect evidence, which may be estimated only by prosecutor and court (Aleksandrov 2018). This is also the position of Vlasova proposing to abandon the investigative standard of evidence formation, investigation report and calling anachronistic outdated criminal procedural relations, in which the investigator dominates (Vlasova 2018).

However, refusal of stages of pre-trial production (where the investigator and the interrogator having procedural powers and experience, check messages on the committed or imminent crime, by production of separate investigative actions, establish existence or absence of the sufficient data indicating crime signs) is possible only at creation of such a mechanism of procedural regulation which is capable to improve the operating system of criminal proceeding. Already at the first stage of the criminal proceeding the investigation reports are sources of evidence that determine the presence or absence of circumstances that allow to take decision to initiate or refuse to initiate criminal proceeding. Then, it is necessary to speak about the prospects and opportunities of the stage of preliminary investigation where the bodies of inquiry and preliminary investigation in compliance with the principles of criminal procedure and the general rules of preliminary investigation terms collect evidence of both, the person’s guilt and innocence, on a professional basis for further trial, which will determine the guilt of the defendant only after court verdict put into effect. Who is able to carry out this array of pre-trial activities, supporters of the rejection of the investigative standard of evidence formation and the authors of detailed theoretical developments do not represent restricting themselves to the ideas of universal competitiveness.

The real achievements of a scientific and technical nature in all spheres of our public life is quite consistent with the high level of Russia authority among the leading nations of the world, as caused by economic issues due to the need to ensure sustainability of investments in scientific achievements, compensation costs spent on expensive digital equipment to maximize the income in the course of its use. However, applying the results of digitalization is necessary to save time and material resources for the benefit of criminal procedure science and practice of implementing its results in the investigation of crimes, solution of criminal cases and the implementation of the necessary reforms to improve criminal procedure relations.

It is difficult to agree with Professor Alexandrov stating that the profession of an investigator is obsolete and will die out in midterm (Aleksandrov 2018). In our opinion, even in the process of digitalization of criminal proceedings there is no alternative to the investigator, as a subject authorized to conduct a number of investigative actions to make decisions at the stage of initiation of criminal proceedings, as well as to collect and verify evidence during the preliminary investigation. Such subjects having power, as the judge and the prosecutor, have no right to collect proofs at stages of pretrial procedure as their activity connected with collecting proofs is limited to trial procedure.

We support the idea of electronic and digital law enforcement of crime investigation and further digitalization of criminal proceedings aimed at a thoughtful approach to changing criminal procedural relations based on the principle of publicity due not so

much to the interests of the individual but the interests of society and the state, which are guarantors of the rights and legitimate interests of persons and organizations being victims of crime, as well as the protection of the individual from illegal criminal prosecution.

It is necessary to agree with Professor Golovko recognizing the presence of positive changes in criminal proceedings in relation to the new opportunities of digitalization in criminal proceedings and believing that these changes are unable to lead to a “criminal procedural revolution” and replace the classic criminal procedure with some “new criminal procedure” (Golovko 2019).

However, suggestions concerning the global innovations in the criminal process caused by the widespread offers of the competitive nature of criminal proceedings, which are associated with the abandonment of stage of initiating criminal proceeding, replacement of the investigator in the preliminary investigation stage by the investigating judge and proceeding of investigative actions. However, these thoughts are caused not so much by the desire to solve the problematic issues of the theory and practice of the criminal procedure as a desire - armed with new ideas of digitalization of criminal procedure, to doubt a scientific perspective of development of the continental criminal process, promoting Anglo-Saxon, comparative idea of building criminal justice.

Digitalization of criminal proceedings enables to reduce the duration of criminal procedure from the beginning of the criminal prosecution to the moment of its termination or conviction and allows to keep records of legal and factual complexity of a criminal case, the sufficiency and effectiveness of the actions of the judge, investigator, prosecutor, head of the investigative body, investigator, body of inquiry, head of the body of inquiry, head of the unit of inquiry, carried out to ensure the rights and legitimate interests of victims of crimes in the production of pretrial and judicial stages of criminal proceedings.

In this case particular attention is paid to the total duration of the proceeding, as criminal proceeding must be carried out within a reasonable time determined to facilitate the digitalization of the criminal procedure, where electronic document management plays an important role.

Thus, in the Central office of the Investigative Committee of Russia there are monthly on average 20 thousand incoming documents, 15 thousand outgoing documents to be registered, and the volume of internal document management of this Department is 5 thousand documents (Bychkov and Veprev 2018). Moreover, the main body of documents is directly related to the investigation of crimes, to the number of documents of restricted access, since the registration, storage, sending and destruction of information about crimes is covered by professional secrecy.

Electronic document management in criminal proceedings accelerates the procedural movement, if all written documents and procedural decisions are translated into digital form allowing public authorities and officials, after requesting the necessary documents, to receive them in the shortest possible time, without wasting it on travelling to different departments.

Electronic document management due to the need to create the information system “Electronic passport of criminal case” in the investigative divisions of the Investigative Committee, the FSS and the internal affairs bodies of the MIA of the Russian

Federation related to investigated, suspended criminal cases with indictment sent to prosecutor. The information system allows to restore the lost criminal case, and also to carry out procedural control over the course of investigation and taking procedural decisions.

So, the main purpose of the system “Electronic passport of criminal case” is recording messages about crimes: - in respect of persons under screening report; - the perpetrators of crime; all criminal cases; - the results of procedural control; - forensic expertise; - forensic characteristics; - use of forensic technology in investigations.

It should be agreed that in the electronic document management system all forms of input and output documentation are to be unified; issues of access are to be resolved; information security during data transfer is to be provided; terminology database of definitions, parameters and details is to be standardized; retrospective documentary search is to be provided; the electronic document management system should cover all levels of management and circulation of documentary information as “vertically” as between the interacting units “horizontally” (Bychkov and Veprev 2018).

In the system of “Electronic passport of criminal case” special attention is paid to the terms of the preliminary investigation, which are coming to an end; the terms of the completed preliminary investigation; instructions that are not executed within the specified period; criminal cases under control; criminal cases in which the diversion took place.

The criterion for the effectiveness of this system is the number of criminal cases investigated within a period exceeding 2 months from the date of initiation prosecution. The task of investigative bodies and departments of procedural control, scientific investigation division, heads of investigation departments is to reduce the number of criminal cases investigated for more than 2 months. The information system “Electronic passport of criminal case” allows to reduce printed document management and to simplify procedural control over the investigated crimes.

You should pay attention to the suggestions for improving the information system “Electronic passport of criminal case”, namely: - uploading the materials of conducting certain investigative actions to create “archive of criminal cases” in order to view a summary list of the criminal cases being investigated for the present moment by a certain investigation department; - creating the register of crime reports of each regional investigative department (Butenko and Butenko 2017).

Electronic document management is associated with the emergence of new information technologies, and therefore leads to the emergence of such crimes, which are caused by illegal access to information, its changing, theft and dissemination (Frantsiforov and Solovyeva 2019). And therefore, electronic document management is stipulated by the need to create such a system of legal guarantees of confidentiality, security of movement and storage of information that would ensure compliance with official and state secrets.

In connection with this problem, the Russian Government passed the Decree in which it approved the Resolution on the system of interdepartmental electronic document management (Decree of the RF Government dated 22 September 2009 № 754 “On approval of Resolution on the system of the interdepartmental electronic document management”), under which federal information system provides automated protection

for exchanging electronic messages containing the information constituting a state secret.

The necessary conditions of the interdepartmental electronic document management are the following: - providing technological opportunities for document management to be used by variable number of its participants; - the use of compatible technologies and technical means; - the lawful use of certified software and hardware; - ensuring the integrity of transmitted information; - minimization of time and financial costs; - ensuring confidentiality of sending and receiving information.

Thus, an important component of digitalization is the observance of confidentiality and secrecy of information transfer and receipt in the field of criminal proceedings.

The observance of secrecy in criminal proceedings requires the protection of such information processed by means of computer technology, and represents various types of electronic media on paper, magnetic and other basis. So the automated information system and the information contained in this system is an electronic document requiring information security, which is ensured by the system of technical and organizational actions based on the special protection of the processed data, compliance with virus protection information and control measures governing the recovery and archiving of data residing on the head node, and the replacement of anti-virus databases to ensure data protection.

Important tasks for the protection of information that is to be transmitted, received or stored within one department are the following:

- (1) providing technological possibility of safe applying electronic document management by competent state bodies and officials in the sphere of criminal proceedings;
- (2) participants' application of electronic document management of unified software and technical means;
- (3) using electronic digital signature to sign electronic documents;
- (4) applying certified software and hardware by state bodies and officials;
- (5) information security of electronic and digital law enforcement.

Information security of electronic and digital law enforcement in the investigation of crimes is provided by technical and organizational measures. Thus, technical measures should include: protection of technical devices from unauthorized entry (setting a password and code), as well as anti-virus protection of information.

Organisational measures are caused by the control over implementing requirements of normative documents regulating protection of information, appointment of officers responsible for information security, establishment of backup procedure, recovery and archive databases residing on the head node of the interdepartmental electronic document management, the order of permitting carrying out repair work of software and hardware, organization mode of the premises that house the technical means of electronic document management.

The possibilities of electronic and digital law enforcement in the investigation of crimes are determined by the need to collect and verify evidence. Despite the fact that electronic (digital) evidence entered the modern criminal process as the term "electronic media", they are not still included in the number of independent sources of evidence, and referred either to physical evidence or to other documents within the

requirements of part 2 of Article 74 of the Russian Federation Code of Criminal Procedure. So, the legislator, revealing features of storage procedure of electronic data storage device (in item 5 h. 2 Art. 82 of the Russian Federation Code of Criminal Procedure), refers them to physical evidence.

Collection and verification of such evidence as electronic media is carried out during investigation actions, which are to be carried out by the investigator in the pre-trial stages of the criminal procedure. Such investigation actions are search, seizure and various kinds of investigative examination, which key characteristic is the use of technology (part 5 of Article 166 of the Russian Federation Code of Criminal Procedure), as well as a specialist participation in investigation action (part 5, Article 164 and 168 of the Russian Federation Code of Criminal Procedure).

The result of obtaining digital information can be issued in the inspection record, only when this information is placed in open sources. For the detection and seizure of electronic information, receiving of which leads to penetrating the room where its storage devices are located, a search or seizure is required. These investigation actions are related to the search and seizure of media or its copying to other media.

As Professor Alexandrov points out, the existing system of general rules for the production of such investigation actions as inspection, search and seizure, created in the era of traditional crime, is of little use in modern conditions (Aleksandrov 2018). In our opinion, the existing general rules system of investigation should not be abandoned, as they are quite acceptable provided that they are correctly interpreted and thoughtfully used in the course of investigation actions for the purpose of collecting evidence from an electronic media. Such investigative actions as search and seizure are caused by coercive measures, they most acutely affect the rights of interested persons and contain procedural features of the proceedings, and therefore should have a high level of guarantees of the rights and legitimate interests of participants in criminal proceedings. Thus, if the necessary information is stored on remote servers, the seizure of the computer from which it was sent and deleted by the suspect from the hard disk will not allow the investigator to obtain information incriminating the person. Therefore, to collect information stored on another device or in the "cloud" it is advisable to conduct a search through remote access (Ivanov 2009).

It should be borne in mind that this type of search is significantly different from a traditional search, because it has difficulties as in the procedure of its proceeding, and the procedure of ensuring the rights of the searched. So, when proceeding a search the person being searched, and also the defender or the lawyer of the searched has the right to be present. Before the start of the investigation procedure the investigator must give a formal note on its proceeding, and in some cases also a judicial decision authorizing its conduct, and to offer the searched to surrender voluntarily important for the criminal case documents to be seized. For this purpose, the owner of the information in respect of which it is necessary to proceed a remote search should be summoned by the investigator, explained his rights, responsibilities, the procedure of conducting a remote search and offer to present documents stored electronically on a computer or remote server. Failure to comply with the rules of the search will lead to a violation of the rights of its participants, what will entail the recognition of inadmissible evidence collected in the case. Thus, if the search is to be conducted in the premises and the technical means located in it, the investigator shall not have the right to invade another

premises or electronic space outside it. However, in accordance with part 2 of Article 19 of the Convention on crime in the field of computer information, law enforcement agencies have the right to search or access a particular computer system to obtain the necessary data. If this data is stored in another computer system and cannot be obtained from the first system or with its help, the law enforcement authorities have the right to legally conduct a remote search of the data in the other system (Convention on crime in the field of computer information ETS No. 185. Budapest, November 23, 2001), for these rules, under proceeding remote search could be legal, they must become statutory in criminal and procedural legislation, in particular in Chapter 21 of the Russian Federation Code of Criminal Procedure “Common rules of preliminary investigations” and in Article 182 of the Russian Federation Code of Criminal Procedure “Grounds and procedure for search”.

3 Results

The authors of the article come to the conclusion that digital document management in criminal proceedings accelerates the procedural movement, if all written documents and procedural decisions are scanned and translated into electronic form, allowing the judge, Prosecutor and investigator to receive requested necessary documents as soon as possible, without wasting time on mailings. The use of the results of digitalization is caused by the need to comply with a reasonable period of criminal proceedings and save material resources for the implementation of the results of electronic and digital law enforcement in the procedure of investigation of crimes. In the course of digitalization at the pre-trial stages the investigator remains an indispensable figure, since only he, and not the prosecutor or the judge, is authorized to initiate prosecution and conduct a number of investigative actions in order to collect and verify evidence.

An important means of digitization of the preliminary investigation stage is the creation of investigative units for the information system “Electronic passport of criminal case” related to suspended and investigated criminal cases with indictment sent to the prosecutor allowing to restore lost criminal case, to monitor the progress of the investigation and adoption of procedural decisions and the supervision over procedural activities of preliminary investigation bodies. The main purpose of the system “Electronic passport of criminal case” is to record reports of crimes in relation to persons in the materials of the inspection; persons who committed crimes; all criminal cases; the results of procedural control; forensic examinations; forensic characteristics; the use of forensic technology in investigation actions.

The authors come to the conclusion that the important terms of the interdepartmental electronic document management are the following: - providing technological opportunities for being used by variable number of its participants; - the use of compatible technologies and technical means; - the lawful use of certified software and hardware; - ensuring the integrity of transmitted information; - minimization of time and financial costs; - ensuring the confidentiality, protection, transmission and receipt of information.

According to the authors, the main tasks of information protection necessary for transmitting, receiving or keeping it within one department are: - providing technological

opportunities for the safe use of electronic documents by the investigator, interrogating officer, prosecutor and judge; - application of unified program and technical means; - use of digital signature for signing electronic documents; - use of certified software and hardware; information security electronic digital law enforcement.

4 Conclusion

Thus, electronic-digital law enforcement is now a necessary tool widely used by the competent governmental authorities and officials in the field of criminal proceedings in the investigation of crimes. This is stipulated by the ability of participants of the criminal procedure to obtain information about committed or planned crime quickly and take the necessary decisions, which belong to the issues of ensuring the rights of victims of crime promptly, the protection of persons from unlawful criminal prosecution, and procedural issues, judicial control and prosecutor's supervision of compliance with legislation and permit applications and response to complaints brought.

The authors conclude that the danger of the information approach in the investigation of crimes is associated with the blurring of clear guidelines between information and evidence. At the same time evidence is not any information that can serve as a reason institution a criminal proceeding, but only one that contains sufficient data indicating the elements of crime, on the basis of which the circumstances relevant to the criminal case are found. Information can be operational search or collected by the defender. However, evidence is informative information (factual data), on the basis of which the investigator, prosecutor or court, in accordance with the procedure established by the Russian Federation Code of Criminal Procedure finds the presence or absence of circumstances constituting the subject of evidence, and which are allowed as its sources (part 2 of Article 74 of the Russian Federation Code of Criminal Procedure).

Therefore, information in the form of received statements or actual data cannot be considered as the purpose of the investigator or inquirer. This is not enough to find the guilt of a person of committing a crime. So, each proof is subject to assessment from the point of view of relevance, admissibility, reliability, and all collected evidence in the aggregate—sufficiency for the solution of the criminal case (part 1 of Article 88 of the Russian Federation Code of Criminal Procedure). Requirements for digital evidence should be significantly higher than for other information that claim to be evidence taking into account their properties and characteristics, since computer information must be verified for authenticity, it should identify the subject and the time of its creation, as well as the possibility of its reproduction in an accessible way during pre-trial or judicial proceedings.


The correct understanding of electronic digital law enforcement when investigating crimes helps to realize the purpose of criminal proceedings is determined by the state guarantees of the rights of victims of crime and to protect individuals from illegal bringing to criminal liability.

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Smart Contracts as a Legal Instrument of Developing the Export Potential of Intellectual Property Rights in International Economic Activity

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Abstract. The emergence of new legal tools mediating relationships in the transfer of intellectual property rights allows resolving issues of quick access to the international right holder market, expands opportunities for the international transfer of intellectual technologies, minimizes costs related to the remote location of contracting parties in different parts of the world. However, there are several new problems emerging due to the absence of legal regulation of legal relationships which arise from smart contracts, the controversy of the current international and national legal norms regulating the international trade of intellectual property items, as well as the tendency of the national law to establish limits and restrictions for the international trade of technologies; the impossibility to identify the entity entering into smart-contract-based legal relationships clearly and unambiguously, etc. Creating a cohesive and consistent legal regulatory system requires a scientific analysis for the purpose of creating a fundamental scientific basis for improvement of the current legislation. The methodology of a study is determined by its goals and objectives and is based on the dialytic method of cognition as an assembly of general and specific scientific methods. The paper presents a theoretical study of issues related to the application of smart contacts in the formation of legal relationships during the transfer of intellectual property rights in conducting foreign economic activities. A detailed analysis of the Russian and international law in force has been conducted. A justifiable conclusion has been made that it is necessary to abandon national regulation of

relationships involving intellectual property rights and create international legal acts. The research of the issue of identification of entities entering into legal relationships via a smart contract has revealed that there is neither required legal regulation nor resolution of the problem in scientific literature. It has been concluded that it is necessary to reference identification not to the physical person but to the physical person's account. Conceptual provisions have been substantiated for the introduction of the new concept of 'digital person'.

Keywords: Intellectual rights · International economic activity · Subject identification, smart contract · Account · Program elements · Hash code

JEL: K12 · K15 · K24 · K33

1 Materials

The theoretical framework to solve the above problems has been provided by works of foreign (R.E. Falvey, N. Foster, D. Greenaway, R.M. Olwan) and Russian scientists (A. O. Inshakova, D.A. Shishkin, M.V. Shuturov, etc.) highlighting key aspects of the influence of intellectual right development on national economy, application of smart contracts to increase the export potential of intellectual property rights, and identification issues regarding entities entering into legal relationships via smart contracts.

The empirical framework has been provided by international acts, bilateral treaties and the Russian national legislation reflecting characteristic aspects of the legal regulation of foreign trade of intellectual rights. In particular, the Convention for the protection of industrial property (1883), the Berne convention for the protection of literary and artistic works (1886), the WIPO copyright treaty of 1996, the TRIPS agreement (TRIPS 1994), the Eurasian Economic Union Treaty (signed in Astana on 29.05.2014) (as amended on 15.03.2018), the WIPO copyright treaty (together with the agreed statements regarding the WIPO copyright treaty) (signed on 20.12.1996), the Civil Code of Russia (second part) (1996), and others.

2 Methodology

The research is based on the universal method of dialectic materialism, general scientific methods (logical, system and functional), and private-law methods (comparative law, technical legal), which has allowed for a comprehensive study of the issue of smart contract application in international trade of intellectual rights and scientifically justified and practically significant conclusions.

3 Introduction

The rapid development of information technologies and the application of blockchain technology and smart contracts in foreign economic activity have allowed solving problems related to instant execution of contracts and performance of obligations, have

enhanced interaction between parties bypassing territorial borders, and have extended the entity composition of legal relationships. However, as a result of new technologies being introduced, a number of problems have arisen due to the absence of legal regulation of newly formed legal relationships, including the area of intellectual rights.

Intellectual property is one of the most important resources of the social and economic development of a state. Considering the intellectual property market from the viewpoint of export potential, it should be noted that the emergence of smart contracts which are used on the basis of the blockchain technology has significantly increased the capabilities of intellectual right holders in terms of entering into legal relationships, going beyond the territorial borders of a single state. However, protecting intellectual property items is a serious problem related to the ability to have free access to them via information and communication systems.

In order to enhance the export potential of intellectual rights in foreign economic activities, it is necessary to progressively resolve a number of interrelated and interdependent issues. Thus, if the purpose is to enter the international market, it is necessary to improve the Russian legal framework for intellectual property items, which has significant differences not only from the legislation of other states, but also international acts. This situation leads to negative ramifications for authors resulting in weaker protection of intellectual rights, due to which Russian right holders and authors are initially disadvantaged in comparison with their foreign counterparts.

In particular, it is noted in scientific literature that the Russian legislation offers a finite list of intellectual property items under protection, whereas most countries leave such lists open so that it is possible to update them with the most recent intellectual property items (Levushkin and Biryukova 2018). Another problem is that the Russian legislation does not stipulate any protection for the geographical designation of origin as a means of identification, which is in contrast with a majority of other countries, in which protection of designation of origin is at the basic level of legal protection (Shishkin 2017). It is noteworthy that the researchers into the problem indicate that if the concept of designation of origin is implemented in the Russian legislation, it will increase the competitive power of our products with specific features attributed to their origin (Shishkin 2017). This situation looks rather unreasonable since Russia recognizes designations of origin as intellectual property items at the international level as it is party to the Eurasian Economic Union Treaty (signed in Astana on 29.05.2014).

Outdated international legislation, which does not account for current developments, is another problem which affects the development of export potential of intellectual property items. In particular, the Convention for the protection of industrial property was signed in 1883 (Convention for the protection of industrial property 1999), the Berne Convention for the protection of literary and artistic works - in 1886, the WIPA copyright treaty – in 1996, etc. The TRIPS agreement, signed in 1994, is more recent but it cannot be effective in regulating relationships arising from the application of smart contracts during foreign trade of intellectual property items.

For an integral consistent legal regulation system to be implemented, it is also necessary to create a scientific basis as a prerequisite for perfecting legal regulation of legal relationships arising during the application of a smart contract as a legal tool of developing the export potential of intellectual rights in foreign economic transactions.

4 Results

The economic performance of any country largely depends on the level of intellectual potential creating a foundation for scientific and technological development. Intellectual property has a major effect on economic growth, which has been repeatedly indicated in research papers (Olwan 2013; Falvey et al. 2006). The ability of an intellectual right holder to have free access to market data and the intellectual property protection level are essential for the effective development of international intellectual markets, as these factors influence greatly the intellectual right holder's decision to enter the international market.

One of the most positive aspects of smart contracts applied for transferring intellectual rights is that it is impossible to exert any destructive influence due to the use of the blockchain technology. Its most notable drawback is having no geographical reference, which makes it impossible to establish jurisdiction of this or that state and remedy infringements on intellectual rights.

Scientific literature expresses quite a reasonable point of view that a special jurisdiction is necessary for this area, which is not attached to administrative borders but governed by special algorithms (Gorbunov 2019). By analyzing this scientific concept, it is possible to conclude that the subject of the impact of legal norms will be program elements. Such arguments are indisputably reasonable.

One of the most severe problems in using smart contracts and blockchain technologies, as well as in the development of the entire digital economy, is the identification of the entity (Inshalova 2018) entering into legal relationships via the Internet. However, this problem appears only if we consider the traditional legal regulation of relationships where entity identification is referenced to their personality. However, if we reference entity identification to their account (login record containing a set of data) or, for example, to a unique hash code, it is essentially unimportant to us what entity is behind this or that account, but it is important what account they use to enter into legal relationships. It is the account which must be used to establish reliability or unreliability of a partner entering into legal relationships. In our opinion, this approach will significantly simplify interaction between contracting parties, especially in international trade where entities are located at a long distance geographically. Moreover, the login record is currently a kind of facility informing of the user's behavior (recording time of activity, number of transactions performed on the net, etc.), which will provide more benefits than problems for a bona-fide contracting party. Therefore, most aggregators operating in both sales of goods and in services (e.g. transportation) allow the contracting party to track both the transaction status and the process of dispatching a product or rendering a service in their personal cabinet.

It should also be remembered that since legal referencing is not based on a specific individual, but their login record, which can be several, it can be reasonably concluded that one physical person (as understood in traditional law) may have a number of digital persons in digital space. It means that a digital person identified across different accounts may have different statuses and may be characterized as a good-faith participant of civil law transactions in some cases, but not in others.

Since the identification issue is closely related to assigning civil liability, which is normally expressed in property equivalent, it is, therefore, critical for financial security (e.g. a bank account) to be referenced to a certain account rather than the person. In this case, it is not desirable to have one bank account referenced to a number of accounts. This will undoubtedly require certain changes to be introduced to the law, including provisions regulating bank deposit and bank account contracts (chapters 44 and 45 of the Civil Code of Russia). There are known examples when a bank deposit is referenced not only to the entity's physical person. Thus, the bank is obligated to pay out the bank deposit to a person exhibiting the savings or deposit certificate (clause 7 of article 837 of the Civil Code of Russia). Thus, the person holding the certificate has title to the funds in that account. Similarly, the person who is in possession of a certain login record (account) has title to the digital person's monetary funds.

Considering the legal framework for international civil transactions involving intellectual property items, certain aspects of the Agreement on Trade Related Aspects of Intellectual Property Rights (hereinafter – TRIPS Agreement) should be pointed out (Agreement on Trade Related Aspects of Intellectual Property Rights 2012). For instance, a study of the TRIPS Agreement shows that the provisions it contains to regulate relationships go beyond international trade and WTO competence. Another negative aspect of the agreement is that referencing to specific international treaties may occur only as of the date of signing the agreement, which means that different versions of the TRIPS Agreement may apply for different member countries and contracts, which creates certain law enforcement collisions. Besides, although the TRIPS Agreement declares the need to expand opportunities for international transfer of intellectual technologies, it mostly regulates the application of intellectual rights, rather than international civil transactions in which they are involved.

However, alongside these negative factors, research papers also note some positive sides of the TRIPS Agreement from the economic standpoint, i.e. reinforcement of the commercial approach to international transfer of technologies (Shugurov 2015), as well as from the legal standpoint, i.e. unification of legal norms (Velyaminov 2015).

Nevertheless, it has to be stated that the domain of intellectual rights is largely subject to national law regulation, which is a negative factor for the development of international transactions with intellectual property items. Moreover, the national law normally contains different limitations making it more difficult for new technologies to enter the international market so as to minimize the risk of copying and creating new intellectual property items on the basis of existing ones.

Besides international acts and the national law, relationships arising in the area international trade of intellectual property items are also regulated through bilateral agreements, e.g. the Agreement between the Government of the Russian Federation and the Government of the Republic of Belarus on scientific and technological cooperation (1996), between the Government of the Russian Federation and the Government of the Republic of Kazakhstan (1996), etc. An obvious downside of such agreements is that they are intended to regulate relationships only between the parties to the agreement.

It is noteworthy that since there is an awareness of the existing problem of intellectual rights export, attempts are being made to establish the basis for interaction between different international trade players. In particular, it is suggested that a

European innovative system should be created on the basis of the Eurasian Economic Union (hereinafter – EEC) as a single database of intellectual technologies to protect intellectual rights (Shuturov 2016).

In this respect it makes sense to consider findings reported by scholars researching international trade transactions using digital technologies, the World Blockchain Jurisdiction concept (Gorbunov 2019), which should function with the use of the distributed ledger technology, where countries act as miners and the International Convention on WBJ provides the legal framework.

There is no doubt that international trade of intellectual property items will start to develop only if all actors in the arising relationships will be provided with a uniform legal framework which will not only meet the requirements of modern state economies but also cater to the interests of owners of the results of intellectual activity. Such a legal system should apply to all market players, should be common to everyone and should provide a foundation not only for international trade of intellectual property items but also for safeguarding and protecting the rights of right holders. Only this approach will ensure quantum growth in international trade of intellectual property.

5 Conclusions/Recommendations

In conclusion, it should be noted that the domain of intellectual activity plays a key role in the economy of any country. Moreover, the development of information and communication technologies demands creating a specific legal regulation system which is different from the traditional law system, which will eventually have a positive effect not only on intellectual property export in foreign trade, but also benefit the financial condition of a country.

The results of the research are as follows.

1. It has been proved that it is necessary to introduce a new person at law. i.e. the digital person, the essence of whom lies in being referenced not to a physical or legal person, but to their account (login record containing a set of data) or a unique hash code. It is not the person behind the account but the account itself which is used for entering into legal relationships which will be of key importance in the arising legal relationships. Reliability or unreliability of a party entering into legal relationships should be established on the basis of the account. In doing so, legal relationships are referenced to an account rather than a specific person holding it. Since one person can hold several accounts, one physical person (as understood in traditional law) may have several digital persons in digital space.
2. A legal regulation concept has been developed for relationships between digital entities where the subject of the impact of legal norms will be program elements alongside other typical classic law subjects.
3. The need for a uniform international legal regulation system for relationships involving civil law transactions with intellectual property items has been justified.
4. It has been proved that financial security (e.g. holding a bank account) should be referenced to a certain account rather than a person. It is necessary to impose a statutory ban on using one account for referencing to different accounts.






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Digital Technologies of Notary Certificate of Real Estate Deals, as Means to Increase the Competitiveness of Civil Turnover

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Abstract. Purpose: The purpose of the chapter is to explore digital technologies of notary certificate of real estate deals, as means to increase the competitiveness of civil turnover.

Design/methodology/approach: In connection with the vector set by our state for building a competitive economy special relevance acquire research related to the consideration and assessment of possible directions for the implementation of this strategic objective. According to the authors of the chapter, such a direction is the construction of a digital economy. Acting within the framework of a given direction, individual civil society institutions, actively introducing modern digital technologies into their activities, generally have a positive impact on the civil real estate turnover. Such an institution is notary. Based on a materialistic world view, the authors implement a systematic approach to the research of the problem.

Findings: The main objective of this study is to consider the digital technologies used in notary practice, used in particular as part of an action such as notarization of real estate deals in electronic form, as well as a critical analysis of the effectiveness of digital tools, the introduction of which is currently planned in the civilian turnover of real estate.

Originality/value: The authors substantiated the conclusion that, despite the undeniable advantages of notarization of real estate deals, including in electronic form, increasing its effectiveness through the introduction of the latest digital technologies, the requirement for mandatory notarization of most real estate deals is not established in the legislation. At the same time, as practice has shown, the emergence of new fraudulent schemes for the illegal seizure of real estate, using digital technologies, is not a good reason for ensuring that subjects of civil turnover comprehensive protection of their property rights. Unfortunately, the legislator takes only targeted measures to stop the problems that exist in the civil circulation of real estate. The authors revealed the interdependence between the current status of notary, used by the institute in the framework of

notarization of real estate transactions of digital instruments, other digital instruments, used in state registration of rights and the effectiveness of new digital instruments, proposed by the notary community in draft Federal Law of July 10, 2019 No. 750699-7.

Keywords: Digital economy · Competitive civil real estate turnover · Notarization · Electronic form of deal · Unified biometric system · Electronic signature

JEL Code: K120 · K150 · K250

1 Introduction

The vector for building a competitive economy in Russia was defined more than 10 years ago. The state, realizing the existing lag behind the advanced competitive economies of foreign countries (Switzerland, USA, Germany, etc.) in the Concept of long-term socio-economic development of the Russian Federation for the period until 2020 (approved by Decree of the Government of the Russian Federation of November 17, 2008 No. 1662-r (the order has expired)) identified the above direction among the priority.

According to the Report of the World Economic Forum (WEF) on global competitiveness in 2018, Russia ranked 43-rd out of 140. Moreover, the improvement in the global ranking, according to reports, is due primarily to the stability of macroeconomic indicators over the past few years. (*The Global Competitiveness Report 2018*).

It is known that one of the main macroeconomic indicators is the gross domestic product, in the structure of which a significant place is occupied by operations with real estate (enlarged group “Construction and Real Estate”).

From a legal point of view, real estate operations are directly related to the dynamics of the civil turnover of real estate. It should be noted that it is private law that acts as one of the key regulators of socio-economic relations, some of which make up the structure of civil turnover.

Competitive civil real estate turnover is not only an effective tool, aimed at ensuring economic growth, in our opinion, it is one of the conditions for the balanced development of the economy as a whole. In addition, we believe that the main property of a competitive civil turnover is its stability.

As noted in Order of the Government of the Russian Federation dated July 28, 2017 No. 1632-r “On approval of the Digital Economy of the Russian Federation” program, low level of innovation and underdevelopment of business, as well as underdeveloped public and private institutions and the financial market are “skimpy” for Russia’s competitiveness in the global digital market. Said document lost force.

Speaking about the digital market and digital technologies, within the scope of this study, it is necessary to pay attention to the fact that today, in order to increase the competitiveness of the domestic economy, such a direction of strategic development of Russia as “Digital Economy” is being implemented (*Inshakova 2018*). In particular, the national project The National Program “Digital Economy of the Russian Federation” was developed, as well as a number of federal projects such as “Digital Technologies”,

“Normative Regulation of the Digital Environment”, etc. Individual civil society institutions have made significant progress in the development and application of digital technologies in its activities. In our opinion, a notary acts as such an institution.

The real estate market does not stand still, constantly developing and improving, thanks to the efforts of legislators, as well as with the assistance of a notary. In essence, the notary institution has transformed into a kind of agent for the national digitalization of the civil real estate turnover (*Inshakova et al.* 2017a).

2 Materials and Methods

The normative basis of the study was made up of legal acts, its projects, as well as various program documents. In particular, one of the strategic directions of the state’s development, outlined in the Concept for the Long-Term Socio-Economic Development of the Russian Federation for the period until 2020, is the construction of a competitive economy that can be achieved through implementation national projects aimed at creating a digital economy.

Civil turnover, being the legal expression of economic turnover, is undergoing changes with the introduction of modern digital technologies. At the same time, notary is one of the key institutions that have an impact on the widespread adoption of modern digital technologies in real estate. The legal basis of which is the Fundamentals of the legislation of the Russian Federation on notary, where, in particular, the provision about execute of notary acts in electronic form is fixed. The notary community seeks to introduce the latest digital technologies in its activities with advanced development. In this regard, the study analyzed the Draft Federal Law of July 10, 2019 No. 750699-7 “On Amendments to the Fundamentals of the Legislation of the Russian Federation on Notary”, which propose large-scale changes to introduce the latest digital technologies in notary practice, including when executing such a notary act, as certification of real estate deals. Also in order to comprehensively review the mechanism for transferring rights to real estate in electronic form, the provisions of Federal Law of July 13, 2015 No. 218-FZ “On State Registration of Real Estate” were investigated.

The theoretical basis of the study composed the works of Russian researchers in which addresses certain issues related to the introduction of digital technology in notary practice (Goncharov A.I., Dolgov S.E., Dolinskaya V.V., Inshakova A.O., Kazachenok S.Y., Sevostyanov M.V., Smirenskaya E.V., Tymchuk Y.A.), also related to the functioning of new state information systems, in particular, a unified biometric system (Platonova N.I., Solovyova-Oposhnyanskaya A.Y.).

In the research’s process, both general scientific methods (the dialectical method of cognition, inductive, deductive, analysis, synthesis, prognostic, etc.) were used, as well as private scientific methods (formal-legal, legal interpretation method, principle of legal process assessment, etc.) were used.

3 Results

3.1 Digital technologies for notarization of real estate deals

Since the beginning of 2014, significant changes have taken place in the activities of the notary institute (*Inshakova et al. 2017b*) associated with the introduction of digital technologies, namely the launch of the Unified Notary Information System. Simultaneously with it, in Federal Law of December 21, 2013 No. 379-FZ “On Amending Certain Legislative Acts of the Russian Federation”, the Fundamentals of the legislation of the Russian Federation on notary of February 11, 1993 No. 4462-1 were supplemented by a new article 44.2, which will be analyzed in more detail below.

Among the digital technologies used today in notary activities follow. Participation in a single system of interagency electronic interaction - allows you to verify information when concluding real estate transactions, as well as send documents electronically to government organs. Creation of new publicly available online services on the Internet - “Checking powers of attorney for details”, “Register of notifications of pledges of movable property”, “Register of inheritance cases”, etc. The result of improving the notary institution through the introduction of digital technology is the effective implementation of the preventive function, as well as reducing the risk of real estate deals (*Dolgov 2019*).

Consider the interrelated changes that are directly associated with digital technologies aimed, among other things, at increasing the competitiveness of the civil turnover of real estate and improving the mechanism for registering rights to real estate.

Article 44.2 of the Fundamentals of the Legislation of the Russian Federation on Notary allows interested subjects of civil turnover to sign and notarize a real estate deal in electronic form. Also article 44.2 provides that the parties to a transaction in the presence of a notary shall sign it with a simple electronic signature, the procedure for the formation of which is established by the Federal Notary Chamber. After that, the notary signs the notarized real estate deal in electronic form with his enhanced qualified electronic signature and independently, without charging an additional fee, sends the application for state registration of rights to Russian registry no later than the end of the working day. According to Item 9, Part 1, Article 16 of the Federal Law of July 13, 2015 No. 218-FZ “On State Registration of Real Estate”, the Russian registry is obliged, within one working day, following the day of receipt of the documents, to register the transfer of ownership of the property. In the absence of circumstances, including technical ones, which impede the implementation of the procedure established by law, the procedure for registering the transfer of ownership of a real estate object takes two working days. In our opinion, the widespread dissemination of such practices will result in an acceleration of civil real estate turnover. Besides, notary, making an act to certify a real estate deal, including in electronic form, it checks its legality and independently, being a member of the interdepartmental electronic interaction system, requests the necessary information.

It should be noted that the previous version of Article 44.2 of the Fundamentals of the Legislation of the Russian Federation on Notary required the presence of interested civil turnover entities, wishing to certify the deal in electronic form, qualified electronic signature. It circumstance did not contribute to the widespread practice of its

application, especially in deals, whose parties are individuals, who do not have a qualified electronic signature, in the design and use of which they do not have a constant need. We believe that the provisions of article 44.2 of the Fundamentals of the Legislation of the Russian Federation on Notary in the current edition are relevant due to the simplicity and convenience of the established procedure, both for individuals, who are not professional participants in the real estate market, and for individual entrepreneurs, whose main activity is the sale or rental of real estate. Since now there is no requirement for a qualified electronic signature for notarization of a deal in electronic form.

As for legal entities, we believe that today they require a notary act, which is executed using modern digital technologies, is the transfer of applications and documents in electronic form to the Federal Tax Service.

In light of the issues under consideration, the Draft Federal Law of July 10, 2019 No. 750699-7 “On Amending the Fundamentals of the Legislation of the Russian Federation on Notary” Draft Federal Law No. 750699-7 of July 10, 2019 is very interesting, the legislators are proposing novelties, the essence of which is to expand the notary’s ability to use the latest digital technologies. In relation to the civil turnover of real estate, among the major changes, the following changes can be noted.

Firstly, the introduction of a new notary act for certifying deals, including with real estate, by two or more notaries (without the joint presence of the parties to the deal). The Draft law elaborated in detail the procedure for a new notary action (Article 53.1), which includes the following actions. Creation by a notary of a project of a transaction using the Unified Notary Information System (UNIS) of a notary, taking into account the conditions agreed by its parties, signing by the parties of the deal with a simple electronic signature and on paper, ensuring the unity of the content of the deal through the UNIS of a notary, signing of a deal by two notaries with strengthened qualified electronic signatures, registration in the new registry, through the UNIS of a notary. The Draft law also worked out the issue of differentiated liability of notaries for harm caused to subjects of civil turnover during the commission of the considered notary action (joint or several liability of one of the notaries). Also the Draft law provides for the possibility for civil turnover’s entities to remotely contact a notary for acceptance of non-cash funds into the deposit, including for settlements on the real estate deal.

We believe that the legislative novelty is relevant for Russia, primarily because of the vast geographical territory of the country. It should predict high interest from subjects of civil turnover in using the possibility of notarizing a deal at two notaries without joint territorial presence in one place at the same time. For professional participants in the civil real estate turnover, business entities, the innovation is relevant, first of all, due to the reduction of time costs, as well as transport and other expenses proper for arrival at the place of deal. The Draft law provides for the collection by each notary of a notary tariff for executing a notary act, we believe that it will not become an obstacle to its unpopularity among interested subjects of civil turnover. Including due to significant benefits execution of deals in a notary form (comprehensive and complete verification of the legality of the deal, reduced terms of state registration, the implementation of notary actions in the “single window” mode, the notary’s responsibility for the inflicted harm, etc.).

For individuals, a new notary action, in addition to the above advantages, will be relevant, if for some reason related to the identity of one of the parties to the deal, long trips outside the place of permanent residence (for example, to complete a real estate deal in another subject of the Russian Federation) not recommended.

At the same time, the Draft law draws attention to the fact, that the procedure for the interaction of two notaries through the UNIS of a notary, when making a new notary action will be separately developed by the Ministry of Justice of Russia together with the Federal Notary Chamber. In our opinion, it is advisable to include in the regulation on the interaction of notaries provisions about video and audio recording of the process of executing a new notary action. We believe that the implementation of such an initiative will take more than one year, due to the need for technical equipment of notary offices. Initially, if the Draft law will passed, take advantage such an opportunity, the subjects of civil turnover will not be able to all notaries, but only in those, that will have the proper technical support. In our opinion, in the Draft law should set the timeline for the implementation of such an innovation, including with regard to constituent entities of the Russian Federation, to preliminarily analyze and predict the demand for a new notary action in its.

Secondly – connection to a biometric system for remote identification of person. The identification of a citizen, who has applied for a notary action, is one of the priority actions that a notary executes before proceeding with any notary action, required by law. The Draft law proposes to strengthen the capabilities of the notary in the framework of the practical implementation of the provisions of Article 42 of the Fundamentals of the Legislation of the Russian Federation on Notary. In particular, the current edition of the norm allows notaries, in the course of establishing the identity of a citizen, and in order to verify an identity document, to make requests authorized organs, as well as to use special technical and software tools to verify the authenticity of documents. The Draft law provides for the right of a notary in case of doubt about the identity of the person, applying for a notary act, or in the absence of a personal identification document, to establish it through a single personal data information system (Unified Biometric System).

The proposed innovation is fully consistent with the strategic directions of the development of Russia to build a digital economy. The idea underlying the innovation is clear and consists in increasing the level of security when signing real estate deals by eliminating the possibility of implementing fraudulent schemes. However, it is worth considering a number of circumstances that significantly affect the effectiveness of the proposed innovation. In particular, some researchers draw attention to the existence of a problem in delineating biometric personal data (*Platonova et al.* 2019). The Unified Biometric System, functioning since June 30, 2018, is only being formed, according to our estimates, the volume of biometric information (voice, image of a citizen) collected, for example, by Sberbank PJSC, significantly exceeds the volume contained in the Unified Biometric System.

In this regard, it is possible to assume that if a notary has an objective need to make a request to the Unified Biometric System, there may be no information about a person, who has contacted a notary. In addition, the inclusion of biometric information in the system is possible only with the consent of a person (*Order of the Government of the Russian Federation of June 30, 2018 No. 1322-r*).

On the one hand, the notary institute, thanks to its fruitful and efficient work, the introduction of the latest digital technologies, has won trust of subjects of civil turnover. On the other hand, the notary form for most deals on the sale of real estate is not mandatory. At the same time as the work is improved and the latest digital technologies are introduced into notary practice, also the work of the Russian registry is undergoing reform.

3.2 Fraud When Making Real Estate Deals in Electronic Form, as a Prerequisite for Improving the Legislation on State Registration of Rights

The media publicized cases of fraud in transactions with real estate in electronic form, which were signed by criminals with an enhanced qualified electronic signature, on the basis of a statement from these persons the transfer of ownership of real estate was registered in Russian registry. These facts contributed to the amendments made to the Federal Law of July 13, 2015 No. 218-FZ “On State Registration of Real Estate”.

In particular, a new legal regulation has been introduced Federal Law of August 2, 2019 No. 286-FZ: an individual - an unprofessional participant in the real estate market, who intends to make real estate deals in electronic form, and in the future to register ownership of the object on the basis of an application in electronic form, is obliged to send a notification to Russian registry in advance. Such a notice can be filed on paper during a personal appeal to Russian registry or by post (signature on the application must be notarized). Based on the application received, the state actuary makes an entry in the Unified State Register of Real Estate on the possibility of submitting an application in the form of electronic documents signed with an enhanced qualified electronic signature.

In our opinion, the innovation looks very timely. However, it is worth noting that in general, it will not allow solve the problem associated with the implementation of fraudulent schemes in the real estate market, including the use of enhanced qualified electronic signatures. This innovation did not exclude the root cause of the problem, which in fact served as a prerequisite for the innovation. After the said amendment has entered into force, fraudsters can still find the opportunity to issue and receive an enhanced qualified electronic signature of the person who owns the property, send a notification to the Russian registry. For example, it is possible to falsify the signature of the owner and notary on paper of the application by sending it by post to Russian registry, in the future, after putting down an entry in the Unified State Register of Real Estate, to make real estate deals in electronic form.

4 Conclusion

The research allows us to approve that in our country the work on the introduction of digital technologies in the civilian turnover of real estate is continues, while the notary institution should be recognized as one of the key drivers of digitalization of real estate turnover. Significant efforts of our state in the indicated direction are caused both by the desire to increase the efficiency of the main institutions, including those operating in the

civil real estate turnover, and by low indicators in the world ranking of the competitiveness of the economy.

The notary institution is developing at a faster pace, actively introducing modern digital tools that are simple and convenient for real estate civil subjects, can significantly reduce the possibilities for implementing fraudulent schemes in the real estate market, and ultimately stabilize the civil turnover of real estate. Despite the undeniable advantages of signing real estate deals in notary form, including in electronic format, notarization for most real estate deals is not mandatory. On the contrary, the legislator, ignoring regular cases of illegal seizure of real estate, including using digital tools, such as enhanced qualified electronic signatures, continues to improve the activities of Russian registry.

We believe that at present, in order to increase competitive civil turnover, it is necessary to intensify activities to establish the work of existing digital tools in civil turnover. We are referring to the popularization of the Unified Biometric System, the elimination of regular technical failures in the work of the Unified State Register of Real Estate, and the tightening of control over entities using electronic signatures in deals. It will allow us to effectively implement the digital shortcuts offered by the notary community - connecting to the Unified Biometric System, executing a notary act to certify a real estate deal with two notaries remotely.

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Digitalization of Criminal Procedure as a Development Factor of Its Competition and Competitiveness

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Abstract. Digitalization has penetrated into all life spheres of our society and continues to gain momentum rapidly. The sphere of criminal justice is no exception, although retaining its “archaic” forms it cannot stand still and must use new opportunities including the detection of crimes committed in the information sphere and with the help of digital technologies. Huge prospects for the criminal procedure are represented by the development of electronic document management. There are new types of evidence and new concepts—electronic evidence, electronic documents, electronic media and even electronic criminal case. The Russian Federation Code of Criminal Procedure has already undergone a number of changes and additions related to the introduction of information and digital technologies in the criminal procedure including those ones relating to the seizure of electronic media, copying and use of information stored on them. The inevitability of digital technologies introduction in criminal proceedings, both accelerating the proceeding of the criminal case and providing it with the necessary evidentiary information, is obvious. Digital information and its electronic media, which occupy an increasingly significant place in the structure of criminal procedural evidence, electronic document management can change the perception of the criminal procedure as a whole, the nature and types of evidence, the procedures of collecting evidence, the concept of investigative procedure. The development of digital technologies in criminal proceedings dispels illusory ideas about evidence as a result of the cognitive activity of the preliminary investigation bodies, and eliminates their monopoly on the collection of evidence. The consequence of this is the fact that the concept of forming evidence has finally lost its scientific validity, the further development of the information concept of evidence, deformalization of the process of collecting evidence, changing ideas about the admissibility of evidence in criminal proceedings, etc.

The digitalization of criminal proceedings can lead to the development of competitiveness and, as a consequence, to the increase of the parties competitiveness in a judicial dispute. It contributes to the competitiveness of the parties and the development of electronic document management in criminal proceedings, facilitating its participants access to the case files, simplifying the procedure of filing complaints and applications.

The article is intended for scientists, practitioners and all those who are interested in the issues of electronic and digital support of criminal procedure.

Materials: The research rely upon practical results achieved in the sphere of digitalization of criminal procedure.

Methods: Methodological basis of the research presented in the paper is the philosophy of dialectical imperialism dictating the necessity of learning social processes including the sphere of criminal procedure in its interaction and interrelation.

Keywords: Criminal procedure · Competition · Electronic evidence · Electronic data storage device · Digital information · Electronic document management

JEL Code: K40 · K41

1 Introduction

The development of criminal proceedings is currently carried out in two opposite directions. On the one hand, there is an increase in the bureaucratization of criminal procedure, the multiplication of formal and bureaucratic requirements for any more or less significant and even not at all significant action, each of them is subject to recording in compliance with a very complex procedure of advisal of rights and duties, fixing the results. From a formal point of view, the bureaucratization of the criminal procedure due to the desire to respect the rights of participants in criminal proceedings (accused, victim), although, in fact, behind this there is the desire to protect the materials of pre-trial proceedings from loosening under the influence of criticism from the parties of adversarial litigation. This tendency was strengthened by the distorted perception of the admissibility of evidence, as the efficiency of evidence to certain, pre-established in the law requirements to their formal, procedural side. On the other hand, the consolidation of competition as a principle of the criminal procedure led to the development of the initiative of the participants of the criminal procedure acting in defense of their interests, at first glance, do not correspond to the interests of the public, although in reality, they do not contradict.

The exaggerated value of the procedural form considered as a guarantee of legality of procedural actions have become a brake on the development of competition as an important factor of increase of competitiveness of the parties which led to the monopolization of the right to collect evidence, although it is clear to us, that the developers of the Russian Federation Code of Criminal Procedure meant the opposite.

The rapid development of information including digital technologies, which on the one hand simplifies the proof of the fact of committing a crime, on the other hand, complicates it requiring new knowledge and the ability to use them from the participants of the criminal procedure. This fast process of digital technologies development increasingly interferes in the fight against these two divergent trends.

The availability of information existing in electronic form eliminates a monopoly on the possession of it by preliminary investigation bodies. This fact contributes to the development of competition and, as a consequence, increase their competitiveness.

It also enables the competitiveness of the parties and the development of electronic document management in criminal proceedings, facilitating access to the case files to its participants, simplifying the procedure of filing complaints and applications.

The stated task is to study the processes of informatization and digitalization of criminal proceedings as factors contributing to the development of competition and competitiveness of the parties and the effectiveness of the entire criminal proceedings.

In recent years a number of *фьютвьутеы* and additions have been made to the Russian Federation Code of Criminal Procedure related to the introduction of information and digital technologies into the criminal procedure. In particular, the Federal Law of 23.06.2016 No. 20-FL in its sixth part includes Chapter 56 on the procedure of using electronic documents and forms of electronic documents in criminal proceedings. The Federal Law of 27.12.2018 No. 533-FL in the Russian Federation Code of Criminal Procedure includes article 164.1 regulating the features of the seizure of electronic media and copying information from them in the proceeding of investigative actions, although the mentioning electronic media in the code of criminal procedure appeared a few years earlier. Thus, today the text of the Russian Federation Code of Criminal Procedure allows us to talk about two forms of using a new information product for the criminal procedure. In the first case we are talking about electronic document management, which as a result of global Informatization of society has become a routine means of information communication (Andreeva and Zajcev 2018). It is implemented in the Russian Federation Code of Criminal Procedure in accordance with the state programs of information support of the activities of the judicial system (the RF Government Decree № 805 “On the Federal Target Program for “Development of judicial system of Russia” for 2002–2006” dated 20.11.2001; the RF Decree Government № 583 on “Development of judicial system of Russia” for 2007–2012” dated 21.09.2006; Resolution of the RF Government of 27.12.2012 No. 1406 on “Development of the judicial system of Russia” for 2013–2020”). The second situation concerns the possibility of using digital (electronic) information in criminal proceedings for the purposes of proof.

In the research literature it is reasonably stated that with the help of rules (including criminal procedure) people prevent the ensuing of negative consequences of non-compliance with mandatory rules in the social world surrounding them (Zelenskij and Solov'eva 2017).

According to the Article 474 of the Russian Federation Code of Criminal Procedure procedural documents can be executed in printed, electronic or otherwise. The authors note here the obvious failure of the wording used by the legislator, since the procedural document cannot be executed in a typographical way. We are talking, of course, about the forms of official documents made in a typographical way and used to be filled in by hand or typewritten, if used somewhere else, as well as electronic forms, filled in when working on a computer or printed on paper for filling in by hand. This is what follows from the second sentence of part 2 of the Article 474 - in the absence of forms of procedural documents made by typographic, electronic or other means, procedural documents can be written by hand. However, we are primarily interested not in the form, even electronic, although its presence facilitates the work of the investigator, Prosecutor, judge, but the possibility of producing in electronic form the procedural

documents themselves, viz. protocols, resolutions. The new Article 474.1 is devoted to regulation of electronic document management.

In this research paper the authors state only two types of electronic documents and the documents only of judicial stages of criminal procedure. Moreover, the provisions of the Article 474.1, as stated in it, are applied only if there is a technical possibility in the court, that is, a site included in the General information system. Nevertheless, there is no doubt that the first step taken by the legislator is only the beginning of a great way of digitalization of criminal proceedings in general. The speed of technological change, according to Vladimir Putin, is growing rapidly.

According to the Article 474.1, a court decision can be made in electronic form, both final and intermediate, as otherwise is not stipulated, although there is a number of exceptions to the general rule due to the need to preserve state secrets, to ensure state security, the interests of minors, as well as moral considerations (criminal cases against sexual inviolability and sexual freedom of the individual). Presumably, if technically possible, the parties of the proceedings having the right of access to the materials of the criminal case will be able to review the decision made in electronic form on the court's website and get a copy of e-decisions via the Internet, and that does not cancel (so far) traditional methods of intake screening process and receiving copies of judicial decisions.

Participants of the criminal procedure also have the opportunity to appeal to court with complaints, petitions, statements and productions (hence, we are talking about the Prosecutor) by filling in the appropriate electronic forms on the court's website, which, of course, facilitates the submission of documents to court, allows one to control the timing and result of their consideration. In electronic form, the participants of the criminal process can submit the documents attached to the appeal to court. At the same time, the legislator is again not accurate. Naming the documents attached to the appeal "electronic", the legislator does not mean electronic documents made via the Internet, but electronic copies (electronic images) of documents made traditionally, on paper, although, judging by the text, it is not excluded and the transfer of the actual electronic documents made by the method provided by the law. A typical example of this technology is a criminal record certificate presented in the form of an electronic document with an electronic signature, although not all employers are satisfied with it.

This aspect of "electronic communication" is of particular interest for the criminal procedure, since electronic documents, as they are called by the legislator, or, more correctly, in our opinion, documents in electronic form are attached to appeals, complaints and petitions of participants of the criminal procedure for the purposes of justification, that is, as evidence. It should be agreed that the introduction of digital technologies can revolutionize the theory of evidence (Aleksandrov 2018).

In the theory of criminal procedure, there are still strong ideas about evidence as a result of the activities of the preliminary investigation body, in the process of which it discovers the source of information, extracts information from it, transforms its form and content and fixes it in the case file (Shejfer 1972). According to this approach, the proof, as the unity of its content and form, is the product of the investigator or inquirer. Forming procedural evidence, the investigator actually creates it. The requirements of the CRC to the investigative procedure are a guarantee of the admissibility of such evidence.

Such notion of proofs monopolizing the right of the investigator, the interrogator to form materials of a criminal case actually excludes from this process the victim, accused, the defender denying their right to produce investigative actions. At the same time the status of such proof having been received by any available means, that is not legally, is also denied when entering upon the record. Stated by the law the right to collect and present evidence by the defense, as well as by other non-official participants of the criminal procedure, is not provided with sufficient guarantees. The inclusion of “their” information in the case the defense implements by addressing the same investigator – the carrier of the opposite function. Within this approach, the right to collect and present evidence turns into a fiction and the results of investigative actions, the protocols, are apriori permissible, and although the defense can challenge them, the effectiveness of this procedure is known to be low. A criminal case is, thus, “a story told about a crime by an investigator” (Vlasova 2018), which a court, excluding a jury, most often takes to be the truth.

The emergence of new types of evidence, the content of which does not depend on by who and how they are obtained, does not only open up new opportunities for the defense, equalizes its rights with the prosecution providing a real competition of arguments represented by the parties in court, but, more importantly, increases the level of independence and fairness of justice.

The question of what type of evidence the electronic media should be attributed to, resolved in the Article 81.1 introduced into the Russian Federation Code of Criminal Procedure by the Federal Law No. 323-FL dated 03.06.2016 and later amended by the Federal Law No. 533-FL, and although formally this rule applies only to criminal cases in the sphere of economy, there is no doubt that the rules set forth therein for the use of electronic evidence are general: the electronic media must be attached to the materials of the criminal case as physical evidence, the relative decision has been made. Indirectly, the status of physical evidence for electronic media is confirmed by part 4 of the Article 81 of the Russian Federation Code of Criminal Procedure: items not recognized as physical evidence, including electronic media are subject to be returned to the persons they were seized from.

The recognition of the fact that electronic media have the value of evidence adds to the criticism of the concept of evidence formation. Electronic data storage device, as a type of evidence, formed without the participation of the investigator, contains a ready-made information product independent of the cognitive activity of the investigator in the same way as the usual physical evidence, other document or expert opinion. The recognition of this fact removes artificial restrictions from the evidentiary activities of the defense and other unofficial participants of the criminal procedure and shifts the center of gravity to the verification of the authenticity of electronic information and the authenticity of its data storage device, both seized by the investigator and presented to him by other persons. Collecting evidence by the investigator is deprived of that sacred meaning allowing the investigator to impose his view of the circumstances of the case on the court through the system of “formed” evidence.

Of course, electronic data storage device is different from the usual physical evidence exacerbating the long-existing and still not solved the problem of distinguishing between physical evidence and documents. Considering this issue it should be borne in mind, what exactly is the evidentiary value of the electronic data storage device,

because it can be both the information itself and the fact of its “binding” to a specific storage device, a specific user, owner, workplace. Based on this, information being actual itself is inherently closer to such a type of evidence as a document. If the fact of “binding” information to a specific storage device is important and the value of the evidence goes beyond its sign (digital) content, then we have the features of physical evidence. If electronic data storage device has the features of physical evidence with traces of hacking or fingerprints, as well as the digital information itself, which has traces of forgery. That is why the law points to the need to reflect the relevant investigative action concerning identification features of the electronic data storage device in the criminal record, when it is withdrawn for inclusion in the case, and when the information contained therein is copied to another electronic data storage device. In a certain sense, we can talk about the characteristics of the derivative of such evidence, especially taking into consideration any failures when copying information, but we must take into account that the information itself is transferred to a new data storage in an unchanged form and the number of copies that can be made is not limited. Thus, an electronic data storage device has the characteristics of both physical evidence and a document, but differs significantly. The characteristics of the electronic data storage device allow us to come to the conclusion about the uniqueness of this type of evidence, which differs from those listed in part 2 of the Article 74 of the Russian Federation Code of Criminal Procedure, which is actually a separate type of evidence.

In theory, it is noted that since digital information is created and processed by computer technologies, the possibility of influencing the change and distortion of this information is extremely low, and the real possibility of establishing this fact by technical means is quite high (Frantsiforov and Solovyeva 2018). This means that we have a more reliable means of proof than the one formed by the investigation body. To obtain such evidence, it is not even always necessary to conduct an inspection, search or seizure, for example, if it is possible to obtain information by remote access. Therefore, it is proposed to formalize a fundamentally different investigative action - obtaining digital information (by machine), excluding human influence (Aleksandrov 2015).

The inclusion of digital technologies in the criminal procedural body can also be found in the form of manufacturing an order of procedure to the bailiffs of the writ of execution (part 2 of the Article 393 of the Russian Federation Code of Criminal Procedure), signed with a qualified digital signature, the possibility of contacting the law enforcement system with a message or statement about the committed or imminent crime through the portal “Public Services”. There is no doubt that the list of ways to use digital technologies can be expanded today. In particular, we see no obstacles to introducing an electronic protocol of the court session into practice, the possibility of intake process and bringing comments on it in the same way as provided for in the Article 474 for court decisions. However we realize that the days of the hearing transcript are over – it can easily be replaced by digital video that will save time of the clerk of the court and eliminate the cause of comments on the report. The same technologies can successfully replace investigative records.

2 Results

The authors come to the conclusion about the inevitability of introducing digital technologies in criminal proceedings, both accelerating the movement of the criminal case and providing it with the necessary evidentiary information. Digital information and its electronic data storage device occupying an increasingly significant place in the structure of criminal procedural evidence and electronic document management can change the idea of the essence of evidence, the procedure of collecting evidence and the concept of investigative action. The development of digital technologies in criminal proceedings dispels illusory ideas about evidence as a result of the cognitive activity of the preliminary investigation bodies, and eliminates their monopoly on the collection of evidence. The result is that the concept of evidence formation has finally lost its scientific viability. As the result of this research the authors also mention development of the concept of evidence, deformalization of the process of collecting evidence, changing of views on the admissibility of evidence in criminal proceedings.

The authors also come to the conclusion that the digitalization of criminal proceedings contributes to the development of its adversarial nature as a factor that increases the legality and efficiency of criminal procedure, strengthens the guarantees of the rights of persons involved in criminal procedure, equality of the parties and objectivity of decisions taken in a criminal case.

The introduction of electronic document management in the criminal process will change the idea of a criminal case as a set of written materials, which may lead to the abandonment of this concept and related legal institutions.

The transition to electronic criminal case will require significant resources and efforts, not only personnel involved in the field of procedural activities is to be trained, but it is also important to improve the overall digital literacy of the population.

3 Conclusion

Digital technologies in criminal proceedings represent reality that not only opens up hitherto unknown and unlimited possibilities and demonstrates the archaic nature of existing procedural forms, the lag of theory from the needs of practice, but also the unreadiness of practice for their more intensive implementation. Full digitalization of the criminal procedure will require time and money, a significant increase in the level of the population computer literacy and qualitatively different training of specialists.

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Actual Problems of Improvement of Criminal and Legal Protection Means of Foreign Economic Activity Carried Out in Conditions of Digitalization: Comparative Aspect

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Abstract. On the basis of comparative legal analysis and taking into account the digitalization carried out in Russia the paper considers the problems of regulation of liability for crimes in the sphere of foreign economic activity existing in the criminal legislation of the EAEU countries. The authors study the typical approaches of the legislator to the construction of criminal and legal norms finding liability for these crimes. Thereupon taking into account the positive legislative and law enforcement experience in this sphere accumulated in foreign countries, the authors formulate theoretical conclusions with regard to the basic concepts of the subject, as well as specific proposals and recommendations for further improvement of the relevant criminal and legal means of crime prevention in the sphere of foreign economic activity in Russia.

Methods: The methodological basis of the study is a set of methods of scientific knowledge among which the leading place is occupied by a dialectical method. The authors use general scientific (analysis, synthesis, abstraction, concretization, generalization) and specific scientific (comparative-legal, technical-legal) methods.

Keywords: Digital economy · Foreign Economic Activity (FEA) · Smuggling · Legislation · Criminal liability · Customs crimes

JEL Code: K00 · K40

1 Introduction

The topicality of researching the problems of enhancing the protection of foreign economic activity (FEA) in the process of digitalization and introduction of new innovative technologies is determined by the need for optimal solutions in these conditions and finding appropriate modern ways of its legal regulation, since the achievement of such a national goal as the establishment of digital economy in Russia depends to a certain degree on a stated problem.

For modern development of foreign economic activity of Russia in conditions of globalization creating digital economy becomes one of especially actual and significant tasks. It is not a mere coincidence that Russian President Vladimir Putin compared the task of developing digital economy with such ambitious transformations as “the construction of railway communications at the end of the 19-th century or the electrification of the country in the first half of the 20-th century” (Putin 2019). In his opinion, “digital economy is not a separate industry, in fact it is a way of life, a new basis for the development of the system of public administration, economy, business, social sphere, the whole society. The formation of digital economy is a matter of national security and independence of Russia” (Putin 2019).

The problem of ambiguity in the attribution of certain terms to the evaluative category and their interpretation is still relevant and requires deep study and analysis (Shinkaruk 2019).

One of the most important for modern Russia is the national program “Digital economy” for the nearest years (2014–2024), in the approved draft of which it is supposed to appropriate about 2 trillion roubles from the federal budget on its implementation. (National program “Digital Economy of Russia 2024”).

The necessary conditions in our country for the implementation of modern world trends of innovative development reflecting the latest discoveries, inventions and new ideas in the field of digital technologies are defined in the strategy of innovative development of the Russian Federation for the period up to 2020 (Order of the Government of the Russian Federation of December 8, 2011. No. 2227-r.).

All the stated above indicates that the innovative development of society, including the EAEU member states, certainly involves the introduction of new digital technologies in all spheres of its life (Kurushina et al. 2017), including the sphere of customs regulation of foreign economic activity and providing customs services.

At the same time in conditions of creating digital economy in our country there is still no unified conceptual basis defining the strategy of further development of foreign economic activity and its legal regulation (Makarov and Zhukova 2016). And only piecewise separate directions of its further perfection are defined in some official documents (Order of the Government of the Russian Federation of November 17, 2008. No. 1662-R).

By its decision No. 12/3 of 17.09.2014 the Joint Board of customs services - member states of Customs Union, approved the Main directions of work on the implementation of the principle of shifting the focus of customs control from the stage of customs declaration and release of goods to the stage after the release of goods in member states of Customs Union for 2015–2020.

However, certain difficulties arose on creating the Customs Union and the Eurasian Economic Union (hereinafter – EAEU) in the legislative regulation of customs control over foreign economic activity in Russia, in the introduction of the new Customs code of the Eurasian Economic Union from 01.01.2018. these difficulties indicate the ambiguity of the approaches used by legislators of the EAEU member states to the legal regulation of responsibility for customs crimes committed on the territory of the common customs space in the EAEU member states.

Thus, on the one hand, customs activity in Russia is regulated by a single normative act for all five countries that are members of the EAEU-the Customs code of the

Eurasian Economic Union, and on the other hand, along with it there are many national normative acts in this area (the federal law “On customs regulation in the Russian Federation and on amendments to certain legislative acts of the Russian Federation” dated 03.08.2018 No. 289-FL, as well as decrees of the President of the Russian Federation, resolutions and orders of the Government of the Russian Federation, other subordinate acts). On the other hand, in conditions of intensive foreign economic activity carried out on the territory of the common customs space of the EAEU, with the development of integration processes new criminal schemes in this area have appeared, these schemes are designed for the active participation of transnational organizational groups uniting representatives of several countries (Grachev 2013; Kuznetsova 2016).

These problems are objectively caused by both social and economic factors (uneven development of certain spheres of society at the present stage; contradictions arising in social and economic, political, ideological, ecological and other social relations) and determinants of natural properties (geological and natural, atmospheric and natural, biological, etc.), which differ significantly in the EAEU countries.

Problems of strengthening prevention of crimes encroaching on foreign economic activity: theoretical and legislative aspects.

Protection of foreign economic activity is one of such problems within which it is possible to distinguish both international and national, including political, economic, social and legal aspects.

Among all possible methods applied to solve these problems a special place is occupied by legal measures including the most repressive, criminal and legal means of preventing customs crimes committed in the sphere of foreign economic activity.

Although criminal law is not the main tool in solving the problem under consideration, its role cannot be underestimated, since customs crimes being the most dangerous of all offenses committed in this sphere primarily lead to the destabilization of foreign economic activity. At the same time, according to official data of the Federal customs service, in 2018, the customs authorities of the Russian Federation initiated 2,054 criminal cases on customs offences under Articles 189, 193, 193.1, 194, 200.1, 200.2, Article 226.1, Article 229.1 of the Russian Federation Code of Criminal Procedure (Indicators of law-enforcement activities of customs authorities for production of urgent investigative actions and to preliminary investigation in the form of inquiry, 2019). According to the statistics, the identified damage from these crimes is very significant. Thus, the value of goods illegally moved across the customs border of the EAEU including strategically important goods and resources (Article 226.1 of the Russian Federation Code of Criminal Procedure), amounted to about 4.2 billion rubles.

The amount of unpaid customs duties (Article 194 of the Russian Federation Code of Criminal Procedure) amounted to 4.3 billion rubles, not returned from abroad funds in foreign currency and the currency of the Russian Federation (Article 193 of the Russian Federation Code of Criminal Procedure) in the amount of 29.6 billion rubles. Funds transferred in foreign currency or in the currency of the Russian Federation to the accounts of non-residents using false documents (Article 193.1 of the Russian Federation Code of Criminal Procedure) amounted to 17.9 billion rubles. The amount of illegally moved cash and (or) monetary resources (Article 200.1 of the Russian

Federation Code of Criminal Procedure) amounted to about 224.2 million rubles. The cost of alcohol and tobacco products illegally moved across the customs border of the EAEU amounted to 406.8 million rubles (Article 200.2 of the Russian Federation Code of Criminal Procedure).

As a result of the measures aimed at compensating for the damage caused by crimes, taken by law enforcement agencies before the initiation of criminal cases and during their investigation, only 821.4 million rubles were transferred to the federal budget (Indicators of law-enforcement activities of customs authorities for production of urgent investigative actions and to preliminary investigation in the form of inquiry, 2019). All these factors point out the necessity for more effective criminal and legal protection of public relations arising in the sphere of foreign economic activity (Zhbakov 2013).

These circumstances give grounds for the conclusion about the importance and significance of the doctrinal study of the problems of regulating liability for crimes in the sphere of foreign economic activity not only at the “intra-industry” level, but also from the standpoint of legal comparative analysis of the relevant regulations of foreign criminal law.

Intensive innovative development of the EAEU member states presupposes proper providing of economic security of the member states of the Union. One of the means for achieving this is the creation of a single regulatory framework, harmonization of the list of criminal offenses against the established procedure of foreign trade activities, and establishing adequacy of the types and amounts of punishment and other measures of criminal and legal character for committing them. However, nowadays, only customs legislation is unified, and criminal legislation remains nationally oriented. There is a rather complicated situation: an economic Union of States has been created, and there is a common customs territory, common goals and objectives. However, the criminal legislation on responsibility for customs crimes existing in each state, a member of the EAEU, has very significant differences, especially, the sanctions of the relevant criminal law norms differ.

This often creates difficulties in law enforcement practice, including those related to the determination of the place of Commission of the crime in the implementation of the territorial principle of the criminal law in space.

The study of the chosen issue is also necessary because many doctrinal provisions of Russian law and our “internal” theoretical ideas and attitudes, which seem at first glance to be correct, when compared with other national legal systems including those of the EAEU member states, are not so indisputable and require a new understanding, and possibly rethinking.

However, at present, countering crimes in the sphere of foreign economic activity by implementing criminal responsibility for their Commission is often not effective enough. This is due, among other things, to the fact that many dispositions of criminal law, placed in chap. 22 of the Russian Federation Code of Criminal Procedure “Crimes in the sphere of economic activity” including the norms on responsibility for customs offences are blank, and their content can be determined only taking into account the provisions formulated in various normative acts of the customs legislation, many of them contain errors related to violation of the rules of legal technique and, yes, with ordinary technical errors.

These shortcomings can fully be applied to the criminal law norms provided for in Articles 190, 194, 200.1, 200.2, Article 226.1, Article 229.1 of the Russian Federation Code of Criminal Procedure. In addition, the sanctions of many norms on responsibility for these crimes are imperfect and do not always take into account the nature and degree of public danger of the act provided for in the disposition of this norm. All this has a negative impact on the effectiveness of criminal liability for the crimes under consideration and requires further improvement of the relevant criminal law norms including taking into account the existing positive experience of legislative activity of foreign countries.

As already noted, the provision of foreign economic security in the conditions of actively developing processes of globalization and the creation of the digital economy is a complex international problem, the solution of which demands systematization of the accumulated scientific knowledge in the field of jurisprudence not only with respect to “intra-national”, but also global trends in the development of law (including the improvement of criminal legal means of protection and prevention in the foreign economic sphere). That is why comparative law in conditions of formation of the rule of law in Russia is an integral element of scientific knowledge and plays an important role in legal science.

Taking into account that socially dangerous behavior causing harm is recognized as an offense, and its most dangerous forms as a crime in all developed countries of the world, it seems expedient, using the method of comparative law (legal comparative), to investigate the peculiarities of the regulation of criminal responsibility for crimes in the sphere of foreign economic activity in the EAEU member states (Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan). As the “vectors “ of comparison (lines of comparison) the authors chose the typical approaches of the legislator to the construction of the relevant legal prohibitions and sanctions established for their violation in a particular national legal system.

Comparative analysis of legal regulation of liability for customs offences in the EEC member states.

There are significant differences in the regulation of liability for infringements on foreign trade in the EAEU member states (Skachko 2017). Let us consider them in more detail.

In the criminal legislation of the Republic of Belarus (the Code of Criminal Procedure of the Republic of Belarus of 9 July 1999 No. 275-L) the common norm on the responsibility for commodity smuggling (Article 228 of the Code of Criminal Procedure), which establishes liability for illegal movement across the customs border of the EAEU in a large amount of goods prohibited or restricted to such movement, in the absence of signs of crimes under Articles 328.1 and 333.1 of the criminal code. The offence is punishable by a fine, custodial restraint for up to 3 years or imprisonment for up to 3 years.

The qualifying sign provided for in part 2 of Article 228 of the Code of Criminal Procedure of the Republic of Belarus is smuggling of cash or monetary resources in a large amount. For this offence the punishment is reinforced: fine, custodial restraint for a term from two to five years or imprisonment for the same term (in the Code of Criminal Procedure for this type of smuggling (Article 200.1 of the Russian Federation

Code of Criminal Procedure) custodial restraint is non-existent, and the maximum penalty is the compulsory labour for a term up to two years, and if such acts are committed by a group of persons or in especially large *фьцгге* (part 2 of Article 200.1 of the Russian Federation Code of Criminal Procedure) – the compulsory labour for a term up to four years.

In a particular aggravation (part 3 of Article 228 of the Republic of Belarus Code of Criminal Procedure) the following features are provided: wrongdoings stipulated by parts 1 or 2 of this Article committed by a group of persons upon a previous concert, or repeatedly or by a person who previously committed crimes specified in Article or 328.1 or 333.1 of the Russian Federation Code of Criminal Procedure, or by an official using his authorities, or committed violently against a person exercising customs or border control. Such acts are punishable by imprisonment for a term of five to ten years with or without confiscation of property. Finally, in CH. 4 Article 228 of the Republic of Belarus Code of Criminal Procedure establishes responsibility for commitment of these types of contraband by an organized group. In this case, the punishment may be imposed in the form of imprisonment for a term of seven to twelve years with confiscation of property or without it.

In the Republic of Armenia Code of Criminal Procedure until 2016 there was one general norm providing for responsibility for smuggling - Article 215 (i.e. as in the Russian Federation Code of Criminal Procedure until 2011 there was Article 188). After joining the Eurasian Economic Union, the Armenian legislator made significant changes to his Code of Criminal Procedure regarding the regulation of liability for customs crimes, in particular, for smuggling. In June 2016, the general norm (Article 215 of the Republic of Armenia Code of Criminal Procedure) has lost its force, and instead of it three separate special rules have been included in the code of criminal procedure differentiating criminal liability depending on the characteristics of the object of smuggling (Articles 215.1, 235.1 and 267.1). Part 7 of Article 215.1 of the Republic of Armenia Code of Criminal Procedure provides a general definition of the concept of “smuggling” in relation to all three compounds identified in the criminal law. Article 215.1 of the Republic of Armenia Code of Criminal Procedure provides for criminal liability for smuggling of cash and (or) payment resources in large amounts.

For committing this crime, the Republic of Armenia Code of Criminal Procedure provides for two alternative types of punishment: a fine from two thousand times to three thousand times the minimum wage or imprisonment for up to two years. According to Article 200.1 of the Russian Federation Code of Criminal Procedure, imprisonment for this act is not provided at all and the maximum term of punishment in the form of compulsory labor is two years. The amount of the fine under the criminal code is calculated based on the amount of illegally transferred cash and (or) the value of illegally transferred monetary resources (from three times to ten times depending on the amount) or in the amount of wages or other income of the convicted person for a period of up to two years. In addition, the sanction of this norm provides for punishment in the form of custodial restraint for up to two years.

If in Article 200.1 of the RF Code of Criminal Procedure there are only 2 qualifying signs allocated: especially large amount and group of persons, in Art. 215.1 of the RA Code of Criminal Procedure in part 2 three such signs are allocated: especially large amount, group of persons by prior consent; use of official position. The sanction of this

norm provides for a more severe punishment: imprisonment for a term of two to six years with confiscation of property.

Part 3 of Article 215.1 of the RA Code of Criminal Procedure identifies a particularly qualified part of this crime: commitment by an organized group or with force against a person exercising customs or border control. The punishment for these acts: custodial restraint for a term from three till seven years with confiscation of property.

In contrast to the Russian Federation, such EAEU countries as Kazakhstan, Kyrgyzstan and Belarus continue to criminalize illegal smuggling. So, in part 1 of Article 234 of the Code of Criminal Procedure of Kazakhstan (Economic smuggling) it is an offence of moving goods or other items through the customs border of the Eurasian Economic Union including prohibited or restricted movement of the goods across the customs border, belongings and valuables being restricted by special rules of movement through customs border, except as set forth in Article 286 of this Code, committed in addition to or with concealment from customs control or with deceptive use of documents or means of customs identification or related to non-declaration or deliberately unreliable declaration or with the indication of deliberately false information in the application for the release of goods before filing a declaration for goods or in the application for transactions in respect of temporarily exported vehicles of international transport being goods placed under the customs procedure of temporary import (pre-launch) including with submission of invalid documents, false and (or) containing obviously unreliable (false) data. The sanction of this norm for this crime provides for alternative penalties: a fine of up to eighty monthly calculation indices, correctional labor in the same amount, or involvement in community service for up to eighty hours, or arrest for up to twenty days, with or without confiscation of property. In the article under consideration, qualified types of smuggling are also singled out (part 2, part 3 of Article 234 of the criminal code). In particular, according to chapter 3 of Article 234 of the RK Code of Criminal Procedure for the crime committed by a person authorized to exercise state powers, or equated to his person, or officer or person holding a responsible public office, if they abuse official position; criminal group. The punishment is in the form of imprisonment for a term of three to eight years with confiscation of property, and in the first case – with life deprivation of the right to hold certain positions or be engaged in certain activities.

In contrast to the Russian criminal legislation characterized by the fact that the amount (including large and especially large) are specified in the notes to the relevant articles, in the Code of Criminal Procedure of Kazakhstan they are defined in a separate independent Article 3 of the general part, which explains some of the concepts contained in this Code. So according to section 38 of Article 3 of the Code of Criminal Procedure larger it is when the cost of the moved goods exceeds ten thousand monthly calculation indices, and in part 3. 3 a particularly large amount is when the value of the goods transferred exceeds ten thousand monthly calculation indices.

In the criminal legislation of the Republic of Kyrgyzstan the criminal law norms on liability for customs crimes are in many respects similar to the norms provided for by the legislation of the Republic of Kazakhstan. Thus, Article 223 of the Kyrgyz Code of Criminal Procedure establishes liability for economic smuggling. Article 230 establishes the responsibility for evasion from payment of customs payments, and in Article 270 a special norm on liability for smuggling of goods for which special rules for

crossing the customs border of the Kyrgyz Republic (drugs, psychotropic substances, firearms, etc.) have been established (Millerov 2018). However, sanctions in these norms also have significant differences from similar norms established in the criminal legislation of other EAEU member states.

2 Results

1. Comparative legal analysis of the relevant criminal law norms available in the legislation of the EAEU member states shows that they have not only similarities, but also significant differences in determining the range of criminal acts that infringe on foreign economic activity, and in the amount of sanctions for their commitment.

In particular, in the Code of Criminal Procedure of the Republic of Kazakhstan (CCP RK), the Code of Criminal Procedure of the Kyrgyz Republic (CCP KR) and the Code of Criminal Procedure (CCP RB) there are general rules on liability for goods (“shopping”, the economic) smuggling (Article 234 of CCP RK, Article 223 of CCP RK and Article 228 of CCP RB) saved; and CCP RF and CCP RA deleted such rules and at present in these countries, commodity smuggling is decriminalized.

Significant differences exist in the sanctions of the norms on responsibility for drug smuggling, especially in the CCP of the Russian Federation, Kazakhstan and Belarus. There are other differences in the regulation of responsibility for customs crimes in the EAEU member states.

In our opinion, in conditions of digitalization it seems more appropriate to unify responsibility for encroachments on foreign economic activity (customs crimes) by creating a common norm in which it would be possible to unite all types of smuggling.

Differentiation of responsibility taking into account features of a subject of smuggling, its size, character and gravity of approach of consequences and other objective and subjective signs can be carried out by means of allocating in one article along with the general some qualified structures (as it was earlier in Article 188 of the CCP of the Russian Federation).

2. When designing the sanctions of criminal law norms on responsibility for crimes in the sphere of foreign economic activity committed by a special subject (a person abusing his official powers) and taking into account the specifics of such socially dangerous behavior it seems expedient to include in both the main and additional punishment such its type as deprivation of the right to hold a certain position or be engaged in certain activities in the system of state and municipal administration, as well as in commercial and other non-governmental organizations, as a rule, for longer periods than in the current Code of Criminal Procedure.

Taking into account the positive foreign experience (for example, CCP of Kazakhstan) the RF Code of Criminal Procedure could significantly increase the maximum period of this form of punishment including for customs crimes, and for committing grave and especially grave crimes it is expedient to include this new

kind of punishment in the general part of the CCP RF – lifelong deprivation of the right to occupy certain positions or activities (absolute disqualification).

The inclusion of this new form of punishment in the penal system (Article 44 of the RF Code of Criminal Procedure) and its regulation in independent norm (for example, Article 47.1 of CCP RF), of course, will require review and a number of other provisions of the criminal law, in particular, it will be necessary to provide the opportunity and conditions of parole from the punishment, regulating the grounds and conditions of redemption or withdrawal conviction, including probation within the punishment, etc.). The solution of these questions is beyond the scope of our research. It is also important to show that the implementation of this proposal and the potential for more active application of such penalties in judicial practice in cases of customs offences can, in our opinion, significantly increase the effectiveness of criminal legal means for preventing these crimes including the effectiveness of the application of relevant criminal law.

3. As it has already been mentioned above, criminal and legal measures of crime prevention in the sphere of foreign economic activity are not the main means in ensuring economic security, including foreign economic activity. The main tools here are general social measures to prevent such crimes, as well as economic and special criminological measures. In particular, the creation of a digital platform in the field of customs services will contribute to their prevention (Shabosheva 2019).

3 Conclusion

Summarizing everything said above, it can be noted that as the main trends manifested at the present stage of development of law-making in the field of protection of foreign economic activity, with the use of criminal legal means, two opposite processes can be distinguished. On the one hand, the new “trends” that emerged at the end of the XX century caused the process of globalization and the inevitable rapprochement and interpenetration of various national legal systems, especially in the frames of economic unions (EU, EAEU, BRICS, etc.). On the other hand, almost simultaneously with them there were also “counter-trends”, which call into question the absolutization of the integrative function of international law and cause a polar tendency to strengthen the “reverse” impact of national legal systems on international law included within the framework of the Eurasian Economic Union. Therefore, the “universalization” of the Russian criminal law doctrine regarding the protection of foreign economic activity should take into account, first of all, the national interests of Russia. The Russian legislator cannot automatically copy and mechanically borrow any foreign legal ideas, views and attitudes underlying the construction and application of criminal law norms existing in the legislation of individual countries of the world and establishing responsibility for encroachments on foreign economic activity.

It is necessary to find a reasonable balance of international and national interests, their ratio should be optimal. However, the unification of criminal legislation on liability for customs crimes, especially for smuggling, in conditions of creating digital economy in our country seems objectively necessary.

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Russia's Competitiveness in the Field of Genetic Technologies: Legal Aspect

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Abstract. Working on the article the authors aimed at analyzing various points of view on the use of genetic technologies. The necessity of proper legal regulation and ensuring the safety of the development of genetic technologies that contribute to Russia's competitiveness in this area is substantiated. The results of a scientific study are highlighted. The article identifies problems associated with the use of genetic technologies in the process of assisted reproduction of a person: in particular, the legal nature of human embryo, eligibility of its use for academic research and therapeutic purposes, the threat of using biotechnology for criminal purposes. It is proposed to solve these problems, taking into account domestic and foreign experience in the use of genetic technologies the field of assisted reproduction, by establishing effective cooperation in this field.

Methods: The dialectical method is the basis of the present study, besides that, for the solution of the objectives, the authors applied complex, systemic and informational approaches, general scientific and such private methods of cognition as synthesis, analysis, deduction, systematic-structural, systematic-functional, formal legal, comparative legal.

Keywords: Genetic technologies · Legal regulation · Embryo · Assisted reproductive technologies · Crime · International cooperation

JEL Code: K40 · K41

1 Introduction

One of the top-priority goals in the domestic policy is to ensure a breakthrough in scientific and technological development of the Russian Federation including high tech solutions and genetic technic. For the further development it is required to be competitive in the field of high technologies, which include genetic technologies. This requires proper legal coverage.

At the same time, there are fierce debates among scientists, government, public, especially religious figures on the feasibility and conditions of using the achievements of genetic technics.

It is noted that after the introduction of state registration of genetically modified organisms (GMOs), the activity of some public figures and organizations trying to hinder the introduction of innovative genetic technics in Russian agriculture has noticeably increased. In this regard, a large number of Russian scientists signed an open letter in support of the development of gene technologies in the Russian Federation. This letter notes that the ban on GMOs in Russia will not only harm healthy competition in the agricultural market, but will also lead to a significant lag in food production technologies, increased dependence on food imports and will undermine the economic position of our state.

It is impossible not to support the idea stated in paragraph 18 of the appeal the Tehran conference in 1968: "While recent scientific discoveries and technological advances have opened vast prospects for economic, social and cultural progress, they can, however, jeopardize the implementation of human rights and freedoms and will require constant attention in this regard".

Therefore, the development of genetic technics requires its comprehension, thoughtful legislative regulation, as well as effective international cooperation in this area.

Much has already been done to strengthen the appropriate legal framework in Russia. The federal law on July, 5 1996 No. 86-FL "On state regulation in the field of genetic engineering" was adopted. The Decree of the President of the Russian Federation on November, 28, 2018 No. 680 "On the Development of Genetic Technologies in the Russian Federation" was adopted to solve complex problems of accelerated development of genetic technics such as genetic editing, developing of bio-based products, analyzers and immunobiological solutions for healthcare, biotechnologies for agriculture. For the compliance with this decree, the Federal Scientific and Technical Program for the Development of Genetic Techniques for 2019–2027 was approved. It states that Russian science is able to quickly perceive successful world experience and provide our country with a leading position in the application of new technics. There are reserves for genetic technics, including the field of genetic editing in Russia.

Along with the issues of funding, scientific and technical support, evaluation of potential commercialization this Decree prescribes to ensure the formation and maintenance of information-analytical system of operational monitoring and assessment of scientific and technical support in the field of genetic technic research, including the technology of genetic editing, as well as the risks of uncontrolled distribution and use of these technologies.

The existence and appearance in the near future of scientific and technological development results in the field of genetic technics, which, if they fall into, can cause enormous damage to people and society in the hands of criminals, require certain response measures.

In any society, even the most highly developed, situations can arise due to both objective and subjective factors, when minor children are left without parental care (Inshakova and Kagal'nickova 2017).

According to some experts, it is necessary to organize on a regular basis at the national and international levels (preferably within the UN) work on scientific forecasting of the possible use of science and technology for criminal purposes, to be able to take the necessary preventive measures, even relating to the criminalization (Zimin 2019).

Scientists and practitioners of various specialties, including lawyers, should contribute to ensuring the security of the development of genetic technologies, which are widely used in creating tools for healthcare, biotechnology for agriculture and industry.

Of particular concern in society is the use of the achievements of genetic technologies in the process of assisted reproduction, including the technology of genetic editing of a human embryo.

Our scientific research in the field of assisted reproductive technologies, which was conducted thanks to the financial support of the Russian Federal Property Fund in the framework of the scientific project No. 18-29-14084, allowed us to come to the following conclusions regarding genetic technologies in the process of assisted human reproduction:

Firstly, modern genetic technologies offer enormous opportunities in the field of assisted human reproduction. At the same time, this direction is associated with risks not only of a medical, but also of an ethical and legal nature. As a result there is a wide range of opinions regarding the use of genetic technologies in relation to humans: from nihilism to full support.

So, in 2018, the State Duma of the Federal Assembly of the Russian Federation introduced legislative proposals to ban surrogate maternity.

The world is discussing an experiment conducted by Chinese scientist He Jianqui, who became scandalously famous after he said that he managed to edit the human embryo genome and achieve the birth of the world's first genetically modified children. He Jiancui said that with the help of CRISPR genomic editing technology, he changed the gene known as CCR5 and associated with HIV resistance and created children protected from this disease. The twin girls Nana and Lolu were born on November 26, 2018. During the experiment, assisted reproductive technologies (ART) were used: eight HIV-infected men provided their sperm for IVF (in vitro fertilization), after the formation of embryos, genomic editing was carried out, and then they were transplanted to women who provided their ovum. Many scientists were critical of the experiment of the Chinese scientist. So, the dean of the medical faculty of Harvard University, George Daley, considers this experience an ethical and scientific failure, since the possible negative consequences were not taken into account. In particular, researchers note that modification of the CCR5 gene leads to increased mortality and vulnerability of people to infectious diseases such as influenza and Nile fever (Stein 2019).

In Russia, doctors and lawyers also analyze the experiment of the Chinese scientist (Mohov et al. 2019a, b). In particular, some authors note: "It is safe to say that genome editing will remain a widely used tool both in scientific research and in the commercial and medical field" (Mohov et al. 2019a, b). However, the same scientists note that there is a risk that attempts to correct the genetic code of an unborn baby can do more harm than good. There are proposals to introduce a global moratorium on editing a human embryo among scientists.

In many countries of the world, there is a criminal prohibition on genetic research on living human embryos, aimed of changing the genome. For example, the Criminal Code of France provides liability to prosecution for experiments with a human embryo (Part 5, "On criminal acts in the field of biomedical ethics", Section III, "On the protection of the human embryo").

Secondly, the problem of determining the boundaries and conditions for the use of genetic technologies in relation to a human embryo makes it necessary to study the issue of a human embryo from a legal perspective, to determine its status, and the admissibility of certain technologies and procedures in relation to a human embryo.

For example, the problem with the reduction of embryos, which occurs when using assisted reproductive technologies, has not been resolved. In an interview to "Ros-siyskaya Gazeta", Academician Vladimir Kulakov, the former head the Scientific Center for Obstetrics, Gynecology and Perinatology of the Russian Academy of Medical Sciences, described *in vitro* fertilization (IVF) as follows: "...it is necessary to take an ovum from a woman, her husband's sperm. Fertilization is carried out in a test tube, which must be kept in the thermostat from 24 to 28 h - while the embryo will be crushed. After this embryo is transplanted into the uterine cavity. In fact, this is a very complex procedure, requiring serious preparation, observation.

But, as a rule, 3–4 embryos are transplanted simultaneously to increase efficiency, the birth to happen. And often not one fetus develops, but two, three, or even four. If triplets, then, of course, a woman gives birth prematurely. Premature babies are difficult to care for. And the pregnancy itself is not easy to continue. We learned to do the so-called reduction, especially if four embryos develop. What is reduction? Under computer observation, a special compound is introduced into one of the embryos, and it dies. Instead of four, three or two remain. The church objects to this" (Krasnopol'skih 2005).

Not only religious figures, but also some scholars believe that the destruction of embryos in such a situation can be considered as crime. M.V. Kiseleva expresses the common opinion: "Deliberate unlawful infliction of death on another person at any stage of his development should be considered a crime. At the same time, deliberate crimes against the life of the embryo (fetus) should not be regarded as crimes of little gravity, since this neutralizes the priorities and values proclaimed by Art. 2 of the Constitution of the Russian Federation" (Kiseleva 2010).

There are other problems associated with the eligibility for using human embryos for research and therapeutic purposes. The basis of these problems is the lack of a clear legal status of the human embryo.

Since the Russian Federation does not have a special law governing the use of ART and the use of human embryos, society needs to determine the legal status of the embryo and identify the features of this status in their systemic connection with various branches of Russian law, as well as taking into account the modern development of European and international law (Glandin 2014).

In the Order of the Ministry of Health of Russia dated 30.08.2012 No. 107n "On the Procedure for Using Assisted Reproductive Technologies, Contraindications and Restrictions on Their Use", the embryo is considered as biomaterial (Russian newspaper 2013).

According to Art. 55 of the Federal Law of November 21, 2011 No. 323-FL (as amended on August 3, 2018) “On the Basics of Protecting the Health of Citizens in the Russian Federation”, citizens have the right to cryopreserve and store their germ cells, tissues of reproductive organs and embryos at their own expense and other means stipulated by the legislation of the Russian Federation (Compendium of legislation of the Russian Federation 2011).

“A human embryo can act as a freely transferable individually defined thing, which makes it possible to become an object of inheritance and contract law, an object of regulation of international private law ...,” some experts believe (Purge 2012).

It should be noted that the problems of using stem cells, which have the ability to transform into functionally active cells of various human organs, are closely related to the problems of using embryos. Now stem cells are used in medicine and the pharmaceutical industry for the treatment of various diseases, therefore, legislative decisions regarding the status and use of embryos must be extremely balanced.

Thirdly, the analysis of criminal and civil cases, scientific developments in this area shows the facts of abuse, including crime, in the field of assisted reproduction of a person. The most common crimes committed in this area are human trafficking, fraud, extortion, falsification of evidence. Of particular concern are crimes against health, since it has to be noted that medical services are often of poor quality. There are situations when, in performing procedures related to the use of ART, medical personnel cause harm to health.

Our findings are also confirmed by other scientists: “The risks of the indirect use of biotechnology for criminal purposes can be expressed in abuse and abuse of authority, corruption, fraud and extortion in this area. Thus, fraud in the field of biomedical technologies such as in vitro fertilization is common” (Tishhenko and Frolova 2018).

Crimes in the field of assisted reproduction of a person may be the result of criminal schemes, but they can also be committed in connection with the inconsistency of legislation, miscalculations in the legal technique of the presentation of regulatory material.

Fourth, the existing legal framework needs to be improved. Although genetic technology, including ART, is a prevailing reality in Russia, reflected at the legislative level, analysis of the legislative framework leads to the conclusion that many issues remained unresolved.

The sources of legal regulation of ART include the Family Code of the Russian Federation, federal law of 21.11.2011 number 323-FL (ed. From 03.08.2018) “On the basis of public health protection in the Russian Federation” (Compendium of Legislation of the Russian Federation, 2011), order of the Ministry of Health of Russia dated 30.08.2012 No. 107n “On the procedure for using assisted reproductive technologies, contraindications and restrictions on their use” (Russian newspaper 2013).

Genetic parents also turn to the court when a surrogate mother, using Art. 51 of the Family Code, does not give her consent to record them as parents and leaves the child to herself. In judicial practice, the consideration of cases of abuse of their rights by surrogate mothers has increased so much that regulation of practice has been required by the Supreme Court of the Russian Federation.

In the Decree of the Plenum of the Supreme Court dated 05.16.2017 No. 16 (as amended on 12.26.2017) “On the application by the courts of the law when considering

cases related to the identification of the origin of children” it was established that when resolving disputes arising in connection with the use of ART, the courts should bear in mind that if the surrogate mother refused to consent to the recording of the above persons (potential parents) by the parents, this circumstance cannot serve as an unconditional basis for refusing to satisfy the claim of these persons to be recognized as child's parents and transferring the child to upbringing” (Bulletin of the Supreme Court of the Russian Federation 2017).

We believe that it is necessary to introduce a mandatory notarial form for contracts between a surrogate mother and genetic parents, fixing this requirement in the Family Code of the Russian Federation. In Russia, methods of assisted reproductive technologies (ART) have generally been used for a long time, but there is no law regulating this area yet. In some countries, the same laws have been adopted, for example, in the Thai Land (Stasi 2017).

We also believe that, in order to protect surrogate motherhood, the proposal to criminalize embryo replacement and disclosure of the secrecy of surrogacy should be supported (Chernysheva 2013).

Fifth, many problems, including those of a criminal nature, cannot be solved without international cooperation. Issues related to genetic technology need international harmonization, including the establishment of international control measures.

In different countries, ART is treated differently: from the ban to state support, seeing in some cases a threat to security, and in others - the potential to solve demographic and economic problems.

2 Results

Studying foreign experience, it can be seen that some countries use bans in other states on a number of methods of reproductive technologies. An example is the situation described in the French newspaper Figaro: “More and more couples from France go on a trip to the north of Cyprus for the purpose of reproduction using medicine methods that allow parents to choose the gender of their child. In the northern part of the island, where the enclave occupied by Turkey is located, there are no prohibitions on assisted reproductive medical practices that are banned in Europe.” The author of the article claims that on this part of the island, thanks to reproductive technologies, spouses can choose the gender of the unborn child. In order to be able to choose the sex of the baby, it is necessary to undergo genetic pre-implantation diagnostics - the only possible procedure that allows you to determine the sex of the unborn baby with 100% accuracy.

The application of this technology in a number of countries is possible only if there is a risk a serious genetic disease to be inherited by unborn child. Turkish laws do not impose any age restrictions on the use of reproduction technologies. More than 5,000 couples annually come for treatment to 16 clinics in this region. And even high prices do not stop patients” (Kefalas 2019).

In Russia, in order to treat infertility, there is a wide range of services provided by Russian medical institutions, primarily for citizens of those countries where the commercial use of embryos for the treatment of infertility is prohibited or restricted.

The use of genetic technologies in the procedures of assisted reproduction, experiments in this area cause problems of ethical, legal, economic, socio-political nature, and these problems acquire global significance.

One of the first documents in this field is the Universal Declaration on the Human Genome and on Human Rights (adopted by the UNESCO General Conference on November 11, 1997). Article 1 of this document, which is advisory in nature, establishes the basic principle: “The human genome underlies the original community of all representatives of the human race, as well as the recognition of their inseparable dignity and diversity. The human genome marks the heritage of mankind”.

On April, 4 1997, in Oviedo (Spain) the Convention on the Protection of Human Rights and Dignity of the Human Being in Connection with the Application of Biology and Medicine: the Convention on Human Rights and Biomedicine was adopted under the aegis of the Council of Europe. The Convention stresses that the interests of man are above the interests of science or society. The Convention sets out a number of principles and prohibitions in relation to genetic and medical research, the right to privacy and information, transplantation, and public discussion.

The Convention prohibits all forms of discrimination based on genetic heritage and permits genetic testing for medical purposes only. It permits genetic engineering only for prophylactic, diagnostic or therapeutic purposes and only on condition that such engineering is not aimed at changing the genome of the heirs of a given person.

The Convention prohibits the use of technologies aimed at providing medical assistance in childbirth in order to choose the sex of the unborn child, unless this is done to prevent this child from inheriting a serious illness.

The creation of human embryos for research purposes is prohibited, and when a country authorizes *in vitro* research on embryo, adequate protection of these embryos should be provided. In addition, the Convention recognizes the importance of facilitating public discussion and proper consultation on the above issues.

3 Conclusion

In our opinion, it is worth considering Russia’s accession to this Convention. On March, 18, 2019, the Committee established under the aegis of the World Health Organization (WHO) to develop standards of monitoring and supervision in respect of the editing of the human genome proposed WHO to make arrangements for international control over work in this area, to design a common database (special register) of all current researches and develop research standards. According to members of the Committee, until the recommendations are not developed, no one should conduct clinical trials related to editing the human genome and these experiments are qualified “irresponsible” at the present point in time. The members of the Committee also called all scientists conducting such studies for a dialogue to assess the conditions they work in and to ensure compliance with ethical and medical standards.

In our opinion, certain rules for the use of genetic technologies in the field of assisted reproduction should be conferred under an international agreement concluded under the aegis of WHO or the UN. This document should ban the choice of the sex of the child, unless it involves genetic diseases, as well as reproductive cloning of a person.

Sixthly, modern genetic technologies require thoughtful and comprehensive analysis by all parties concerned, including individuals, civil society and academia.

These problems, along with others, became the talking point at the International Academic Conference “Law and Modern Technologies in Medicine”, held in May 2019 at the Moscow State Law University. The participants came to the conclusion that the solution of many problems associated with modern achievements of science requires an integrated approach and the study by specialists in various subject areas, including medical, philosophical and legal.

In our opinion, all of the above measures for financing, the formation of a scientific, technical, informational, analytical and legal framework, for ensuring the security against the criminal use of genetic technologies, including active participation in relevant international cooperation, will allow Russia to take not only competitive, but also leading position in the field of genetic research and technology.

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The Principles of Competition and Sustainable Development in the Economy: The Dialectic of Interaction in the Context of Information Globalization

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Abstract. Purpose: The subjects of this article are actual theoretical and practical problems of interaction between the competition principles and sustainable economic development in the context of modern information globalization.

Design/Methodology/Approach: The research is based on General scientific and private scientific methods of cognition. The General dialectical method allowed to investigate a question of dialectical interrelation of competition principles and sustainable development of economy in the context of application of new information technologies.

The structural and functional method is also used, which is applied in the characterization of the principles of sustainable development.

Among the private scientific methods, the formal legal method is used to disclose the content of the legal regulation of the competition principles and sustainable development. The comparative legal method is served as a basis for identifying General trends in the dialectical interaction of the competition principles and sustainable development of the socio-economic sphere of society.

Findings: Regarding the impact of information technologies on economic processes, it should be taken into consideration that the evolution of these information technologies in the economy is not unlimited. It must be pointed out that the introduction to revitalization of new information and communication technologies, as well as the importance of their effective implementation, determine the need to preserve the inviolability of generally recognized principles of law and legal regulation in the economic sphere.

Originality/Value: The authors come to the conclusion that in general within information globalization there is a progressive dynamics of economic development in the conditions of interaction of the considered principles.

The dialectical interrelation of the principles of competition and sustainable development of the socio-economic sphere of life is expressed in their systemic development and interdependence; in the subsidiarity of interaction; not identical in degree and forms, but in the equally important influence of these principles on the processes of functioning and development of economic relations.

Keywords: Competition · Sustainable economic development · Globalization · Legal regulation (principles of law) · Information society

JEL Code: K10 · K24 · L86 · O10

1 Introduction

A noticeable trend in the development of modern law is the expansion of the influence of the principles of law as regulators of public relations at the international and national levels. In the sphere of regulation of economic relations, the dialectic of interaction between the principles of competition and sustainable development is important. These principles are of strategic importance for maintaining the effective development of economic relations.

On the one hand, the principles of competition and sustainable economic development within the information globalization ensure the maintenance of trust taking into account the expansion of access to information and the achievement of another level of its openness. On the other hand, these principles stimulate the development of balanced economic relations, which is especially important in the development and modernization of the market economy. Actually there is a need for a comprehensive definition of systemic problems in the implementation of the principles of economic development. Moreover, there is also a need for the formation of reasonable proposals to improve the legal regulation of economic relations based on the principles of competition and sustainable development.

2 Materials and Method

The Constitution of the Russian Federation and the Constitution of foreign countries form the basis of the regulatory framework of the study. Under the constitutional acts the principles of sustainable development and the principle of competition in their dialectical relationship were investigated.

The strategic documents that contain the principles of economic development in the context of the digital economy were analyzed: decree of the President of the Russian Federation of May 9, 2017 No. 203, approved the “Strategy of information society development in the Russian Federation for the years 2017–2030” and resolution of the Government of the Russian Federation on April 15, 2014 No. 316 «On approval of the state program of the Russian Federation» Economic development and innovative economy».

The legal doctrine which reveals the content and development processes of the system of economic development was investigated on the basis of the works of Russian and foreign authors (Ruchkina 2017; Inshakova 2018; Vavilin and Volos 2018; Balleste 2019; Ershov 2018; Karnaukh 2019).

3 Results Content Modernization of the Principles of Competition and Sustainable Development in the Context of Information Globalization

The analysis of legal regulation and practice of application of new information technologies in the economic sphere in Russia and foreign countries allows us to note that the dialectic of interrelated development of the principles considered in the article is most clearly expressed in the conditions of information globalization.

The principle of competition is as follows: equal partnership of subjects of economic activity in relation to any goods within the relevant commodity market, when each of the subjects of economic activity does not have the opportunity to unilaterally affect the General conditions of circulation of commodities in this market. This principle is matter because the absence of competition leads to a quality deterioration of economic relations.

The most important thing for the effective development of the modern economy is meeting the requirements of the principle of sustainable development. The principle of sustainable economic development is an integral part of the concept of “sustainable development” that is relevant to the most countries in the world (Iqbal 2009; M’Baye 1972; Vasak 1977).

Declaration on the Right to Development adopted by General Assembly resolution 41/128 of 4 December 1986 recognizes that «development is a comprehensive economic, social, cultural and political process, which aims at the constant improvement of the well-being of the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits resulting therefrom».

The tendency for the principles of competition and sustainable development in the economic sphere is of particular importance in the modern conditions of information globalization because it allows us to solve the problems of strengthening social statehood. Such a dichotomy makes it possible to implement the principles of the social state based on the requirements of competitiveness and social responsibility of business including the principles of social equality; security of a decent life, the free development of man, etc. We can observe a similar relationship with you in the subsystem of interdependence of the economic development of the political, environmental and spiritual-cultural components in the modern concept of sustainable development. In turn, the effectiveness of the principle of sustainable development has a stimulating effect on the balanced functioning of a market economy.

Information globalization and the introduction of new information transfer technologies are those factors that increase competition and serve as additional means of ensuring sustainable development. Information globalization has expanded the scale of socio-economic transformations taking place all over the world and substantially predetermined the nature and variation of the interaction of elements and subsystems of the socio-economic formation. In the branches of both private and public law, there are prominent examples of the gradual shift of a number of legal relations into virtual reality (Inshakova 2018).

With regard to the global development of the information environment, one can highlight both the pros and cons of expanding the channels of information openness and accessibility development of a competitive environment. On the one hand, the operational efficiency of the economy and other components of sustainable economic development are increased, the process of providing services is optimized. On the other hand, Internet companies that provide financial services have more potential to dominate the market (Ruchkina 2017).

At the same time, we believe that the competitiveness of state organizations is of particular importance, since it is the force that enhances its sustainability and stability of the domestic economy. The state always acts in the public interest, while the parties to the contract can act only in favor of their own profit (Vavilin and Volos 2018).

In order to minimize risks, certain measures are taken.

Thus, the decision of the board of the Eurasian Economic Commission dated January 23, 2018 No. 9 “On the procedure for the development and adoption of recommendations and joint measures aimed at stabilizing the economic situation, in case the member states of the Eurasian Economic Union exceed the quantitative values of macroeconomic indicators that determine the sustainability of economic development” approved the recommendations and results of the implementation of joint measures. These measures are also taken into account in the development of the main macroeconomic policy guidelines of member States.

The “Strategy of information society development in the Russian Federation for the years 2017–2030” was adopted on May 9, 2017 in order to ensure conditions and the formation of a knowledge society in the Russian Federation. This document focuses on key areas of the implementation of the Russia’s domestic and foreign policies in the field of information and communication technologies, aimed at developing the information society, creating a national digital economy, ensuring national interests and implementing strategic national priorities.

Here are the main principles outlined in this strategy:

- (a) ensuring the rights of citizens to access information;
- (b) ensuring freedom of choice of means of obtaining knowledge while working with information;
- (c) preservation of traditional and customary for citizens (other than digital) forms of obtaining goods and services;
- (d) priority of traditional Russian spiritual and moral values and observance of behavioural norms based on these values while using information and communication technologies;
- (e) ensuring legality and reasonable sufficiency in the collection, accumulation and dissemination of information about citizens and organizations;
- (f) ensuring state protection of the interests of Russian citizens in the information sphere.

Furthermore, the Strategy of economic and innovative development of the Russian Federation for the period until 2020, adopted by the Government of the Russian Federation on April 15, 2014, No. 316, is aimed at creating a favorable business climate and conditions for doing business; increasing innovative activity of business; improving the efficiency of public administration.

It draws attention to the creation of conditions for the development of competition and attracting investment in the economy of the Russian Federation.

The dialectical relationship between the principles of competition and sustainable development in terms of functional orientation and content contributes to effective legal regulation and provides an opportunity to make the right practical conclusions in understanding the operation of laws in the socio-economic sphere. At the same time within the information globalization strengthening of their influence on balance of economic development consist in observance of the following requirements: information about the parties of economic activity, and also about goods, services has to be disclosed completely for formation of objective opinion of users; the information base should meet the needs and requests of stakeholders; reporting should provide all information about risks and guarantees of reliability of evidence. These circumstances determine the relationship between the content of the principles of competition and sustainable development (Umnova-Konyukhova 2019).

It must be pointed out that information as a significant segment of economic development considerably affects the modernization of the content of these principles, in particular the reliability, timeliness and availability of information that are of great importance.

Part 2. The patterns of the dialectical relationship of the competition principles and sustainable economic development

On the basis of generalization of normative legal acts and judicial practice it is possible to allocate a number of dialectical interrelation regularities of the competition principles and sustainable development in the sphere of economic development.

Among them are:

- (1) systematic development of economic development principles;
- (2) interdependence of economic development principles;
- (3) subsidiarity of economic development principles;
- (4) the influence of economic development principles in the process of their implementation which are equivalent in importance.

Since the system of principles of sustainable economic development is dynamic and depends on a number of factors such as the political and legal structure of the economic regime, openness, accessibility and reliability of information, in the modern period, the relationship between the principles of competition and sustainable development should be considered on the basis of the General laws of dialectics.

Modern scientists, for example, Roy Balleste believe that in order to achieve openness, accessibility and reliability of information, it is necessary to take such measures as the coordination of national and international law in the field of regulation of the use of the information space of the Internet, the search and elimination of “black holes” in science and education using the Internet, the development of common standards for the use of the information space of the international community and individual nations or states. National law and international law have made significant progress in creating common rules, but political regimes and low living standards of individual countries do not allow making Internet information publicly available (Balleste 2019).

The formation of the Information Community was directly set by the UN as a key goal at the Millennium Summit, which was held from September 6 to 8, 2000 in New York. Achieving full primary school education for children by 2015 and ensuring a global partnership for development were identified as development goals outlined in the UN Millennium Declaration. The eradication of illiteracy in the world is a priority for development. Illiteracy leads to poverty, disease, oppression of women, wars and, no doubt, to the neglect of technology. This is the beginning of the stratification of society. All these problems can be solved by taking advantage of Internet technologies.

Therefore the essence of the correlation between the competition principles and sustainable development and the economic regime is primarily to improve the welfare of people and countries. The information space in this direction should serve as a means to achieve this goal.

Part 3. Actual theoretical and practical problems of realization of the competition principles and sustainable development in the context of information globalization

Noting the overall positive impact on economic development of the competition principles and sustainable development, namely their stabilizing effect on the economy in the context of information globalization, it should be noted that there are urgent issues that need to be addressed.

In fact, a number of legal categories that affect the process of information globalization and the implementation of the competition principles and sustainable development in the new information reality need to be specified and clarified.

In particular, we are talking about a reassessment of the content of the freedom principle in economic activity. The freedom of economic activity and the ability of everyone to use their abilities and property for entrepreneurial and other economic activities not prohibited by law in the new information reality necessitates the control of the information economy by the state. These measures require regulation of civil circulation of information, relations on its creation, storage, replication, reproduction and use in the economic sphere.

The primary role of the private sector is to introduce technological innovation to the Internet for the benefit of everyone. At the same time, representatives of private business should contribute to economic growth and new partnerships, help to modernize (transform) technologies, and improve Internet use skills.

Meanwhile, despite the activity of the legislator to regulate the sphere of information relations, in the modern period there are a number of uncertainties and conflicts in legal regulation. In support of this point of view, Roy Baleste emphasizes that access to the Internet and public reaction to the new technological space shows the growing need for legislative reform and consideration by politicians of the universal importance of Internet technologies for economic, social and cultural and other human rights and freedoms (Balleste 2019).

We believe that in order to improve legal regulation in the sphere of creation, storage, dissemination and use of information, application of information technology it is necessary to do the following: introduce subsidiary regulation of such intellectual property as information, setting limits of its action according to both the competition principles and sustainable development principles of national security and economic sovereignty of the state.

There is a need to improve legal regulation and some issues related to the implementation of the competition principles and sustainable development. In particular, the question of what are the implementation limits of these principles is relevant. The implementation limits of the competition principles and sustainable development are established by mandatory norms and are aimed at determining the limits of these principles. It is important to note that the state should not abuse its ability to determine the limits of their implementation.

Part 4. Prospects for the development of the competition principles and sustainable development

In many countries of the world electronic documents, digital rights, digital money, electronic trading, electronic money, electronic transactions, digital objects, online services and other things like that are actively developing.

It would seem that the use of artificial intelligence in the economy helps to optimize economic relations and reduce time and costs. But we should remember that there is a negative side to information globalization.

It seems that the effectiveness and formal expression of the **competition** principles and **sustainable development** at the international and domestic levels will contribute to the optimization of economic relations.

4 Conclusion

To crown it all it should be noted that in the context of information globalization, the process of adaptation to the basic requirements of the competition principles and sustainable economic development is becoming increasingly relevant for economic development. The dialectical interconnection of these components is expressed in their systemic development and interdependence; in subsidiarity of action; in an equal effect on the processes of economic development.

However, based on the fact that the evolution of information technology in the economy is not unlimited, it should be noted that the increased implementation of new information and communication technologies, as well as the importance of their effective implementation leads to the need of preserving the essential purpose of the principles of law in the economic sphere. Abuse of the state in imposing restrictions on the implementation of the competition principles to ensure sustainable economic development is unacceptable.

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Interactive Communication as an Essential Precondition for the Development of Citizen Centered E-Government

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Abstract. Purpose: The development of e-government raises the question how to provide e-services oriented to the personal needs of individuals and collective interests in a civil society. In this sense, the various forms of e-democracy are becoming the tool of direct communication between consumers and suppliers of public services.

The purpose of the article is to determine the value of various forms of electronic communication between citizens and civil society with public authorities as a general prerequisite for the development of citizen-centered e-government.

Design/Methodology/Approach: The methodology of this paper is represented by a set of general scientific and private scientific methods (logical, dialectical techniques and methods of scientific knowledge, comparative legal and legal technical analysis of texts of laws and other documents, analysis of Internet sources, as well as domestic and foreign literature dedicated to the study of various forms of electronic communication between citizens and state institutions as an effective channel to bring information to the government).

Findings: Information exchange is becoming an increasingly important condition for achieving a balance of interests between individual citizens, society and the state which becomes the only and uncontested subject of the e-government policy implementation. A study of the issue suggests that the Russian government does not pay enough attention to possible ways to optimize state regulation through the effective use of various forms of e-democracy. The historically confirmed importance of a democratic political regime in the context of the development of information and telecommunication technologies receives an additional backlog for the development, which, however, is complicated by the fragmentation of state policy in this area, a formal approach demonstrated by the authorities, instability, imperfection of legislation and law enforcement practice. The most developed forms of e-democracy in modern Russia are at the same time the simplest types of communication (information provision, public consultations) have a very narrow, specific character of their application and are not obligatory for the government, and therefore, they are not able to have a significant impact on changes in state and municipal policies at the federal, regional and local levels, respectively.

Originality/Value: In modern Russia the institution of e-democracy is used insufficiently and its role for the development of citizen-centered e-government is underestimated. Digitalization of public administration often takes place autonomously, in isolation from channels of direct communication with communities, which entails a reduction in the general pace of development and the coverage of the population using e-services. As a result, despite legal, organizational and technical foundations laid down, there is a huge underutilized reserve in this area related to the implementation of democratic institutions through various e-services. According to the authors of the publication, the solution to this problem is seen in the formation of a holistic and systemic vision of all forms of information communication of citizens, society and the state.

Keywords: Interactive communication · E-government · Public services · E-democracy · E-participation · E-influence

JEL Code: K24 · O38

1 Introduction

The role of information technologies in modern society is growing from year to year. Inevitably, they begin to exert more and more influence on the processes taking place in all spheres of social life and public administration. The political system of society also cannot change the current trend and, therefore, becomes the subject to the increased influence of IT-development. Various information platforms for communication between citizens and the state, electronic voting tools, media resources, social networks start to play a prevailing role.

Almost two decades ago, on July 22, 2000, the Charter of the Global Information Society was adopted at the G8 Summit of Heads of State held in the Japanese city of Okinawa (Okinawa Charter). This document officially established a Digital Opportunity Taskforce, determined the basic standards of international cooperation in this field, as well as the parameters of e-society development in the context of the spread of digital technologies. In line with the global trend the Russian Federation become actively involved in the formation of the information society.

On the basis of the Government Decree No 313 of April 15, 2014, the state program “Information Society” was adopted in Russia. It was additionally supported by the Strategy for the Development of Information Society for 2017–2030 (approved by the Decree of the Russian President № 203 of May 9, 2017), as well as a number of program and regulatory acts introduced initiatives on open government, e-government in order to create the society, which officially aimed to achieve “the level of application and accessibility of information allowing the fundamental change of economic, social and other living conditions of citizens”.

This article attempts to establish the role of modern information and telecommunication technologies and interactive communication in the establishment and improvement of e-government institutions, which ensures the satisfaction of the needs of individuals and society in access to socially significant information and diverse public services.

2 Materials and Method

The initial methodological premise of this paper is the revealed imbalance between the existing level of e-government implementation and the diversity of forms of electronic communications potentially available for citizens. This mismatch resulted in the fact that the authorities do not achieve the necessary level of satisfaction in a range of public interests with high importance and actuality (housing, education, medical care, pensions and social insurance). By studying a vast range of articles, conference papers, books on legal and political matters in English and Russian, the authors have established the differences and weakness of systematization of points of view on the classification of forms of e-democracy. Further more in the legislative and regulatory activity of the Russian government, the least developed forms of electronic communication (e-information and public consultation) prevail that have a very weak effect on changing and improving public policy.

Based on the prerequisites of scientific understanding identified by the authors, the present research was grounded on the methodological approach and used the set of methods of formal logic, system and structural analysis, as well as comparative legal method, methods of legal forecasting and interpretation of legal norms. Methods of formal logic, system and structural analysis were used to systematize the forms and types of electronic democracy, to establish a hierarchical relationship between the different forms of electronic communication. Through a comparative analysis of foreign experience on the use and legal regulation of information and telecommunication technologies, the authors identified examples that can serve as a guide for the development of the domestic legal system.

In the framework of the research the authors widely used dialectical techniques and methods of scientific knowledge, as well as a number of specific scientific methods (content analysis of Internet sources, as well as domestic and foreign literature), which made it possible to establish problematic aspects of various forms of electronic communication by citizens as an effective channel for bringing information to the attention of public administration agencies.

3 Results

3.1 The Impact of Electronic Communication on the Development of the State Legal Regime

The Russian Constitution in articles 1 and 3 proclaims Russia as a democratic state and its multinational people as the bearer of sovereignty and the only source of power, the implementation of which takes place directly, as well as through state and municipal governments. A referendum and free elections are recognized by the constitution as the highest direct expression of the power of the people of Russia. However, the methods

of exercising state power are very diverse, they are a dynamic phenomenon, developing under the influence of a number of objective and subjective factors. Modern states have the opportunity to choose the appropriate tools of traditional and innovative forms in order to solve certain problems. At the same time, there are certain laws that determine the special role of modern information and telecommunication technologies, since they are the ones that can fundamentally change the very essence of the methods and practices of the state apparatus.

The form of the state is constituted by the triad of components widely discussed in Russian legal science (form of polity (form of government), administrative (territorial) structure and political (state-legal) regime). From the listed triad of elements it is the political (state-legal) regime that is the most dynamic one. It plays the role of “a calling card” for the state and testifies at what level the population is involved in state activity and shows the possibility of realizing the political responsibility of state authorities.

In modern society information technologies have become the tool that brings authorities closer to citizens and makes it more accessible to communication, interaction, and mutual influence than it was before. As Clift (2004), a global digital strategist, speaker and expert on digital engagement, open government, and civic technology, rightly noted: «E-government and democracy, fused together, are one piece of the e-democracy puzzle. Whether it is online campaigning, lobbying, activism, political news, or citizen discussions, the politics and governance of today are going online around the world. What is unknown, is whether politics and governance “as we know it” is actually changing as it goes online».

The importance of interactive communication between citizens and government entities is fully updated in the light of the necessity to achieve a delicate balance between maintaining a strong state and creating a sustainable e-government and information society.

3.2 Legal Forms of Electronic Communication of Citizens with Government Bodies

Russian citizens are able to use various forms of communication with government bodies today and the study of these channels opens up great cognitive prospects for deep insight into the essence of the phenomenon and understanding the prospects for the impact of e-democracy on the development of e-government.

Various aspects of “legal form” as the concept in judicial science were studied by many researchers. The most significant papers belong to S.S. Alekseev, V.S. Afanasyev, M.I. Baitin, Yu.B. Baturina, N.L. Granat, I.Ya. Dyuryagin, S.L. Zivs et al. Based on the previous studies concerning the concept of “legal form” and understanding of e-democracy, we can generally define *the form of e-democracy as a specific way of legal embodiment of e-democracy*.

Vakulenko (2011), who studied the interaction of civil society and the state, suggests distinguishing between its two main forms: participation and influence. This position is widely spread in judicial science and is explained by the necessity to differentiate legal guarantees of influence on political processes and decisions as a result of various forms of citizens’ participation in the work of public administration.

The demonstrated approach fully meets the essence of the legal formalization of political relations precisely as power-related.

From our point of view the legal formalization of the power of a civil society over state and municipal bodies and their officials is the main criterion for distinguishing between electronic political participation (e-participation) and electronic political influence (e-influence) as the two main forms of e-democracy. In the case of e-participation the civil society does not have an authority over public administration and only contributes to the activities of the subjects of political power. On the contrary, influence, as a form of e-democracy is always associated with the legal formalization of the authority of civil society in relations with state or municipal bodies and their officials.

Meanwhile, it should be noted that the vast majority of political and sociological papers do not differentiate the e-participation and digital influence (involvement) of civil society actors on the functioning of the political system. For example, E. Furseev in his article concerning political matters does not distinguish between electronic participation and influence. He understands electronic participation in two senses - broad and narrow. According to the author, electronic participation in a broad sense is the use of ICT by civil society actors in order to participate in the political process from the formation of the agenda to the control of decisions. In a narrow meaning electronic participation is a system of methods that ensure the interaction of citizens with government bodies, that might result in the formation of political decisions (e-information, public consultations, discussions and debates, e-petitions) (Furseev 2008). The terminological confusion in such an approach makes it impossible to develop high-quality, logically consistent legal regulation, we consider it is unacceptable as the basis for our research.

From our point of view, in the legal context, two main forms of e-democracy, which ensure communication between citizens and public administration entities, should be distinguished:

electronic participation (hereinafter - e-participation) implies the use of IT-channels by citizens for provision of information that is not binding for authorities and doesn't play the role of directive, obligatory norm for them, and electronic influence (hereinafter - e-influence) guarantees the possibility to transmit intentions and directives addressed to subjects of public administration within the framework of electronic communication.

It should be noted that the concept of "electronic participation" came into active use in 2000 in connection with the formation of the concept of e-government in the states of the European Union. Developing the regulatory framework its authors paid special attention to the need to ensure transparency of public authority, achieved through information and telecommunication technologies (Smith and Dalakiouridou 2009).

Based on the world practice of e-communication, different modern researchers identify a wide range of electronic tools for electronic participation: (1) Information provision online; (2) Creation of e-participation groups (Community building); (3) E-consultation; (4) E-campaigns; (5) E-elections; (6) Poorly structured discussion (online deliberation); (7) Discourse; (8) Conflict resolution online (mediation); (9) Urban planning and environmental issues; (10) e-Polling; (11) e-Voting (Leonova

2010). Despite the fact that the systematization is undoubtedly interesting, it seems that it cannot be taken as the fundamental basis for studying electronic forms of communication between citizens and the government, since it violates the basic logical rules of classification. Many researchers and official documents enacted by public bodies, including the UN brochures and surveys, reduce this list only to three categories: e-information, e-consultation and e-decision making.

Based on the existing Russian and foreign experience and taking into account the logical principles for the division of concepts and classification (division should be adequate, consistent, clear and orderly) we think that the following legal forms of e-Participation should be differentiated:

- provision of electronic information (e-information);
- electronic monitoring and performance evaluation (e-monitoring, e-evaluation);
- electronic public discussions and consultations (e-consultation);
- electronic pre-election campaigns, including their electronic financing (e-support, e-campaign, e-crowdfunding, e-crowdsourcing).

E-influence, in its turn, should be divided into two legal forms:

- electronic voting in elections and referenda (e-voting);
- electronic law-making initiative (e-decision making).

4 Individual Characteristics of Legal Forms of E-Democracy

Taking into account the above-mentioned distinction between the forms of electronic communication of citizens (e-participation and e-influence), we will consider the specific forms of e-democracy in the context of the realities of modern Russia and their development prospects.

4.1 Legal Forms of E-Participation

4.1.1 E-Information

Based upon previous scientific experience of our colleagues and our own considerations, we define the first of the enumerated types of e-Participation, e-information, as an activity through which individuals and groups of civil society broadcast socially significant information addressed to public authorities without the obligation of the latter to perform any legally significant actions.

E-information was implemented in the Russian Federation through the functioning of many Internet-resources, but many of them have very narrow, sectoral and territorial character. As an example of the first of them “www.dissertnet.org” website can be cited, which is aimed at identification and exposure of scientific works that violate current legislation in terms of ensuring the originality of research and preventing the use of other people’s copyright texts (plagiarism). Despite the fact that the results of the findings and examinations published there do not have any legal force and do not directly entail any legal consequences, they may be taken into account (and are widely taken into account now) by experts of the Higher Attestation Commission at the

Russian Ministry of Education and Science who assess the objectivity of awarding candidate and doctoral degrees in different institutions and universities in Russia.

The study of the Internet space shows the presence of other resources aimed to inform the authorities and society about the existence of social problems to be solved. However, often the existing resources are unrelated, disperse the attention of active citizens and limit the possibility of a holistic problem-solution (see: “Другая Россия” (<https://alterrussia.ru>), “Сердитый гражданин” (<https://www.angrycitizen.ru>), “Фонд борьбы с коррупцией” (<https://fbk.info>) and etc.).

To consider e-information as a legal form of e-democracy is made possible by the availability of an appropriate regulatory framework. It includes the Russian Constitution, Article 33 of which guarantees the right of citizens to apply in person, as well as to submit individual and collective applications to state bodies and municipalities; the Federal Law of May 2, 2006 № 59-FZ “On the Procedure for Considering Appeals of Citizens of the Russian Federation” (“О порядке рассмотрения обращений граждан Российской Федерации”), as amended by Federal Law of July 27, 2010 № 227-FZ, contains legal instructions on the possibility of sending an application and supplements to it in electronic form.

In general, the characteristic features that make it possible to consider this phenomenon as e-information are: the form of citizen participation in the functioning of the social system is regulated by applicable laws, the information provided is advisory in nature, the comparative simplicity of communication without analytical and expert assessments.

4.1.2 E-Monitoring and E-Evaluation

The next form of e-participation, e-monitoring and e-evaluation, can be defined as a form through which individual citizens and members of civil society consolidate on their opinions on the work effectiveness of public administration bodies and pass them to the authorities and other members of civil society.

The specified form is a more complex type of e-democracy, which significantly develops the possibilities of electronic information with its submission to competent authorities, as well as allowing electronic monitoring and evaluation of the activities of a government agency in a specific area of its work. An example is the official website of the Ministry of Health of the Russian Federation. The “polls” option invites users to go to the section of public polls (<https://www.rosminzdrav.ru/polls>) and allows them to express opinion on socially significant issues, including anti-corruption. A study of the official websites of other federal executive bodies showed that in most cases they have no options for expressing opinion on any issue, as well as for evaluating the performance of a government body in various activities.

4.1.3 E-discussion

E-discussion should be considered as a form of e-participation, in which, in mutual communication, individual citizens as members of civil society formulate their opinion on socially significant issues, especially bills and drafts of legal acts, and pass it on to government.

At the time of the preparation of this paper, e-discussion was the most effective form of e-participation. In modern Russia a broad and centralized discussion of drafts is

organized on the Unified portal “regulation.gov.ru”. The legal regulation of this resource is established by the Decree of the Russian Government № 851 of August 25, 2012, which made it obligatory for bodies of legislative and executive branches of the Russian government to publish information on prepared drafts as well as the results of the corresponding public discussions. The essential feature of this resource is the option to trace the adoption of amendments to specific articles of the draft. This opportunity allows actors of civil society to monitor and evaluate the quality of work on the draft, as well as to assess the proposed options for formulating legal norms.

4.1.4 E-Support, E-Campaign

We consider electronic support of an election campaign or referendum campaign (e-support, e-campaign), including the electronic financing of these campaigns, as a legal form of e-participation, allowing members of civil society to provide resource support (cash, real estate, organizational and other opportunities for political advertising, etc.) to politicians and other actors of political processes, thereby expressing their attitude to the proposed political programs (support of the political course). E-support can also be considered as part of e-participation.

Modern political realities demonstrate wide possibilities of using electronic technologies to raise funds for the financial support of the electoral activities of candidates (crowdsourcing, crowdfunding). The most known example is the election campaign of Barack Obama in 2008 and the Swedish Pirate Party in 2009. In particular, one of the key features of both Obama’s campaigns for the presidency of the United States was broad support noted for record financial contributions from individuals received through a specially created website. In the first campaign, this sum amounted to more than \$ 750 million, of which more than \$ 600 million were received from citizens, whose average contribution was only \$ 86. In the second elections, the total amount of Obama’s campaign reached \$ 631 million, which was three times more than the funds raised by his opponent, Mitt Romney (Silveira 2013). Similarly, thanks to the established crowdfunding platforms, the so-called pirate parties in Europe showed unprecedented success: in 2009 the Pirate Party received 7.1% of the votes in the European Parliament elections held in Sweden, in 2011 the German Pirate Party received 8.9% of votes to the House of Representatives of Berlin (Abgeordnetenhaus von Berlin) (Jacobsen 2014).

Based on the studied points of view, it can be noted that the assignment of e-support to the forms of e-democracy seems possible only with some degree of conventionality. From a legal point of view, the expression of support as a result of voting on program documents, as well as the financing of referendum or election campaigns cannot be fully attributed to the manifestations of democracy. This is due to at least two circumstances. Firstly, in principle, a politician who received an electronic vote or financial support via Internet does not have a legal obligation to perform any actions in favor of individuals or civil society actors that provided such support. Secondly, these relations are not inherently imperative (overbearing), because the people who receive this support belong to civil society themselves, or they are deprived of any opportunity to use their administrative resource or power. Thus, e-support can be attributed to the forms of e-democracy only by taking into account these limitations. At the same time, it seems possible to develop legal mechanisms that would ensure the

emergence of legal obligations for persons who received e-support if they succeed in the election campaign or referendum campaign. In addition, the study of electoral legislation allows us to make a general conclusion that at present time the legislation does not make significant differences between electronic and traditional forms of such financing.

4.2 Legal Forms of E-Influence

Now let us turn to the consideration of the forms of e-Influence. The relevance of the forms of e-Influence for the Russian Federation was expressed in May 2010 by D.A. Medvedev, the former President of the Russian Federation, at the meeting with the members of the party “United Russia” (Единая Россия). He said: “I am absolutely sure, that there is coming an era of return to some extent from representative democracy to direct democracy via the Internet. ... the elements of direct democracy are not only the discussion of “burning” issues, not only sociology, not just discussions in blogs, but the elements of direct democracy itself will appear in our lives”.

In our opinion, the essence of e-Influence lies in the imperious influence of civil society institutions and individuals on the political system and its subjects, ensured through electronic communication. The indicated influence can be exercised in the forms of electronic voting (hereinafter – e-Voting) during electronic elections or referenda, as well as in the form of electronic law-making initiatives (hereinafter - e-Decision making).

4.2.1 E-Voting

E-Voting as a form of e-Influence provides the opportunity for citizens to vote in electronic form and exercise their constitutional right to participate in democratic elections and referenda. In theory, this way provides citizens with the opportunity to influence on the adoption of politically significant decisions by the authorities.

Technologies for conducting e-Voting have been tested for a long time in a number of countries of the world, namely in Australia, Canada, Spain, Switzerland, Estonia, etc. For example, Estonia has legally authorized the use of electronic identity cards for voting over the Internet during preliminary voting in parliamentary elections. Similar technologies are used in the electoral process of some other countries. At the same time, experts in this area of knowledge note that the existing foreign experience in regulating political and legal relations makes it possible to speak only about a very limited, often experimental nature of electronic voting despite the existing technical possibilities of remote electronic voting (Pavlushkin and Postnikov 2009).

The Russian Federation has had an experience of electronic voting, but the corresponding experiments carried out during the period 2008–2012 at elections of various levels (Tula, Vladimir, Volgograd, Tomsk and other regions of Russia) showed that the results of the voting obtained in this way cannot be mandatory because of the absence of clear legal regulation. Today with the existing numerous technical and legal restrictions e-Voting can be considered only as a special way of survey of the population in the elections.

4.2.2 E-Law-Making Initiative (E-Decision Making)

E-Decision making is another form of e-Influence. In its traditional form, the institution of popular legislative initiative is guaranteed by constitutions and laws in a number of countries of the world, particularly in Brazil, Italy and the USA. Nevertheless, some countries set up significant restrictions on its implementation reasoned by the presumption that parliament is the main actor of the legislation activity (Great Britain, France). In addition, there are differences in the implementation of this form of democracy at the national and local levels of those states where a certain regional autonomy of local authorities is allowed.

In general, the e-Decision making can be defined as a type of e-Influence ensuring citizens and civil society institutions the formation of the dictate binding on subjects of law-making and containing proposals on the creation, amendment or repeal of legal norms. In Russian jurisprudence, the legislative initiative is seen as a practical embodiment of the right to appeal to authorities, the implementation of which stems from the provisions of article 33 of the Russian Constitution.

At the same time, we consider it necessary to distinguish between two types of electronic law-making initiative: the direct one allows members of civil society to submit drafts of legal acts directly to the law-making body, while the indirect e-Initiative allows citizens only to apply with a proposal to adopt particular legal acts on issues of interest for the initiator. The proposal supported by a certain number of citizens within the prescribed period of time imposes an obligation on the law-making body to undertake appropriate law-making procedures. This particular form of law-making initiative was implemented through the web-site “Russian Public Initiative” (“Российская общественная инициатива”, <https://www.roi.ru/>). Unfortunately, since April 2013 when this site was launched it proved to be inefficient in the modern political system of Russia. While the total number of initiatives has increased up to 50 thousands, the number of successful proposals resulted in practical decisions is only 34 (dramatically low rate - only 0,068%, including federal, regional and municipal initiatives).

5 Conclusion

In the context of the attempts to establish a “Strong State”, the applied methods of exercising power, the limits of state intervention in the private sphere, the relationship between organization and self-organization has a fundamental importance in modern Russian legal and political reality. The variety of forms of electronic communication of citizens with the government that we identified in the framework of the above-mentioned classification allows us to conclude that it has a qualitative heterogeneity that embraces the most diverse aspects of social reality. Many of these forms, ranging from simple to complex ones, do not deny, but, on the contrary, emphasize their unity and focus on achieving socially significant results, expressed in the formation of a public governance that satisfies all members of society.

From our point of view, we should abandon the traditional clichés typical for the so-called liberal circles, for whom the process of strengthening of Russian statehood is associated with the reanimation of authoritarian style of government. At the same time,

the insufficient attention paid by the authorities to possible channels of communication with citizens, the restrictions and prohibitions created in this area seem to be justifiably criticized by Russian and foreign experts. For example, in one of the reports of Freedom House it was stated: «Over the past decade, Russia's government has become increasingly authoritarian... While the Russian population is generally well-educated, it remains politically inert. With little prospect for change in the current leadership, the country continues to sink into a stagnant form of authoritarianism at home» (Robert 2010).

We share the concerns regarding the potential danger of the formation of an anti-democratic regime in the Russian Federation as in any other state. At the same time, it is impossible to directly link the strengthening role of the state, its institutions in various spheres of public life with anti-democratic regimes. The state, for many objective reasons, can strengthen its role in certain areas and spheres in response to some social trends. The self-removal of the state from certain areas of the social management system, minimization of its participation in solving social problems, is often characterized as its impotence, and this, in turn, can lead to more substantial damage to society.




We believe that improving the practical implementation of the concept of electronic government, a wider use of the existing forms of interactive communication by the authorities, as well as identifying new ways of building a dialogue with society, providing citizens with wide access to information and service resources of the state will create a foundation in the successful development of Russian statehood in the future.

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Trends in the Implementation of the Constitutional Principles of Economic Development in a New Reality

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Abstract. Purpose: The article discusses the current theoretical and practical issues of the implementation of the constitutional principles of economic development in the conditions of the new information reality in relation to states with a democratic structure.

Design/Methodology/Approach: The study is based on scientific and private scientific methods of cognition.

The general dialectic method allowed to investigate the issue taking into account the regularity of the development of constitutional principles of economic development in the context of the introduction of new information technologies into the modern reality.

Among private scientific methods used a formal legal method - to justify and formulate opportunities for effective implementation of constitutional principles of economic development in the new information reality. The comparative and legal method is taken as a basis for identifying general trends in the implementation of the principles of economic development in Russia and foreign countries.

Findings: It is noted that the evolution of the system of principles of economic development in relation to different countries in the context of today's information society is sometimes divergent, taking into account the prevailing principle. There is also no common understanding of the system of these principles is somewhat "chaotic." In this context, the increased introduction of new information and communication technologies into diverse domestic economic processes leads to the search for a uniform approach to understanding the system of principles of economic development and the limits of their implementation, ranging from the fundamental principles of equality of ownership, freedom of entrepreneurship to the new principles of economic development shaped in modern jurisprudence, including the principle of Sustainable development principle of reasonable openness of the national economy, etc.

The development of a modern information society, the introduction of new information and communication technologies inevitably makes a significant change in the tactics and strategy of economic development of states. Most principles of economic development have their limits of implementation. First of

all, these are the principles of freedom of business, freedom of movement of goods, etc. Because freedom ends where it is necessary to ensure the preservation and inviolability of the foundations of the constitutional order and the security of the state.

However, there are principles that have no limits to implementation. Among them is the principle of economic pluralism; The principle of economic sovereignty; The principle of voluntary cooperation; The principle of good faith; principle of careful attitude and preservation of valuable assets (economic, environmental, political and social) of the state.

These principles are aimed at the development of the market economy, but are no less important for optimizing state economic activity, for balanced development of the state and civil society. They play a significant role in ensuring that the institutions of the State meet the needs of a democratic information society. Combined with other general principles of law, in particular the principle of state security, the principles of economic development act as effective regulators of public relations.

Originality/Value: The authors conclude that the implementation of the constitutional principles of economic development in the new information reality is a progressive process in which these principles act as a basic and stabilizing segment in the legal economic and legal relations.

Keywords: Principles of economic development · Information society · Economy · Integration · Sustainable development

JELCode: K10 · K24 · L86 · O10

1 Introduction

For every nation in the world, the creation of an effective and rational model for regulating economic relations is one of the most important and pressing issues.

In the modern period of the world order, the development of various economic relations, both at the micro and macro levels, both at the domestic level and at the international level, is undergoing another stage of evolution. In an era of globalization and the increasing influence of an inclusive information environment on political, socio-economic processes, there is some restructuring of traditional notions of fundamental principles of economic development. In the branches of both private and public law, there are vivid examples of the gradual shift of a number of legal relations into virtual reality (Inshakova 2018).

In the context of these processes, new, modified principles of economic development are emerging. Among them we can distinguish - the principle of sustainable development, the principle of information security, etc.

The main goal of the domestic modernization of the economic development strategy is to preserve natural, intellectual and human capital, as well as to ensure the security of the state and social lyses of citizens.

The principle of free market and free trade, which dominates most countries of the world in an information reality, has significantly weakened the ability of Governments to provide the security of States and social protection of their citizens (Claassen et al. 2019).

As part of the emerging economic development strategies, the principles of centralization and consolidation are coming to the fore, as proof of their effectiveness and capable of ensuring sustainable domestic development and improvement competitiveness in the global market (Legiedz 2019).

Based on the fact that the principles are an effective regulator of public relations and actively applied in practice, there is a need to analyze the new system of principles of economic development and practice of their implementation.

2 Materials and Method

The basis of the normative basis of the study was the Constitution of the Russian Federation, the constitution of foreign countries. Constitutional acts have explored and analysed the principles of economic development, including the principle of freedom of economic activity; The principle of sustainable development principle of competition, etc.

As strategic documents containing the principles of economic development in the digital economy, were studied: Decree of the President of the Russian Federation of May 9, 2017 No. 203 “On the Strategy for the Development of the Information Society in the Russian Federation for 2017–2030” and the Russian Government’s Resolution of April 15, 2014 No. 316 (ed. 22.05.2019) “On the approval of the state program of the Russian Federation “Economic Development and Innovation Economy.”

The authors also examined the decisions of the constitutional control bodies in which the content of a number of principles of economic development is interpreted.

Legal doctrine revealing the content and processes of the development of the system of principles of economic development based on the works of Russian and foreign authors has been studied (Inshakova 2018; Levakin and Trifonova 2018; Shakhray and Yanik 2018; Claassen and Gerbrandy 2019; Legiedz 2019 и др.).

3 Results

Part I. Система принципов экономического развития

The system of principles of economic development can be viewed from several angles.

(1) Based on the level of systemization: mega-, macro, meso- and micro level

The mega-level is a system of principles of economic development enshrined at the international level.

The macro level is a system of principles of economic development enshrined in the constitutions of different countries of the world.

The Meso level is a system of principles of economic development at the regional level (has an impact on the region’s economy).

The microlevel is a system of principles of economic development enshrined at the municipal level.

(2) *Based on the formal expression*

Among the principles of economic cooperation common to all countries of the world are:

- The principle of the inviolability of state sovereignty in economic activities;
- The principle of state sovereignty over its resources and economic activities is the right of States to own and use their resources for the benefit of their people;
- The principle of peaceful resolution of economic disputes;
- The principle of mutually beneficial cooperation between states for development.
- The principle of openness and liberalization of the national economy;
- The principle of fair competition;
- The principle of voluntary cooperation.

Analysis of the content of the constitutions of different countries of the world allows to distinguish the classic principles of economic development - the principle of diversity of forms of ownership; The principle of freedom of economic activity; The principle of the free movement of goods, services and finances; The principle of monetary cohesion; The principle of banning monopoly; The principle of equality of economic relations; free use of their abilities and property for business and other non-legally prohibited economic activities; The principle of privacy; principle of prohibition on deprivation of property except by court order, etc. (Strashun 2016; Maklakov 2010).

(3) *Based on the formation of society*

The modern period is characterized by the formation of a new formation - an information society. As a result of the creation and introduction of new information and communication technologies, significant adjustments are being made to all life processes. The economy is no exception. In connection with the need to ensure the economic and national security of the state, the socio-economic rights of citizens, the protection of personalized data, the identification of economic actors, the importance of becoming increasingly important the principles of economic development, which are generally expressed in the jurisprudence, are generally expressed in the jurisprudence.

The principles of economic development should therefore be considered:

- (1) Classical (constitutional, basic) principles of economic development
- (2) neo classical principles of economic development.

It is noteworthy that the broad digitalization of the modern economy leads to the emergence of some new kinds of principles, modifying the existing ones. These principles of economic development are often reflected in judicial practice. Thus, when analysing the practice of the Constitutional Court of the Russian Federation, it is possible to single out the most commonly used neoclassical principles as a priority of public interest; The principle of sustainable development The principle of controlling the financing of public organizations, including political parties; principle of reasonable openness of the national economy, the principle of legal equality of economic entities, the principle of stability of economic conditions, etc. (Decisions of the Constitutional Court of the Russian Federation of April 23, 2004 No. 9-P; dated March 30, 2018

No.14-P; Dated June 19, 2003 No.11-P; As of November 12, 2003, No.17-P; June 19, 2003 No.11-P.) Many of them are in the scientific literature. (Bezrukova and Romanovskaya 2019).

It is worth noting that these principles of economic development cannot be called constitutional in their formal expression. However, they can be attributed to them by their essence, as they in the modern world, as a rule, form the basis of the “economic constitution” of many advanced economies and social spheres.

International economic integration, as well as the introduction of new IT technologies, necessitate streamlining the interaction of national economies with external factors; the need to ensure a sustainable national economy and the security of the state. In this regard, it is very important to understand the limits of both classical and neoclassical principles of economic development.

For example, the classic principle of economic development is the principle of openness and liberalization of the national economy, aimed at reducing or reorganizing certain types of restrictions and barriers to displacement goods, services and labor across state borders, leading to increased competition between national and foreign producers. However, full openness is not only not conducive to economic development, but, on the contrary, is a threat to the country’s economic security. As a whole, this principle has been transformed into the principle of “reasonable openness” and includes three important elements - national security, efficiency and competitiveness, which influence the decision on the level of openness national economy. The classic principle of balancing private and public interests, judging by the emerging jurisprudence, gives way to the principle of priority of public interest.

It is noteworthy that, in general, the system of principles of economic development has ceased to be static. It becomes quite flexible and more dynamic. “Economic constitutions” are the product of a specific historical era, they reflect the peculiarities of scientific and technological development of society in a certain period (Shakhray and Yanik 2018).

Modernization of the principles of economic development is necessary. However, the formation of a system of neoclassical principles should not diminish the guaranteed fundamental rights and freedoms of human beings. In general, classical and neoclassical principles should, through their consolidation, be aimed at rational and harmonious development of a social and economic environment favorable to the person, creating equality of social opportunities for citizens. The dominance of the State in the economy and the necessary control of the private sector of the economy must be strictly in accordance with the limits set by the law in order to remain within the limits of human rights and freedoms, to prevent abuse of the law.

Part 2. Common approaches to the development of legal regulation and the practice of implementing the principles of economic development

In the modern era, the constitutional regulation of economic relations and the emergence of a well-established system of principles of economic development, which constitute the basic content of the “economic constitution” of most of the world’s states, is universal phenomenon. Meanwhile, given the rapid development of the information society, the system is becoming more flexible and dynamic.

It is possible to identify a number of approaches common to most countries around the world to promote legal regulation and to implement the principles of economic development:

(1) *the dominance of neoclassical principles over other formally defined principles of economic development at the constitutional level;*

(2) *The interest of states in an intensively developing information society in economic cooperation based on effective democratic principles of economic development.*

Part 3. Current theoretical and practical issues of implementation of the constitutional principles of economic development in the new information reality

Constitutional regulation of economic development in certain countries of the world is usually oriented towards the consistent demonopolization of the economy, which is essential for the formation of an optimal institutional environment innovative development. At present, however, a system of universally accepted principles of economic development has not been established at the international level, which could serve as the best model for innovation development.

It seems that the optimal model of innovation development should be based on a system of universally accepted principles of economic development, which does not currently exist. On the contrary, there is a chaotic intra-state formation of neoclassical principles of economic development. The emergence of these principles is due to the fact that the constitutions of the nations of the world do not prejudge the consolidation of an exhaustive list of significant issues in the sphere of economic relations. Individual legal regulation is important in ensuring the proper economic development of the state. It is designed to take into account both the objective circumstances of the development of economic relations, including socio-cultural, financial, economic, organizational and other institutional factors, and the need for economic relations, to take into account the objective circumstances of the development of economic relations, including socio-cultural, economic, organizational and other institutional factors, and the need for the most effective implementation of social, economic, environmental, cultural and other development objectives in specific situations. At the same time, of course, the judiciary cannot act arbitrarily. Their decisions should be based on universally accepted principles, constitutional and current legislation and ensure the rights and legitimate interests of those involved in economic relations.

Another pressing problem is the uneven participation of states and business entities in world trade, due to the varying degrees of the introduction of information and telecommunications technologies into economic government regulation, as well as existing threats to national security.

The phrase “principles of globalization of economic development” is actively used in world practice. However, this does not seem to be the same as “constitutional principles of economic development”. The systematization of the principles of economic development in a new information reality and their relationship with the general principles of law and principles of state development, such as stability, openness and transparency, implies the possibility of inclusion in a number of adjustments.

It is probably not entirely right to mix all kinds of principles of economic development in one strictly folded system, as new principles are being developed as a result of social and technological innovations. In our view, the whole system of principles of

economic development should act as a relationship between classical and neoclassical principles, a form of their balanced development and implementation in order to effectively address the standing and the future socio-economic challenges.

Some constitutional principles of economic development need to be refined.

In particular, the question of what should be understood as fair competition is a pressing one. As a result, the term good faith as a moral category is interpreted differently.

Part 4. Prospects for the development of the principles of economic development in the new information reality

The principles of economic development are in constant evolution: the development of economic relations, whether ups, stagnation, crises, naturally complicate the mechanisms of constitutional legal regulation, increase the number of ties between economics and constitutional law (Barenboim and Merkulova 2007).

The development of the principles of economic development is objectively influenced by advances in scientific and technological progress. On the one hand, the importance of stability of the system of principles of economic development, which create a model of constructive possibilities for legal solutions to socio-economic problems, is obvious. On the other hand, the importance of their evolution, given their impact on the economy in an intensively developed information society, is inevitable. In particular, the issue of security, as well as there liability and openness of the information provided in the economy is a pressing one.

Classical constitutional principles of economic development are notable to fully take into account all the new moments arising in the new information reality (the emergence of electronic trading platforms, online services, electronic money, electronic documents, etc.). Unfortunately, despite the development of neo classical principles of constitutional development in the modern period, the principles of interaction of economic actors in the global information society are not fully developed, no rare they enshrined in the world. right to the Internet. There is not enough support and assistance to electronic information actors, as well as its production, exchange and distribution.

The emerging system of new principles of economic development in the context of the development of the information society should ensure the preservation of such constitutional values as human rights, the security of the state and the social support of the individual categories of citizens.

It seems that the process of forming universally accepted principles of economic development for the new information society is still in its infancy.

For the foreseeable future, the classic principles of economic development may be partially limited in action due to the emerging threats from the limitless introduction and development of IT technologies into the economy. In particular, the principle of freedom of economic activity, the principle of the free movement of goods, services and financial resources can be significantly narrowed, and in fact, converted into a “hard” controlled right. The deterrent against abuse by the state in this area should remain the freedom of the individual, its rights, the concept of general welfare. It is the responsibility of the State to establish such a system of distribution of social well-being in order to reduce social inequalities; that would provide social support for vulnerable social groups, as well as the decent life and free development of every citizen (Levakin and Trifonova 2018; Shakhray and Yanik 2018).

At the same time, it is worth noting that the principles of economic development at different stages of historical development, as well as in different states are formed, normatively fixed and implemented in different ways. In this regard, today, in the context of the globalization of the economy, the development of international law, it is important to develop a system of universal, universal, universally accepted international principles of economic development, taking into account the general trends and problems of world economic development, as well as the rapid introduction of information and other high technologies.

4 Conclusions

To sum up, the digital economy must be governed by consolidating the classic and neoclassical principles of economic development of a democratic society.

An adequate understanding of the interconnections and limits of both classical and neoclassical principles of economic development is essential. The dominance of the principles of centralization and consolidation of state institutions in the sphere of strategic economic planning is seen as promising and justified. It is important to preserve and ensure the effectiveness of the classic, life-adjusted principles of economic development, which have proven a positive impact on the development of the economy and against this background to set the limits of the action of a number of new neoclassical principles of economic development.

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Civil Turnover of Objects by the Intellectual Property in Conditions of Digital Intensification

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Abstract. Purpose: To formulate key areas for the development of private-law regulation of the sphere of the turnover of the results of intellectual activity, stimulating the achievement of a balance between the traditional values of civil law and the high-tech processes of the neo-industrial economy in conditions of exacerbation of practical problems in the field of protection of both the results of intellectual labor and the interests of copyright-holders in connection with the intensive use of digital space.

Design/Methodology/Approach: The methodological basis of the research was the materialistic worldview of the authors and general scientific methods (logical, systemic, functional), also for the study used a set of private-law methods (comparative-legal, formal-legal).

Findings: The powerful development of the digital space, the active practical interaction of civil turnover's participants on the Internet causes new challenges in the sphere of protecting the results of intellectual labor and the interests of copyright-holders of intellectual property rights. By virtue of the principles of private legal regulation of the civil turnover of results of intellectual property (the principle of territorial protection of intellectual property, state information sovereignty, etc.), many problems of domestic and international nature remain relevant.

Originality/Value: According to the authors, modern technologies of distributed registries based on the use of Blockchain technology and having undoubted advantages (decentralization, anonymity, independence from external factors and others) can be used and introduced into the economic circulation of the results of intellectual labor, in order to take into account the rights of subjects, using objects of intellectual labor.

The current registration system, according to the authors, should be transferred to a digital platform based on the use of distributed registry's technology. Along with this, it is necessary to rethink and modernize the established principle of territorial protection of intellectual property's results, since the digital environment has the characteristics of a global space.

Keywords: Intellectual property · Blockchain technology · Protection of the results of intellectual labor

JEL Code: C 89 · R 49

1 Introduction

The saturation of the market with objects of intellectual labor, the active and effective use of such results of intellectual activity, undoubtedly, allows us to enhance the competitiveness of the country, increase the level of population's well-being.

Modern participants in economic relations are increasingly exploring the digital space (Inshakova 2018; Sandalova 2019), including as framework of the turnover of intellectual property, which contributes to the buildup of cross-border relations.

At the same time, the popularization of the digital space raises new practical problems in the sphere of protection of both the results of intellectual work and the interests of holders by intellectual property rights. Many problems remain in view of traditionally existing principles in the global legal field (in particular, the principle of territorial protection of intellectual property, the principle of state information sovereignty and others). According to the authors, the search for a balance between the traditional values of established law and the high-tech processes of the neo-industrial economy is the task of modern researchers in the field of private-law regulation of the economic turnover of the results of intellectual activity.

2 Materials and Methods

The methodological basis of the research was the materialistic worldview of the authors and general scientific methods (logical, systemic, functional), also for the study used a set of private-law methods (comparative-legal, formal-legal).

The theoretical basis of the research is represented by the studies of both domestic jurists (Inshakova A.O., Shakhnazarov V.A.) and foreign scholars (Leaffer A., Franzese P. W and others), which reflects current trends in the impact of the use of digital space in economic relations in the turnover of the results of intellectual labor; features of the application of distributed registry's technologies are disclosed.

The empirical basis was universal international acts (in particular, the Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS, 1994), norms of domestic Russian legislation (part two and four of the Civil Code of the Russian Federation) establishing private-law regulation of the economic circulation of the results of intellectual labor.

3 Results

Creation of a legal framework for the introduction of new technologies, based on the Blockchain platform, with the aim of protecting and enforcement rights to use by intellectual activity's results.

As noted by colleagues, Blockchain technologies are widely used in electronic interaction in the sphere of financial assets and securities. The widespread use of the

technologies in question was influenced by the presence of undoubted advantages, including the following:

- an algorithmic;
- the software based on mathematical calculations that exclude the values of the material world, the direction of the political course of the state and other external factors, capable of an influence and control;
- the possibility of anonymous presence in the system during public disclosure of information;
- the lack of a single centralized authority influence, control, since the program code that underlies the functioning of the system is contained in an encrypted file and is calculated according to a certain algorithm.

In addition, certain properties of Blockchain technology, such as the decentralization of the system and the absence of the need for a third party to verify transactions, make it possible to construct distributed rights registers for individual assets on its basis. With a similar design of a virtual interaction system, each participant has access to a single transaction history, where any procedures and changes are recorded in a distributed registry, synchronized, and participants have an identical copy of such a registry.

A very attractive idea is the use of technology for creating a registry by analogy with Blockchain when accounting for intellectual activity's results and intellectual property's rights in digital form.

The existing legal regulation of intellectual property's rights in Russia provides for various options for certifying exclusive rights. Depending on the variety and specifics of the object of intellectual activity, the protection and enforcement of copyright can be directly dependent on the state registration of the arisen right. In particular, objects of originative and intellectual activity, such as an invention, utility model, selection achievement, trademark and other objects, receive legal enforcement only from the moment of official recognition of copyright by the competent organs and the inclusion of the corresponding object in the register of intellectual activity's results.

Along with official recognition by authorized organs based on the results of an expert opinion, the emergence of intellectual rights is possible in the objectification of intellectual property since its creation.

Consequently, the initial construction of rights in relation to the results of intellectual activity is variable:

- upon the fact of official recognition of the right, which is based on the competent registration of an object of originative, intellectual activity;
- upon the fact of creation, which is based on the objectification of the result of intellectual activity.

In our opinion, in the first and second cases, it is possible to create a registration system based on the Blockchain platform using distributed registry's technology.

There is a scientific position that the state registration system of the results of intellectual activity cannot be transferred to such platforms, since the decision of the authorized organs that generates legal protection of the object is directly dependent on the results of subjective expert opinion. Carrying out expertise assigned to Rospatent

and is a manifestation of public, specific functions of the state. Consequently, the decision of users of the registry will be influenced from the outside, on behalf of the authorized registration organs. We believe that such an opportunity should not be ruled out. Specific versions of Blockchain technologies are predicted to appear, which imply the provision of administrative rights to public entities (Kharitonov 2018).

In particular, we see the introduction of a “superuser” into the Blockchain structure, that is, a participant with special legal status and authorized to make changes to the registry, is accessible (Savelyev 2015). In relation to the problem under consideration, amendments to the register may occur on the basis of decisions of the competent authorities (Rospatent), authorized expert commissions.

Of course, opponents of introducing the “superuser” figure have the right to argue that with this approach, Blockchain technology loses its key advantages - autonomy, independence and decentralization. However, we believe that in the foreseeable future we will still have to solve the issue of the interaction of virtual and legal reality, find ways to reconcile Blockchain technology with existing legal institutions.

As for the system of optional registration of the intellectual activity’s results, it is obvious that the use of Blockchain technologies in maintaining the register of copyright, exclusive and other intellectual rights is quite acceptable without any formalities and even, in some way, it should be encouraged. At the same time, it should be borne in mind that the information contained in registries created on digital platforms concerns only certain facts that reliably indicate that a certain person declared himself, the author of a particular composition.

Modern technologies make it possible to quickly and with minimal expenditure of resources fix the ownership of the intellectual activity’s object to the copyright holder. The registry entry itself may be the basis for fixing the existence of an object of intellectual labour at a specified point in time, and also allows a person who considers himself an author or copyright holder to claim rights to a registered object of authorship.

In our opinion, a question about the volume of placed information needs in a separate discussion. We believe that the information entered into the register through the Blockchain technology should reflect the key characteristics of the intellectual activity’s object; be universal, visual and comfortable. This is necessary in order so that potential investors, contractors and other interested parties can learn both technical specifications and other complete data on the selected result of the intellectual activity. Practically solving the issue the amount of information to be posted should be guided by the targets of creation one or another registry.

When maintained optional accounting it is important for the authors of the results of intellectual activity to deposit the work itself, the very result of intellectual work. In this case, it is possible to provide the work itself with the author’s data on it. It can be any material that reflects the objective form of the work - text, photograph, recordings, etc. Similar information can be entered into the registry when fixing the creation time, in order to obtain priority. At the same time, for certain objects of intellectual activity, the legislation establishes a universally binding amount of information that reveals the essence and description of the object (meaning information about the invention, annotations to it).

Thus, during the initial formation of the registry, the computer program should include algorithms developed in the form of standards, forms that allow participants and users of the registry to satisfy interests related to the turnover of the results of intellectual activity in private relations. Including in case of contentious situations: for the first use in civil turnover, when confirming the right of prior use, when reflecting and fixing the authorship of a composition, when establishing the scope of rights of copyright holders at a particular point in time and other circumstances requiring confirmation.

Overcoming the principle of territorial protection of intellectual property results when they are used in economic circulation through digital space.

The implementation of Blockchain technologies in the field of the economic circulation of the intellectual activity's results will require solving a long-overdue issue - the territorial limitations of protecting the rights arising in connection with the use of the results of intellectual activity.

As noted by colleagues, the principle of territoriality of protection and enforcement of copyright holders in the modern digital era is an anachronism (Leaffer 1998). The practical functioning of the historically established territorial approach to the protection of copyright holders negatively affects on the development of economic ties, fetters the processes of competition in global markets.

Current international legislation is aimed at unification and universalization of international trade unfortunately it does not solve the issues of protection of rights in relation to intellectual property in the globalized market of goods and services. According to Russian scientists, foreign jurisdictions are not ready to abandon the principles of sovereignty, and are not able to overcome the national approaches that have developed in the field of protecting the interests of copyright holders, including the right to protect public interests (Shakhnazarov 2018).

Despite the bases laid down by the TRIPS Agreement, overcoming the territorial principle of enforcement the interests of copyright holders did not take place, since the final amount of legal protection, means and methods of protecting the intellectual activity's results are determined on the basis of the national principle or the principle of the most favoured nation.

We convinced that in the foreseeable future, digital space will have the characteristics of a global space or "common good for all" (Franzese 2009). With such an approach, the task outlined by us - overcoming the principle of territorial protection of the results of intellectual property when used in economic circulation through the digital space - is quite achievable.

4 Conclusion

We believe modern technology of distributed registries, based on the use of Blockchain technology, and having undoubted advantages (decentralization, anonymity, independence from external factors and others) can be used and implemented in the economic circulation of the results of intellectual activity. There is formed national legal system for regulating the turnover of the intellectual activity's results in Russia represents some ways of protecting intellectual property rights: upon the fact of official

recognition coming from authorized organs, and upon the creation, objectification of the result of intellectual activity.

In our opinion, the existing registration system could be transferred to a digital platform using distributed registry technology. To this end, it is necessary to create a legal framework as soon as possible, which potentially enables the introduction of new technologies, in particular, those based on the Blockchain platform. It will ensure the protection and enforcement of rights in the field of the use of the intellectual activity's results: firstly, by fixing in the digital sphere the fact of the first use in a civil turnover of the result of intellectual activity; secondly, by confirming the right of prior use, thirdly, by reflecting and fixing the authorship of a composition, fourthly, by establishing the scope of rights of copyright holders at a particular point in time, while fixing other circumstances requiring confirmation.


In addition, there is an urgent need to overcome the established principle of territorial protection of the results of intellectual property, since the digital environment has the characteristics of a global space.

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Features of the Protection by Brand's Name of the Organization Right in Conditions of Digitalization of the Economy

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Abstract. Purpose: The purpose of the article is to explore features of the protection by brand's name of the organization right in the conditions of digitalization of the Russian economy.

Design/Methodology/Approach: In the chapter, the authors prove that in the Unified State Register of Legal Entities of Russia, many organizations are registered, whose brand names are similar or even identical. One of the reasons for conflicts in entrepreneurial activity is precisely the violation of the exclusive right to use a brand name. The number of litigations in this sphere is increasing. The need for scientific substantiation of the principles of systematic reduction of disagreements between entrepreneurs in connection with the use of identical names of organizations or similar to the point of confusion to the extent, that it misleads consumers, is the purpose of this article. The reason for the violation of the exclusive right to a brand name is often unfair competition, as well as insufficient awareness of persons, responsible for choosing the brand name of the organization. Based on a materialistic world view, the authors implement a systematic approach to the research of the problem.

Findings: Currently developed state mechanisms for verifying the brand names of organizations, but the lack of conscientiousness of entities leads to intentional or reckless abuse. Also various methods for the protection of intellectual property have been developed and scientifically substantiated. However, the brand name is specific in that it is non-transferable, general and special rules for the protection of intellectual property rights cannot be applied in full. In addition, the difficulty of securing the right to a brand name and its protection is due to the fact, that it does not correspond to the obligation to verify the brand name with those that are registered earlier.

Originality/Value: The Russian national law-order does not have any significant legal consequences for an unscrupulous person, who has registered an organization with an identical brand name or similar to a degree of confusion with an existing one. The chapter substantiates the necessity of introducing the obligation of preventive-prophylactic methods, based on digital technologies to select and consolidate a brand name, during registration of commercial organizations. It will help to reduce conflict situations, when using the right to a brand name in a digitalized economy.

Keywords: Commercial organizations · Company name · Legal entity · Protection of intellectual rights · Unfair competition · Exclusive right · Digital technologies

JEL Code: K41 · O38 · L86

1 Introduction

The globalization of economic relations entails the cross-border functioning of companies. The identity of the organizations should be recognizable and contribute to a clear definition of the counterparty, as it directly affects the business reputation and profitability of the activity. To achieve it target, legal entities conduct costly advertising campaigns, charity and sponsorship events. The international and regional character of the activity of commercial legal entities in the digital space requires the introduction of special mechanisms for protecting the right to name organizations, since traditional methods show their low efficiency. The right to a company's brand name is a type of intellectual property. At the same time, it has specific features that significantly affect its security. Violation of the right to a company's brand name leads to confusion of counterparties, customers, consumers, violating their legitimate interests. Moreover, studies show that the consumer is the most vulnerable link in the totality of economic relations (Ilovaysky et al. 2019). The interests of consumers should be protected primarily by creating a mechanism, based on electronic technologies that promotes the unambiguous determination of a counterparty through its company's brand name. Using in economic relations of opportunity digital technologies significantly affects on the traditional methods of perception of personal interaction between actors. The mass distribution of organizations as business entities did not exclude the factor of trust, confidence in the integrity of the counterparty representing the organization. The use of digital technologies partially "depersonalizes" the partner, from a psychological point of view, making him poorly or completely unrecognizable. The traditional subjective relations "person-person", "person-organization (person)" with the development and massive use of digital technologies are replaced by "person-machine" not in the subject-object meaning, but rather in the subject-subject sense. This situation requires a more thorough identification of subjects, eliminating the possibility of duplication of its name or other illegal behavior when choosing and using its means of individualization of the organization.

In accordance with the Strategy for the Development of the Information Society in the Russian Federation for 2017–2030, the main national interests in the sphere of the

digital economy include ensuring the protection of the interests of Russian organizations selling its products in traditional (non-electronic) markets and fulfilling the requirements of the legislation of the Russian Federation by foreign participants of the Russian market on an equal footing with Russian organizations. The creation of effective mechanisms for protecting the rights to the company's brand name of organizations is necessary both for the traditional economic system and for the development of the digital economy of modern states.

2 Materials and Methods

The solution of the problems of legal regulation to use of the right to the brand name of legal entities and its protection in the digital economy by various business entities was carried out on the basis of a set of regulatory and doctrinal sources. Among them: Global Competitiveness Report 2018 World Economic Forum (World Economic Forum, WEF), Strategy of the development of the information society in the Russian Federation for 2017–2030, approved by Decree of the President of the Russian Federation of 05.09.2017 No. 203 (Official Internet portal of legal information <http://www.pravo.gov.ru>), Passport of the national program “Digital Economy of the Russian Federation” (approved by the Presidium of the Presidential Council for Strategic Development and National Projects, protocol dated 12.24.2018 No. 16). The information and analytical base of this study was the statistical data of the section “Bank of arbitration court decisions. E-justice” of the official site “Federal Arbitration Courts of the Russian Federation” (<http://www.arbitr.ru/>).

Doctrinal sources are represented by scientific publications of domestic jurists and economists, including: A.O. Inshakova, A.I. Goncharov, M.V. Goncharova, O.A. Mineev, A.E. Kalinina, M.V. Sevostyanov, A.Yu. Bykov, I.B. Ilovaysky, D.A. Tokarev, Y.Y. Kayl, V.A. Usanova, etc.

The scientific development of the content of this article was carried out on the basis of the materialistic worldview and the universal scientific method of historical materialism. The general scientific methods of cognition are applied: the dialectic, hypothetical-deductive method, generalization, induction and deduction, analysis and synthesis, an empirical description. Particular scientific methods were also used in the study: normative-dogmatic, comparative-legal, structural-functional, etc.

3 Results

The Basis of Conflicts in the Use of the Company's Brand Name by Business Entities

A company's brand name is a means of individualization of a commercial organization, which is indicated in the constituent document, with the exception of cases provided for by law, and is a protected object of intellectual property from the moment of state registration of a legal entity when creating or from the moment of making changes to the Unified State Register of Legal Entities of information on a change in the name of an organization. A special state registration of a company's brand name is not required.

Thus, the exclusive right to a company's brand name in Russia arises from the day of state registration of a legal entity and ceases when the company's brand name is excluded from the Unified State register of legal entities in connection with the termination of a legal entity or a change in its company's brand name. Article 1474 of the Civil Code of the Russian Federation provides that a legal entity has the exclusive right to use its company's brand name as a means of individualization in any way that does not contradict the law (exclusive right to company's brand name). Including by indicating it on signs, forms in invoices and other documentation in announcements and advertisements, on goods or its packaging on the Internet. It is the Paris Convention (Article 8) that sets forth the requirement for member states to ensure the protection of a company name without having to submit an application or registration, regardless of whether it is part of a trademark.

Controversial situations related to the use of a company's brand name may arise at the stage of state registration of a legal entity that is its legalization. Legislation of various states may provide for special requirements for a company's brand name. In particular, in Russia they are established by Article 1473 of the Civil Code of the Russian Federation. There is a basis for refusing state registration on the basis of Article 23 of the Federal Law of 08.08.2001 No. 129-FZ "On State Registration of Legal Entities and Individual Entrepreneurs" namely, the discrepancy between the name of a legal entity and the requirements of the law. It grounds for refusal has been put into effect since 2010. Until now, the situation remains when the Unified State Register of legal entities contains information about a sufficiently large number of organizations with identical company's brand names, with names similar to the point of confusion, as well as with other violations. The reasons are that the indicated grounds for refusal of state registration are relatively recent. Also in the subjective character of the categories used is "similarity to the point of confusion", the interpretation of which depends on the law enforcement and judicial authorities. Also in intentional abuse of the right for unfair competition by business entities (Inshakova et al. 2017a).

According to official information for 2015, the website of the arbitration courts of the Russian Federation posted decisions on the results of the consideration of conflicts related to the company name - 370, for 2016 - 488, for 2017 - 786 documents, in 2018 - 827, for 2019 (25.08.2019) - 404 (<http://ras.arbitr.ru/>). Thus, there is a steady tendency to increase conflict situations regarding the use of company's brand names.

The analysis of law enforcement practice has revealed the following types of causes of conflict situations related to the consolidation and use of the right to a company's brand name. Firstly, the denial of state registration due to non-compliance of the name with the requirements by federal law. Secondly, the acquisition and use of the exclusive right to a company/s brand name in order to unfair competition. Thirdly, intentional violation of the requirements of the law in order to mislead third parties. Fourth, inattentive attitude to the selection and formation of the company's brand name by the founders (negligence).

From the point of view of subjects involved in conflicts related to the right to a company's brand name, the following can be distinguished. Conflicts between commercial organizations; conflicts with the registration authority (tax service); conflicts with the antitrust authority; conflicts between a legal entity and an individual. When, for example, an individual, being the founder of an organization, is the author of a

company's brand name, but later on when transferring the rights of a participant when leaving the organization or transferring his share in its authorized capital, the possibilities for using part of the company's brand name in other objects were not determined in a contractual mode intellectual property. Registration by such an individual in the future of a trademark, including a part of the company's brand name, is unlawful behavior (Inshakova et al. 2017b).

The current Russian legislation provides for two main forms of protection of the right to a company's brand name: administrative and judicial. As practice shows, self-defense, the claim procedure for settlement, mediation in these cases are ineffective. The Federal Antimonopoly Service of Russia is authorized to consider controversial situations, including bringing to administrative responsibility under Article 14.33 Code of Administrative Offenses of the Russian Federation. However, in order to apply these provisions, the interested person should be distracted from his main type of activity, contact the state body, and that person, in turn, will decide on the initiation of administrative proceedings. The application of methods to protect the exclusive right to a company name may be carried out in public and private interests. In the public interest, the application of protective measures is carried out by authorized organs (tax service, antimonopoly service) in cases where the company's brand name does not meet the requirements of the law. In the private interest, the right to a company's brand name is protected in conflicts between commercial organizations or with the participation of individuals.

The judicial procedure for protecting the right to a company name also requires maximum efforts and means to obtain the desired result. It seems that the introduction of a preventive-prophylactic approach based on electronic technologies will allow the formation of a successful mechanism for protecting the exclusive right to a company's brand name (Kalinina et al. 2019).

Modernization of Ways to Protect the Right to a Company's Brand Name Using Digital Technologies

For the successful protection of the exclusive right to the company's brand name of the organization in the transnational character of the functioning of legal entities, the intensification of digital technologies, it is necessary to rely on the following institutions and the facts of its functioning. International law on the protection of a company's brand name as an object of intellectual property and the practice of its international and domestic application; national procedures for protecting the exclusive right to a company name and practice of its application; the activity and effectiveness of the activities of authorized state organs authorized to protect exclusive rights to a company's brand name; public and private hardware digitalization designs. Including an architecture cloud services; features of applied software products - digital technologies, including cloud services; digital platforms of business, society and citizens to the national economy; federal and regional information resources on digitalization of the economy; specialized communication forums for government officials, scientists and practitioners of digital technologies in the economy.

Currently, the architecture of digital law is being built and updated in economically developed countries of the world: Great Britain, Germany, other EU states, China, South Korea, USA, Sweden, Japan. Only a well-thought-out concept of law can allow

governments to create reliable hardware and software solutions for the digitalization of national economies and for protecting the rights and legitimate interests of business entities, and well-thought-out international conventions - for digitalizing the economy of the whole planet. The formation of software products that facilitate the clear identification of commercial organizations and the development of uniform international and national regimes for the use of intellectual rights in the company's brand name.

Given the ongoing digitalization of the economy, the effectiveness of the work of the state organs, responsible for the security regime of intellectual property, the Federal Tax Service, the Federal Antimonopoly Service, Rospatent, and other federal institutions will, to a much greater extent than before, depend on the relevance of international conventions in which Russian Federation, as well as from the novelty and effectiveness of implemented technologies.

According to experts, "the global library of digital economy law offers us a number of national laws and regulations, parliamentary resolutions, the G20 and OECD outcome documents that may soon form the basis of international conventions on the digital economy" and bilateral agreements with participation of the Russian Federation (Bykov 2018).

It seems that the information of the Unified State Register of legal entities as an information resource on the protected company's brand names of organizations should form the basis of an electronic database implemented in other technological software products used in the financial and economic activities of entities within the global market (Goncharov and Goncharova 2019). That is, the authorized organ checks the company's brand name for compliance with the requirements of the legislation before entering information about the organization in the register. Subsequently, subject to security conditions, protection against distortion and unauthorized changes, the data becomes available to other information technologies in order to enable automatic verification of integrity use of the company's brand name by the relevant person.

Since the right to a company's brand name is protected until information is entered into the register on the termination of a legal entity, accordingly, after the occurrence of it fact, legal protection is not provided for it object of intellectual property. Theoretically, on the next day, a new company may be registered with the company's brand name of the person who has ceased operations. Accordingly are formed again a threat misleading to business entities. To exclude this threat, it is necessary to legally prohibit the use of a company's brand name that is identical or similar to the point of confusion of a legal entity that has ceased operations or has changed its name within a certain time, for example, for 5 years. The created Internet resource will automatically block the registration of the company's brand name in case of violation of the specified terms.

4 Conclusion

The existing system for protecting the exclusive right to a company's brand name does not allow to fully ensure the interests of both the copyright holder and third parties. The development of the digital economy and electronic commerce requires the introduction of special electronic technologies that allow you to quickly obtain reliable information about the counterparty through a company's brand name.

The development of an appropriate regulatory framework is required at the international and domestic levels to unify the requirements for protection and the mechanism for protecting the exclusive right to a company's brand name in digital space. The economy of prevailing digital technologies can be fruitful only with a combination of three necessary elements, which include concise business-oriented legal regulation, competent hardware solutions and peak achievements of programmers.

The situation with the protection of the exclusive right to a company's brand name is now really complicated. For the current and strategic solution of business problems and the implementation of planned projects by commercial organizations, a stable state of security and confidence in the company's recognition are necessary. Faced with violations of the exclusive right to a company's brand name, organizations are currently forced to use administrative and judicial forms of protection, as well as legal protection methods, not all of which are effective in practice. In the context of the development of the digital economy, it is necessary to form unified preventive and prophylactic approaches to the protection of the intellectual property under study, based on reliable information provided by electronic or state agencies or other organs that register legal entities and its company's brand names.

Given that international law is becoming a priority over national law, a systematic and continuous analysis of the condition of protection of the exclusive right to a company's brand name as the basic interest of business in the context of digitalization of the economy both within the state and abroad is important.

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Digital Financial Assets as a Contribution in the Authorized Capital of Economic Companies

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Abstract. The purpose of the study is to justify the need to review the current Russian legislation governing the process of forming the authorized capital of business entities. In order to achieve this goal, the authors apply a number of general scientific, private scientific and special methods. Achieving an appropriate level of quality of life for citizens of the Russian Federation, ensuring economic growth and national sovereignty of our country is impossible without the active use of modern digital technologies, both in the manufacturing and financial sectors, in the scientific field, in the field of education, etc. Studying the best practices in regulating such relations in advanced economies where digital financial assets have firmly entered the business cycle will help to develop proposals for improved Russian legislation. In this article, the authors consider legal relations associated with the formation of the authorized capital of business entities. Such methods of scientific knowledge are used as analysis and synthesis, from general to particular, comparative law, etc. The authors concluded that it is necessary to admit digital financial assets as a contribution to the authorized capital of business companies.

Keywords: Financial digital assets · Crypto currency · Legal entity · Economic societies · The authorized capital · Blockchain

JEL Codes: K00 · K15 · K11 · K22

1 Introduction

The need to increase labor productivity, as a basis for improving the living standards of the Russian population, requires the search for new effective technologies that will reduce the cost of production both organizationally and technologically. Improving the competitiveness of the Russian Federation, achieving an appropriate level of quality of life for citizens, ensuring economic growth and national sovereignty of Russia is impossible without the active use of modern digital technologies, both in the manufacturing sector, and in finance, in the scientific sphere, education, etc.

By order of the Government of the Russian Federation of July 28, 2017 No. 1632-r, the program “Digital Economy of the Russian Federation” was approved. The Government of the Russian Federation justifiably believes that the introduction of digital technologies will accelerate the exchange of information, transfer the interaction of business entities to a new level and will be one of the factors for increasing labor productivity in all areas of socio-economic activity.

However, the current legislation does not always manage to adequately respond to changes in public relations, due to the rapid development of new technologies and their use in civil circulation. We have already noted that at the moment, the legal norms of the Russian Federation regulating social relations regarding such new phenomena as digital financial assets, smart contracts, digital rights are in their infancy (Trifonova and Sadkov 2018). It seems that today there is an urgent need to abandon the use of outdated approaches, refine the previously formulated concepts, bring them into line with current trends in economic turnover, including the use of digital financial assets as a contribution to the authorized capital of business entities.

2 Methodology

Issues of legal regulation of the use of digital financial assets as a contribution to the authorized capital of business entities are resolved on the basis of a set of legal sources, such as the Civil Code of the Russian Federation (part one) dated November 30, 1994 No. 51-Φ3; Federal Law of the Russian Federation of March 18, 2019 No. 34-Φ3 “On Amendments to Parts One, Two and Article 1124 of Part Three of the Civil Code of the Russian Federation”, Decree of the Government of the Russian Federation of July 28, 2017 No. 1632-r “On approval of the program” “Digital Economy of the Russian Federation” and others.

The scientific basis of this article is the research of such scientists as A. Bolshedvorskii, A. Goncharov, A. Inshakova, V. Kuznetsov, A. Savenkov, R. Starkov, K. Wales, A. Yakubov, etc.

In the process of conducting the research, such general scientific methods of scientific knowledge were used as dialectic, analysis and synthesis, from general to particular and from particular to general. In addition, private scientific research methods were used, such as legal-dogmatic, comparative-legal, structural-functional, etc.

3 Results

One cannot disagree with A.O. Inshakova, who claims that full or partial automation of various business processes contributes to the growth of labor productivity in the economy and more rational spending of limited resources. Due to lower production costs (and, consequently, cost), price competition in industrial markets is increasing, which increases the efficiency of meeting public needs (Inshakova 2019).

An analysis of current trends in the monetary sector indicates an increase in the number of cashless transactions and a gradual decrease in the share of cash settlements.

Modern non-cash payments are in demand both on a professional and household level. Appropriate software and Internet access allow you to quickly make payments and money transfers anywhere in the world with virtually no fees. The availability of cashless payments determines the multiplicity of operations.

However, with an increase in the number of cashless transactions, an increase in abuses in the sphere of cashless cash turnover is inevitable. This is partly because new methods and forms of cashless payments are introduced into the user's circulation. Not all participants in the money turnover are guided by the principles of the operation of electronic payment systems such as Sberbank - Online, QIWI, Webmoney, Perfect Money, although they are actively using them.

At present, it should be noted that the needs of economic turnover participants in the credit and settlement sector are often satisfied through the use of new designs such as "cryptocurrency", "digital financial assets", "digital rights", etc. A.I. Savelyev, defining the legal nature of cryptocurrency, even suggests considering it as a specific form of uncertificated securities (Savelyev 2017). However, in the Russian Federation there is still no single approach to formulating a definition that reflects the essence of these similar categories.

In May 2018, the bill No. 419059-7 "On digital financial assets", in Art. 1 of which it was proposed at the legislative level to formulate the rules for the circulation of property in electronic form. According to the developers of this bill, a digital financial asset should be understood as electronic property created using cryptographic means that are not a legal means of payment in the Russian Federation.

However, at present, this draft law is under discussion, while on March 18, 2019 the Federal Law of the Russian Federation No. 34-FZ "On Amending Parts One, Two and Article 1124 of Part Three of the Civil Code of the Russian Federation" was signed in which the Russian legislator moved away from the category of "digital financial assets" in favor of a new category, which it designated as "digital rights".

Norms of Art. 141.1 of the Civil Code of the Russian Federation determine that digital rights should be understood as obligations and other rights, the contents and conditions for the implementation of which are determined in accordance with the rules of an information system that meets the criteria established by law and the exercise, disposal and encumbrance of a digital right or the restriction of a digital right can only in the information system without contacting a third party.

Analyzing this definition above, it should be noted when speaking of "third parties" in Art. 141.1 of the Civil Code of the Russian Federation, the Russian legislator, means, first of all, the state or banking organizations. Although, as K. Wales rightly points out, banks, credit unions, or some other financial institution often act in civil circulation only as intermediaries (Wales 2017).

However, the significance of digital rights belonging to a particular subject is determined by their recognition by other participants in civil (economic) turnover and the valuation of such rights in terms of domestic legal tender (that is, rubles) or foreign currency. By and large, the categories of "digital financial assets", "cryptocurrency" and "digital rights" have a single essence. We agree with the opinion of A.V. Stepanchenko, who reasonably argues that digital technology is not a new object of rights, but only an original way of fixing relationships between entities (Stepanchenko 2019). That is why the position of A.I. Goncharova and A.O. Inshakova proposing to

use the category “settlement digital crypto-recording” instead of the term “digital financial assets” (Inshakova and Goncharov 2018).

It is thought that the wording of the category “digital rights” given in Art. 141.1 of the Civil Code of the Russian Federation, complicates its legal circulation, complicates the introduction of new economic mechanisms in the official sector and facilitates its movement into the shadow economy. According to K. Vakulenko, it is not uncommon for economic entities to try to hide information about their taxable objects or to lower their value in order to reduce the amount of taxes paid, because saving on tax payments allows them to increase their net profit and gives them a competitive advantage over those who work legal (Vakulenko 2013).

Currently, the most popular cryptocurrency in the world is Bitcoin. H. Siddiqi notes that Bitcoin is a decentralized virtual currency that appeared privately in 2009 as an inexpensive means of exchange to facilitate transactions, both locally and internationally (Siddiqi 2015).

According to the recommendations of the Financial Anti-Money Laundering Measures Development Group (FATF), cryptocurrencies are a type of virtual money, namely, they are decentralized, convertible, distributed, mathematically based open-source peer-to-peer virtual currencies that have no central administrator and no centralized control or supervision (FATF 2019).

An analysis of informational reviews of cryptocurrency turnover in various countries shows that today in the world community there are no uniform standards in regulating the turnover of digital currencies. National central banks in this area use various regulatory methods, from formal authorization and application of general principles of regulation in the field of digital payments (including recommendations for the industry about possible risks, research in this area, etc.) to a complete prohibition of such activities. V.A. Kuznetsov and A.V. Yakubov noted that often national regulators practice the establishment of regulatory prohibitions or impose a tax on cryptocurrency transactions, which ultimately leads to their disadvantageous (ineffective) use in the payment industry (Kuznetsov and Yakubov 2016).

In a number of countries, the same value-added tax (hereinafter referred to as VAT) was introduced on operations with cryptocurrency as on barter operations, which was a serious limiting factor that significantly limited the turnover of cryptocurrencies. However, in October 2015, the European Court of Justice ruled on the inadmissibility of non-use of VAT on cryptocurrency transactions (Bits.media 2019), which marked a relaxation of the regulatory regime for cryptocurrency turnover in the European Union. This mitigation of the regulatory turnover of cryptocurrency began to be practiced after the statement of the Japanese government on the acceptability of using Bitcoin in commercial circulation.

The cryptocurrency settlement process is fast, convenient and cheap. Counterparties do not need to open bank accounts for mutual settlements. It is for this reason that experts are exploring the possibilities of using digital currencies as the most efficient payment tool.

The country that became the first in the world to issue state cryptocurrency is Venezuela. The only issuer of the Venezuelan cryptocurrency is the state, and its value is determined in proportion to the price of Venezuelan oil and is tied to the national

currency. According to the President of Venezuela, the value of the Venezuelan cryptocurrency is backed up by the country's resources and national currency (RBC 2019).

In the USA, there is also no consensus at the state level regarding the legal nature of cryptocurrencies. The U.S. Internal Revenue Service considers cryptocurrency to be subject to federal taxation. The Commodity Futures Trading Commission considers all types of assets, including tokens and cryptocurrencies, as goods. According to the decision of the court of the Federal District Court of the Southern District of New York, Bitcoin and other types of cryptocurrency are cash (Davydov and Shapovalova 2018).

Given the popularity of Bitcoin in Germany in 2013, the Ministry of Finance issued a decree recognizing this cryptocurrency as an official means of payment. The use by organizations of this cryptocurrency for commercial purposes requires special permission (license). These organizations are subject to increased requirements: the need for a detailed business plan, professionally qualified staff, regular reporting, as well as the establishment of the minimum authorized capital in the equivalent of at least 750,000 euros. Organizations that use Bitcoin for commercial purposes apply methods to counteract the legalization of proceeds from crime and the financing of terrorism. These activities of such organizations are established by the Federal Financial Supervision Authority.

Innovations are designed to stabilize the cooperation of banks and Bitcoin companies. An example of such cooperation is the interaction of Fidor Bank AG with the virtual currency exchange Kraken, thanks to which all major operations with digital currencies have become available to German citizens. To date, in Germany, activities with any digital currencies are financial instruments, and for violation of the rules of such activities, criminal liability is implied (Cryptocoinsnews 2019).

The UK is one of the leaders in cryptocurrency integration, as well as one of the most convenient and favorable jurisdictions for doing cryptocurrency business. Back in 2014, the Bank of England said about Bitcoin that the biggest hypothetical risk for the credit and financial system from electronic currencies is the possible "bitcoinization" of the economy, that is, the use of cryptocurrency as the main payment unit. Despite the fact that the likelihood of a "bitcoinization" of the economy is small, the Bank of England noted that it is quite possible to use Bitcoin simultaneously with the pound. In May 2016, the official website of the UK Office for Financial Regulation and Control published detailed information on the use of the so-called "regulatory sandbox". Its goal is to create a separate place for financial technology centers in which they can develop and test their products, as well as interact with users without risk of violating British financial law. In November 2016, 22 startups became participants in the "regulatory sandbox", 9 of which (for example, Epiphyte, SETL, Luno, etc.) are cryptocurrency related companies. (надо указать источник сведений).

Today it should be noted that the interest of citizens in the use of digital financial assets is increasing in Russia. Fairly said A.A. Bolshedvorsky and R.F. Starkova, this is a vivid example of the formation of new market relations that are not covered by legal regulation, due to the inflexibility of official mechanisms for regulating the economy and the lack of proper state control over transactions (Bolshedvorskiy and Starkov 2017).

In our opinion, the use of digital rights (digital financial assets, cryptocurrencies) in the civil circulation of Russia as a whole corresponds to the spirit of civil law regulation, since the norms of clause 2 of Article 1 of the Civil Code of the Russian Federation determine that citizens (individuals) and legal entities acquire and exercise the rights of their own free will and in their interest, and paragraph 1 of Art. 9 of the Civil Code of the Russian Federation establishes a rule in accordance with which citizens and legal entities, at their discretion, exercise their civil rights.

In fact, the current Russian legislation does not directly identify digital financial assets (digital rights) as a contribution to the authorized capital of business entities. According to Art. 661 of the Civil Code of the Russian Federation, a contribution of a participant in a business partnership or company to its property may be cash, items, shares (stocks) in the authorized (joint-stock) capital of other business partnerships and companies, state and municipal bonds, and also exclusive, other intellectual rights subject to monetary valuation and rights under license agreements, unless otherwise provided by law.

However, in accordance with paragraph 1 of Art. 15 of the Federal Law of the Russian Federation of February 8, 1998 No. 14-Φ3 “On limited liability companies” (hereinafter the Federal Law “On LLC”) payment of shares in the authorized capital of a LLC can be carried out not only with money and securities, but also with other things or property rights or other rights having a monetary value. And, given the amendments to the wording of Art. 128 of the Civil Code of the Russian Federation, where it is defined, the category of “property rights” includes such components as cashless funds, paperless securities and digital rights, it is appropriate to conclude that there are no bans on the use of digital rights as a contribution to the charter capital of LLCs. The only reservation should be recognized by the norm of paragraph 2 of Art. 15 of the Federal Law “On LLC”, which states that the monetary value of property contributed to pay shares in the authorized capital of the company is approved by the decision of the general meeting of the company’s participants, adopted unanimously by all company participants. And if the nominal value or increase in the nominal value of the LLC participant’s share in the authorized capital of the LLC paid by a non-monetary contribution is more than two hundred minimum wages established by federal law at the date of submission of documents for state registration of the LLC or corresponding changes in the charter of the LLC, then such a contribution should be evaluated by an independent appraiser. At the same time, the nominal value (increase in the nominal value) of the share of the LLC participant paid by such a non-monetary contribution cannot exceed the valuation amount of the specified contribution determined by an independent appraiser.

Similar rules are contained in the norms of the Federal Law of the Russian Federation dated December 26, 1995 No. 208-Φ3 “On Joint-Stock Companies” (hereinafter - the Federal Law “On AO”). So in paragraph 2 of Art. 34 of the Federal Law “On JSC” it is indicated that payment for shares of a joint-stock company (hereinafter referred to as JSC) at its establishment and payment for additional shares placed by subscription can be carried out not only with money, securities, but also with other things, property rights or other rights having monetary value. Restrictions regarding the types of property by which shares of the joint-stock company can be paid can be prescribed in the charter of the joint-stock company.

Carrying out a comprehensive analysis of the rules contained in Art. 34 Federal Law “On JSC” and Art. 128, 66.1 of the Civil Code of the Russian Federation, it is appropriate to conclude that, as in the case of the formation of the authorized capital of LLC, the legislator has not established a direct ban on the use of digital financial assets (digital rights, cryptocurrencies) as a means of payment for shares of AO.

4 Conclusions/Recommendations

In the Russian Federation, legal regulation of the use of digital financial assets is in its infancy. There is an urgent issue regarding the streamlining of their turnover. The inclusion in the list of objects of civil rights contained in Art. 128 of the Civil Code, the category of “digital rights” is a step forward in this direction. However, we think that one step is not enough. It is thought that in order to avoid a double interpretation of the law on the permissibility of using digital financial assets (digital rights, cryptocurrencies) as a contribution to the authorized capital of business entities, the Russian legislator needs to specify the category of “digital rights” in Art. 66.1 of the Civil Code of the Russian Federation as a specific type of property (property right) admissible as a contribution of a participant in a business company or partnership to his property.

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

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Rendering the Cadastral Services in the Electronic Form as an Element of the Private Law Socialization

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Abstract. The purpose of the study is to distinguish the cadastral works and the cadastral services, substantiate the importance of providing the cadastral services in the electronic form to ensure the availability of the information contained in the state cadastral records for the population, to develop the proposals to improve the legal regulation of the cadastral services. In the course of the study, the authors used such methods of scientific knowledge as from general to particular, the system analysis, comparative law, etc.

The authors emphasize the importance of the introduction of digital technologies in the cadastral activities to ensure the availability of the cadastral services for the population. We studied such normative legal acts as the Federal law of the RF “On the state registration of the real estate” dated July 13, 2015 No. 218-FZ, the Federal law of the RF “On the cadastral activities” of 24 July 2007 No. 221-FZ and other normative legal acts, regulating the provision of the cadastral services in Russia. The authors analyzed the works of Russian and foreign scientists devoted to the specific character of providing the cadastral services to the population, while the greatest interest was aroused by the publications of such researchers as A. A. Varlamov, N. M. Radchevsky, V. Haverk, etc.

According to the results of the analysis carried out by the authors they defend the thesis about the need for the further development of digital technologies in the sphere of the cadastral activities. This will allow to provide greater accessibility of the cadastral services to the population by reducing the costs of their provision, to simplify the access to receiving the legally significant information, to ensure the “transparency” of the cadastral services mechanisms. The consequence of the latter will be the reduction of the corruption component in the activities of persons providing the cadastral services. The authors have formulated a number of proposals to eliminate the contradictions of the current Russian legislation regulating public relations in the sphere of the cadastral services.

Keywords: Cadastral services · Law socialization · Real estate · Cadastral records

JEL-Codes: K11 · K15 · K24

1 Introduction

The entry for the information on the status of land plots and other real estate objects into electronic registers, storing the information concerning the characteristics of real estate objects in the electronic form allow to provide the availability of this information for businesses and citizens, prevent the unjustified concentration of real estate in one hands, counteract the unjust enrichment of unscrupulous civil turnover participants.

We support N. M. Radchevsky and A. A. Varlamov, who affirm that today the significant work is being carried out in Russia. This activity is aimed at introducing new technologies for improving the quality of the cadastral activities, efficient responsiveness to citizens' and legal entities' requests regarding the provision of information reflected in the cadastral records, reducing the corruption component in the sphere of the real estate turnover and accounting (Radchevsky 2016; Varlamov and Galchenko 2016). Undoubtedly, this requires the improvement of the legal regulation in the sphere of the cadastral services' provision, the correct definition of the essence of the cadastral services in the legislative and normative bylaws.

2 The Methodology

Currently, in Russia the problems of legal regulation of the cadastral services' provision are reflected in such legal sources as: the Civil code of the Russian Federation (part one) dated 30 November 1994 No. 51-FZ; Civil code of the Russian Federation (part two) of January 26, 1996 No. 14-FZ; the Federal law of the Russian Federation from July 13, 2015 No. 218-FZ "On the state registration of the real estate" (hereinafter Federal law "On the state registration of the real estate"); the Federal law of the Russian Federation of 24 July 2007 No. 221-FZ "On the cadastral activities" (further – Federal law "On the cadastral activities"); the Federal law of the Russian Federation dated 29 July 1998 No. 135-FZ "On the valuation activities in the Russian Federation" (further – Federal law "On the valuation activities"); the Federal law of the Russian Federation from October 27, 2010 № 210-FZ "On the organization of rendering the state and municipal services" (further – Federal law "On the organization of rendering the state and municipal services"), etc.

The scientific basis of this article is the research of a number of scientists, such as A.A. Varlamov, A.O. Inshakova, Yu. Kaufman, L.B. Sitdikova, N.M. Radchevsky, V. Haverk, etc.

In the process of the research, such general scientific methods of scientific knowledge as from general to particular, from particular to general, the system analysis of the studied phenomena and concepts were used. In addition, private scientific methods of research, such as juridical-dogmatic, comparative-legal, structural-functional, etc. were used.

3 Results

In accordance with paragraph 4 of article 1 of the Federal law “On the cadastral activities” the cadastral activities is the execution of works with real estate in accordance with the requirements established by the Federal law. As the result of these works the preparation of the documents containing the necessary information needed for the state cadastral registration of the real estate and the provision of services in accordance with the Federal law are ensured.

The purpose of the cadastral activities is the provision of the civil turnover of the real estate, and the objectives of these activities are the warranty of the real estate owners’ rights, the improvement of the tax collection efficiency on the real estate, the development of the rational real estate usage. Winfried Haverk confirms justifiably that the cadastre is a part of the basic data needed in any state land information system (Haverk 2012).

There is no doubt that only properly organized cadastral activities can keep state records of the real estate effectively, form the tax base on the basis of determining the cadastral value of real estate objects, provide citizens, business communities, public authorities and management with reliable and legally significant information about the real estate objects, their legal status and cadastral value. At the same time, we agree with Kaufmann Jürg, who says that the land resources management should be carried out on an integrated basis, and the cadastre in this system plays the role of accounting (Kaufmann 2014).

The legal regulation provides the stability of public relations. According to A.O. Inshakova’s equitable statement it is the law that acts as the basis for infrastructure support of the economy (Inshakova 2019). In accordance with p. 1 of article 2 of the Federal law “On the state registration of the real estate” the legal basis of the state cadastral registration and the state registration of rights on the real estate is the Constitution of the Russian Federation, the Civil code of the Russian Federation, the above-mentioned Federal law, other Federal laws of the Russian Federation and other regulatory legal acts of the Russian Federation issued in accordance with them.

The essence of the state cadastral registration of the real estate is the state recognition and confirmation of the existence of the individually defined real estate object with characteristics reflected in the state register of the real estate. In the fair opinion of V. N. Baranov, this requires the proper information support Baranov et al. (2006).

The rules prescribed in paragraph 2 of article 8 of the Federal law “On the state registration of the real estate” determine that the basic information about the object of the real estate, to be recognized in the real estate cadastre, is such information which allows to identify it as an individually certain thing, and also such characteristics, which are defined and modified as the result of the formation of land plots, specification of the exact location of boundaries of land plots, construction and reconstruction of buildings, constructions, premises and parking spaces, redevelopment of premises. At the same time, in addition to basic information, a number of additional information is entered in the real estate cadastre, including the cadastral value of the real estate object, the limitation of the turnover of the land plot, etc.

Currently, in the RF the efficiency in the conducting the cadastral records of the real estate, as well as the availability of information contained in the cadastre of the real estate for the population is provided by using a single electronic cartographic base created in accordance with the law on geodesy and cartography as cartographic base of the Unified state register of the real estate (further – EGRN). The data about such cartographic basis are placed on the official site of the Russian Federal service of the state registration, cadastre and cartography (hereinafter-Rosreestr) in the information and telecommunication network “Internet”. In accordance with paragraph 3 of article 7 of the Federal law “On the state registration of the real estate” the EGRN, the cadastral maps and books of documents are maintained in the electronic form, and the registry cases are conducted both in the paper execution and in the electronic form.

Undoubtedly, the maintenance of the EGRN, cadastral maps and other cadastral documents in the electronic form provides the efficiency in obtaining the information, timeliness of changes, instant availability of information for a large number of the electronic resources users. In the item 5 of Art. 7 of the Federal law “About the state registration of the real estate” the Russian legislators registered the thesis about the public availability of the data contained in the EGRN. The EGRN management in the Russian Federation is carried out within the framework of a special information system which falls under the Federal law of the Russian Federation of July 27, 2006 No. 149-FZ “On the information, information technologies and information protection”.

In accordance with the norms of article 18 of the Federal law “On the state registration of the real estate” an application on the state cadastral registration and (or) state registration of rights and attached documents may be provided by citizens and legal entities using a paper medium or in the electronic form and (or) electronic images of documents.

As a general rule, the submission of an application in the electronic form is carried out using the information and telecommunication networks of the general usage, including the Internet. Using the capabilities of the unified portal of the state and municipal services simplifies the interaction of the cadastral services’ consumers with the authorities greatly, reduces the corruption component of the office employees’ activities in the timely provision of the cadastral services, providing unconditioned by law priorities when considering applications from citizens and organizations. There is no doubt that the appointing of the requirements regulating the availability of information, contained in the cadastral records, the introduction of “transparent” mechanisms for the provision of the cadastral services in the legal norms is one of the important elements of ensuring public interests of the whole society. All this testifies to the phenomenon of socialization of the law that we have repeatedly stressed in our previous publications (Sadkov 2017; Kotelnikov et al. 2018; Sadkov 2018).

Noting positively the changes in the organization of the cadastral activities that occurred in the Russian Federation with the entry into force of the Federal law “On the state registration of the real estate” but at the same time it should be paid attention that the legal regulation of public relations in this sphere is far from being perfect. One of the reasons that negatively affect the quality of providing the cadastral services is the imperfection of the legal technique demonstrated by the Russian legislators in the framework of the regulation of the cadastral activities, the use of the legal structures typical of the contract relations for the legal regulation of the cadastral services.

Giving the definition to the category “the cadastral activities” in paragraph 4 of Art. 1 Federal law “About the cadastral activities” the Russian legislators do not disclose the list of the actions making the category “the cadastral services” by defining only that these services are rendered in “the cases established by the Federal law” without accurate designation of such cases.

The use of the reference method of constructing a legal norm in paragraph 4 of article 1 of the Federal law “On the cadastral activities”, the Russian legislators’ fuzzy designation of the list of the cadastral works and the cadastral services leads to the fact that even organizations specializing in the **rendering** the cadastral activities allow the mixing of categories “the cadastral works” and “the cadastral services”.

As an example, on the website of the limited liability company “Geodesy Stroy Service” in its “Services” section you can find such subsections as “Apportioning of a land plot”, “Redistribution of the land plots”, “Allotment of a land plot”, “Unification of land plots”, “Location specification and setting in the cadastral records”, “Inventory error or restoring the documents,” “Land plot formation”, “The definition of the order in the plot usage”, “The stakeout boundaries of land plots”, “Geophysical examination of the land plots’ boundaries”. Besides there is the inscription “All types of the cadastral works” under the indication of the name of the section “Services”. However, we think that the confusion between the definitions “cadastral works” and “cadastral services” is unacceptable, since they relate to different types of the objects of the civil rights and their provision is mediated by different law structures.

In the doctrine of civil law, the differentiation of such objects of civil rights as the results of works and the provision of services, named in article 128 of the Civil Code of the RF, is carried out according to the specifics of the result. It is generally recognized that the result of works must be manifested in a materialized form and be separable of the process of activities. That is, it must be an independent object of law, having a consumer value. In contrast with this, the result of services is manifested in an unrealized form and is inseparable of the activities of the contractor (Sadkov 2016).

The main purpose of carrying out the cadastral works is the registration of the real estate object in the cadastral records and the registration of its ownership. The norms of article 35 of the Federal law “On the cadastral activities” indicate the conclusion of a contract of hiring work for the performance of the cadastral works between the parties as a basis for carrying out the cadastral works. The requirements for such a contract are established by the legislators in article 36 of the above-mentioned law. A contract for the cadastral works is a type of a contract of hiring work for carrying out the design and survey works. The basis of the law regulation for such contracts are the norms of the Civil Code of RF: paragraph 2 of article 702 and paragraph 4 “A contract of hiring work for the performance of the design and survey works”, chapter 37 “Contract of Hiring work” (Art. 758–762). In article 37 of the Federal law “On the cadastral activity” the Russian legislators consider a boundary plan, a technical plan or a survey act as a result of the cadastral works.

As for the cadastral services, first of all they should include services on the cadastral valuation of a real estate object and state services provided by the cadastral authorities. Besides the Civil Code of the Russian Federation, the Federal Law “About the state registration of real estate” and the Federal law “On the cadastral activities” we should mention the Federal law “On organization of rendering state and municipal services”;

Federal law of the RF from December 30, 2015 No. 431-FZ “On geodesy, cartography and spatial data and on introduction the amendments to certain legislative acts of the Russian Federation in terms of improving regulation”; Federal law “On the valuation activities”; Orders of the Ministry of economic development of the Russian Federation: No. 848 of November 13, 2015 “On the requirements to plans, maps, which are the basis for the Unified state register of real estate”, No. 877 of November 24, 2015 “About the statement of the order of the cadastral division of the territory of the Russian Federation, the order of the assignment of cadastral numbers to the real estate objects, registration numbers, register numbers of borders to them”, etc. as the main normative law acts regulating the provision of the cadastral services in Russia.

The essence of services on the cadastral valuation of a real estate object is determining its cadastral value. The concept of cadastral value is disclosed in article 3 of the Federal law “On the valuation activities”, where it is stated that the cadastral value should be defined as the value established as a result of the state cadastral valuation or the consideration of disputes on the results of determining the cadastral value in court or the Commission for the consideration of disputes on the results of determining the cadastral value.

There is no doubt that the legal nature of the contract on the cadastral valuation of a real estate object is determined by the general understanding of the valuation activity as service activity (Sitdikova and Neznamova (2016), Istratov (2014), Volkova (2015)). However, while regulating relations on carrying out the cadastral valuation of real estate objects, the legislators allow the application of categorial device typical of contract relations of hiring to these relations too. So in the norms of Chapter III.1 the Federal Law “On the valuation activities” (the title of the Chapter is “State cadastral valuation”) the term “works” is repeatedly used in relation to the activities to define the cadastral value of a real estate object. For example, in article 24.16 of the above-mentioned Federal law referred to as “The Examination of the report on defining the cadastral value” it is determined that “the executor of works on defining the cadastral value” is obliged to provide an examination of the report on definition of the cadastral value within thirty days from the date of this report.

It seems that this is contrary to the nature of the cadastral valuation activities, which should be considered to as the information services’ activities.

4 Conclusions/Recommendations

The use of all capacities of the electronic exchange and storage of legally significant information within the framework of the Russian Unified state register of real estate should be considered as one of the elements of the digitalization of the Russian economy aimed at improving the competitiveness of the Russian Federation, increasing labor productivity in the private and public sector, creating favorable conditions for providing the vital activity of the Russian population.

An important point on this path is the improvement of Russian legislation relating to the provision of the cadastral services. The correct understanding of the legal nature of the contract for the carrying out of the public cadastral valuation will not only allow to bring these activities in line with the established provisions of the Russian civil

doctrine, regarding the differentiation between the contract of hiring relations and the relations for the provision of services, but also to achieve the improvement of the quality of such activities. To eliminate contradictions in the legal regulation of activities of the state cadastral valuation in the norms of the Federal Law “On the valuation activities” in Chapter III.1, devoted to the legal regulation of the state cadastral valuation the authors of this study propose to replace the term “works” with the term “services” in relation to the parties of the contract for such valuation (for example, in article 24.11, replace the term “contractor” with “service provider”, in articles 24.14, 24.16, replace term “contractor” with the phrase “service provider”, in art. 24.13, 24.19 replace the term “works’ customer” to “services’ customer”, in articles 24.17, 24.18, 24.19, replace the term “works’ customer” in the phrase “services’ customer” and in article 24.18 replace “works’ customer” with “services’ customer”).

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Realization of Rights to On-duty Results of Intellectual Activity in Neo-Industrial Modernization of the Economy

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Abstract. Purpose: The purpose of the chapter is to explore approaches to realization of rights to on-duty results of intellectual activity in neo-industrial modernization of the economy.

Design/methodology/approach: In the chapter substantiates the need to review the current legislation regarding the definition of the circle of participants in legal relations for the creation and use on-duty results of intellectual activity. Neo-industrial modernization of the economy is closely related to the scientific-technical approach, which is based on the potential of scientific researches. In this case, conflicts often arise between legal entities (employers) and the creators of the intellectual property result (employees) regarding the creation and use of such a result. Based on a materialistic world view, the authors implement a systematic approach to the research of the problem.

Findings: The authors consider the circle of participants in relations related to the creation of an on-duty result of intellectual activity, as well as its subsequent use. The characteristic of authors (workers), co-authors, organizations (employers), heirs of the author (employee) is given. Participation in such legal relations is considered as the author of a municipal employee.

Originality/value: The authors reveal the problem of defining the work of co-authors as joint labour. The conclusion is drawn on the need to transfer priority from labour-law terminology to civil-law terminology. Provisions have been formulated to amend modern legislation: the replacement in the norms on on-duty results of intellectual activity of the term “employee” with the term “author”, the term “employer” with “hirer”.

Keywords: On-duty result · Intellectual activity · Author · Employee · Neo-industrialization

JEL Code: K15 · K31 · O38 · L88

1 Introduction

The technological renewal of the sectors of the national economy is closely connected with the intellectual sphere, namely, the creation of the results of intellectual activity that allow accelerating the pace of modernization of the economy, developing new sectors - scientific, technical, and biotechnical. Recently, the importance of the study of relations regarding the creation and use of official results of intellectual activity has increased, since their share among such results is rapidly increasing. Among inventions, more than 80% are created by an employee in connection with the execution of his labour duties or the tasks of the employer. However, the terms contained in the domestic legislation do not allow to unambiguously determine the participants in these legal relations, since the rules of law do not have sufficiently accurate interpretations of such terms. The wording used by the legislator raises many questions related to the establishment of a circle of participants in relations regarding the creation and (or) use of official creative result, as well as related to the name of the parties to legal relations and determination of their legal status (Inshakova et al. 2017b).

2 Materials and Methods

The tasks of legal regulation of the rights of economic entities to on-duty results of intellectual activity, as well as the issues of their implementation in this chapter are solved on the basis of a set of sources. The authors examined regulatory documents, namely the Civil Code of the Russian Federation (part four), the Labour Code of the Russian Federation, and Reports on the activities of Rospatent.

The scientific basis of this chapter formed on the basis of researches by a number of scientists: Agnessa O. Inshakova, Alexander I. Goncharov, Oleg A. Mineev, Maxim V. Sevostyanov, Yu. N. Andreev, V.S. Vitko, V.O. Dobrynin, S.A. Kazmina, S.I. Krupko.

In the course of work on the content of the chapter, the authors applied general scientific methods of cognition: the dialectic, hypothetical-deductive method, generalization, induction and deduction, analysis and synthesis, empirical description, classification. Also in study used private scientific methods: normative-dogmatic, comparative legal method, structural-functional method; special methods: statistical method, etc.

3 Results

3.1 The Author of the Result of Intellectual Activity: General Provisions of Civil Law

In accordance with civil law, the result of intellectual activity is created by an individual - the author of such a result. According to Art. 1228 of the Civil Code of the Russian Federation, the author is a citizen whose creative work the result is created. Moreover, if a citizen did not make a personal creative contribution to the creation of the result, and also only contributed to the registration of rights to a creative result or

exercised control over the performance of work, he is not recognized as the author of the result of intellectual activity. As noted by V. Vitko, “the subject of copyright is only an individual who is able to think and create” (Vitko 2019).

By “citizen” it is necessary to understand both citizens of the Russian Federation, and foreign citizens, and stateless persons. The ability of a citizen to have the rights of an author is enshrined in legislation as an element of the content of the legal capacity of citizens. The norms of civil law do not contain an age framework for individuals - the authors of the results of intellectual activity. At the same time, the possibility of independent exercise of the rights of the author, his property rights, is outlined by specific age limits.

The result of intellectual activity can be created not by one author, but by two or more, in which case they will be its co-authors. The rights to the result of intellectual activity created by the co-authors belong to them jointly (Item 4 of Article 1228 of the Civil Code of the Russian Federation), the creative result itself is also used jointly (Andreev 2011). Meanwhile, the norms of the Civil Code of the Russian Federation contain a condition under which the result of intellectual activity will be recognized as co-authored, but it will not be disclosed which facts characterize the authors’ work as joint. The joint nature of labour can be determined, for example, depending on whether the people had an intention to create a single work, and whether the people collaborated in the process of creating the work. This means that in order to recognize labour as a joint court, it is necessary to study the individual circumstances of the controversial situation and recognize the legal significance of these facts (Minasova 2011).

According to V. Serebrovsky, co-authorship in relation to a work is “the participation of two or more persons in joint creative activity to create a work of literature, science or art, as a result of which all these persons acquire copyright in the work they have created” (Serebrovsky 1956).

Participants in relations within the framework of which the on-duty result of intellectual activity is created and used must have a certain legal status, as well as be in labour relations. In accordance with the current law, the employee and the employer act as participants in the investigated legal relations.

3.2 On-duty Results of Intellectual Activity: Creators and Copyright Holders

According to Article 20 of the Labour Code of the Russian Federation, the employee is an individual who has entered into an employment relationship with the employer, and the employer, in turn, is “an individual or legal entity (organization) which has entered into an employment relationship with an employee”. As a general rule, persons who have reached the age of 16 years have the right to enter into labour relations as workers, with the exception of cases established by the Labour Code of the Russian Federation and other federal laws. For example, “in cinematography organizations, theatre and concert organizations, circuses, it is permitted, with the consent of one of the parents (guardian) and the permission of the guardianship authority, the conclusion of an employment contract with persons under the age of fourteen to participate in the creation and (or) the performance (exhibiting) of works without prejudice to health and moral development”.

As employers can act (article 20 of the Labour Code of the Russian Federation): (1) legal entities (organizations); (2) individuals registered as individual entrepreneurs; (3) private notaries and lawyers who have established law offices; (4) other persons whose professional activities in accordance with federal law are subject to state registration and (or) licensing, entered into labour relations with employees in order to carry out the specified activities; (5) individuals who are not individual entrepreneurs (entering into labour relations with employees for the purpose of personal service and assistance in housekeeping).

For the most part, legal entities are the owners of the rights to the results of intellectual activity that are the objects of patent law. Many such results of intellectual activity are created by employees of these organizations.

The largest volume of agreements registered by Rospatent in 2012 on the alienation of the exclusive right to inventions, utility models, industrial designs and agreements on granting the right to use them falls on such sectors as: medicine, energy, electrical engineering, chemistry, petro-chemistry, mechanical engineering, machine-tool industry (Report on the activities Rospatent for Report on the activities Rospatent for 2012. http://www.rupto.ru/about/reports/2012_1).

According to the data contained in the Rospatent Report for 2018, the leading fields are occupied by the same areas of technology: chemistry and petro-chemistry, energy, electrical engineering, medicine, electronics. It is legal entities that primarily operate in these sectors (Report on the activities Rospatent for 2018. https://rupto.ru/content/uploadfiles/otchet_2018_ru.pdf).

According to the statistics of Rospatent, in 2008–2012 actively participated in the conclusion of agreements (on the alienation of exclusive rights, licensing agreements) both individuals and legal entities. However, a large proportion of all registered traces fall on such business entities as legal entities, especially if it is the transferring party (copyright holder). Among such organizations are both Russian and foreign legal entities. Over time the predominance of legal entities that act as subjects of these legal relations (as acquiring rights party and transferring rights) (Rospatent 2018). Also labour law applies to municipal employees. The federal legislation on municipal service contains a provision by virtue of which the municipal entity is the employer for the municipal employee. On behalf of the hirer in such legal relations is his representative (employer). In the scientific community, various points of view are expressed about this. A number of researchers believe that the representative of the hirer and the employer are one and the same. In particular, Dobrynin V.O. supports the point of view according to which it is necessary to introduce the concept of “hirer” in the Labour Code of the Russian Federation and define it as “a legal entity or an individual who is granted by law the right to conclude and terminate an employment contract with an employee” (Dobrynin 2016). In the opinion of N. Zhukova, “the employer is most accurately understood as the person hiring labour force” (Zhukova 2016).

Khrustalev B.F., believes that the term “hirer” is more universal, and therefore should be included in modern legislation (Khrustalev 1991).

At the same time, some jurists take a different position on this issue. In particular, Golovina S.Yu. conclude that the term “employer” refers to the person providing the work, while the term “employer” defines the person which labour buys. It follows that the concept of “employer” is broader than the term “hirer” (Golovina 2000).

It is worth noting that this is an area of labour law. At the same time, within the framework of civil law, the above proposal can also be implemented, namely: in the texts of norms on official results of intellectual activity, in addition to the term “employer”, the term “hirer” is included, which would contribute to an expanded interpretation of the terminology used.

In the articles of the Civil Code of the Russian Federation on official results of intellectual activity (Articles 1295, 1370, 1430, 1461 and others), the terms “employee” and “employer” are used everywhere, which creates a number of problems. Firstly, the terminology used in civil law is not civil law, and secondly, these terms are not defined in the Russian doctrine (despite their concepts enshrined in the Labour Code of the Russian Federation) and are the subject of discussion in the scientific community (Inshakova et al. 2017a).

The rules on the on-duty work contain the following wording: “copyrights to a work of science, literature or art created within the limits of labour duties established for the employee (author) (official work) belong to the author”. Based on the foregoing, it follows that the legislator recognizes the advantage of the term “employee”, thus trying to emphasize the specifics of relations. While priority, should be given to civil law terminology indicating the special legal status of the author.

In some norms, the reference to the “author” is completely absent. For example, article 1461 of the Civil Code of the Russian Federation stipulates that “a topology created by an employee in connection with the performance of his job duties or a specific job of the employer is recognized as an on-duty topology.” Also, third parties, successors of the author or employer may be participants in the relations under study. If the employer (or the employee - the owner of the exclusive right) transfers the right to an invention, utility model, industrial design under the contract, then a third person who becomes a participant in legal relations for the use of on-duty creative result has the right to file a patent application. The “successors” of the employer and the author can be both the persons with whom the contract was signed, and other persons outside the contractual order: the heirs of the author; legal entities established through reorganization; persons to whom the right passes upon foreclosure on the property of the copyright holder.

The definition of the successor of the employer was first proposed in the draft Federal Law No. 95700320-1 “On business inventions, utility models, industrial design” (submitted to the State Duma of the Federal Assembly of the Russian Federation as amended on 06.06.1995). Namely: “the successor of the employer is a legal entity to which the right to file an application for a patent for an official invention, utility model certificate or industrial design patent or the right to obtain a patent for a filed application or patent has been transferred from the employer lawfully”. It should be noted that the presented definition is not consistent with the norms of existing labour law, since not only a legal entity can be an employer (Inshakova 2019).

Inheritance of the rights of the author is carried out by law and by testament. An heir is a person who inherits the property rights of an author. According to Art. 1112 of the Civil Code of the Russian Federation, the estate includes things, other property, property rights and obligations that belonged to the testator on the day the estate was opened. To the heir from the author pass in the order of inheritance the rights that ensure his property interests. By virtue of Article 1226 of the Civil Code of the Russian

Federation, exclusive right is a property right. Resolution of the Plenum of the Supreme Court of the Russian Federation of May 29, 2012 No. 9 “On judicial practice in cases of inheritance” gives an interpretation of the composition of the inheritance, in particular, clarifications that it includes exclusive rights to the results of intellectual activity or to means of individualization.

According to Article 1283 of the Civil Code of the Russian Federation, the exclusive right to a work shall be inherited, while the right to remuneration for an on-duty composition shall not be inherited. At the same time, the rights of the author under the contract that he signed with the employer and the income not received by the author pass to the heirs.

With regard to the on-duty invention, utility model or industrial design, the author’s right to remuneration passes to the author’s heirs for the remaining term of the exclusive right (Item 4, Article 1370 of the Civil Code of the Russian Federation). A similar position is enshrined in Art. 1430 of the Civil Code of the Russian Federation on on-duty selection achievement and in Art. 1461 - topology.

Rights to the on-duty secret of production (Article 1470 of the Civil Code of the Russian Federation) may be transferred by universal legal succession to another legal entity.

Item 91 of Resolution of the Supreme Court of the Russian Federation dated May 29, 2012 No. 9 provides a provision according to which the right to remuneration for on-duty results of intellectual activity due to the employee - the author of an: composition, invention, utility model or industrial design, selective achievement, service topology is included in the hereditary mass. This conclusion is justified by the civil law character of the remuneration contract, however, this position is not unambiguous and is widely discussed in the scientific community.

Also debatable is the question regarding the possibility of recognizing as an on-duty result of creative activity, which created by a student as part of his training in an educational institution.

Kazmina S.A. believes that the question of the legal personality of graduate students, students, pupils (at factory) in relation to on-duty inventions seems difficult. On the one hand, relations associated with studying at a university, college, and with industrial and technical training at a workplace are a special type of relationship, as its arise on the basis of an agreement on studying at a university (in another educational institution) or on an apprenticeship drawn up between a student and an enterprise. These types of contracts are a means of realizing the rights of citizens to education, and not to labour, the rights to which are realized in accordance with the labour contract. On the other hand, when these persons execute a labour function, a different situation arises. If earlier, in accordance with labour legislation, at various times, the length of study could be counted as a labour standing to one degree or another, now it is taken into account when there is a corresponding record of employment in the workbook (Kazmina 2010).

According to Rybina N.A., often “students’ inventions pass over to universities, but in fact there is no full reason for this”, in case “if students and graduate students did not have or do not have contractual obligations to the university in the field of invention, then the concept of “on-duty invention” cannot be automatically extended to the inventions created by them” (Rybina 1994).

The Court of Intellectual Property Rights concluded that the relations of the educational organization and the student during his training are not labour. Therefore, to such a relationship the provisions of Article 1370 of the Civil Code of the Russian Federation are not directly applicable and, accordingly, patentable objects created by students are not on-duty. An invention is not on-duty if the following conditions exist: it was created by the student as part of his participation in the educational organization's activities; there was no labour relationship between the parties.

However, there are cases when it is obvious that the relationship between the student and the educational organization is similar to the labour relationship, within the framework of which on-duty results of intellectual activity are created. For example, if the result of intellectual activity is created by a student: (1) using equipment, means of an educational organization; (2) on the instructions and under the supervision of employees, specialists of an educational organization; (3) in the framework of achieving the targets of the educational organization; (4) subject to other criteria determining the on-duty character of patentable objects.

As we see, the norms of modern law do not provide an answer to the question of how possible the application of the provisions on on-duty results of intellectual activity to the results, created by students, graduate students in the framework of the educational process. This circumstance indicates the need to resolve such legal relations.

4 Conclusion

The direct participants in relations related to the creation and (or) use of official results of intellectual activity are mainly persons with the legal status of an employee (official) and employer (hirer), as well as third parties. However, the rules of law on the subjects - participants of legal relations regarding the creation and use of the on-duty result of intellectual activity are not sufficiently developed.

On the side of the author of the on-duty result of intellectual activity, in addition to the "employee", an official and a student of an educational institution may act. Moreover, in the legislation of the Russian Federation, official are not directly indicated as the author of the service result of intellectual activity. It "understatement" should be eliminated by the legislator.


In the framework of civil regulation of on-duty results of intellectual activity, civil law and labour concepts are mixed, and, as a rule, priority is given to labour concepts. There is a need to amend the Civil Code of the Russian Federation regarding the consolidation of the subject composition of participants in legal relations regarding the on-duty result of intellectual activity, with a shift in emphasis to civil structures using inherent civil law terminology. Within the framework of such changes, the term "employee" should be replaced by "author" in the norms on official results of intellectual activity, and the term "employer" by "hirer", since this concept is seen more wide.

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Implementation and Realization of Technologies to Distributed Registers (Blockchain) and Smart-Contracts in Public Purchases

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Abstract. Purpose: The purpose of the chapter is to explore the possibilities of using technology of distributed registries (blockchain) and smart-contracts in public procurement for state and municipal needs. Advantages of blockchain technology and smart contracts, ways to overcome existing ones law enforcement issues in this sphere are analyzed. Also the purpose of the research is to assess the prospects for introducing blockchain technology and smart contracts into public law-enforcement practice, taking into account foreign experience and doctrinal studies in this sphere.

Design/methodology/approach: It is substantiated that the use of technology of distributed registries (blockchain) and smart-contracts in the field of public procurement will solve some problems of law enforcement, optimize the public procurement system, and stimulate the development of the economic sector. Ultimately, it will expand the scope of international trade with the participation of public-law entities as participants in foreign economic relations. Based on a materialistic world view, the authors implement a systematic approach to the research of the problem.

Findings: The authors came to the conclusion that a smart contract is a sui generis civil contract that combines two aspects: formal (technological) and substantive (legal). The use of blockchain technology and smart contracts in public (state and municipal) procurements will neutralize problematic aspects of law-enforcement and will contribute to the development of the national economy.

Originality/value: The main advantages of using smart-contracts in the sphere of state and municipal procurement will be to increase the efficiency of budget spending, stimulate competition by minimizing the possibility of unscrupulous participants in procedures and customers to enter into conspiracies, including the formation of cartels. In addition, the digitalization of the sphere of public procurement will serve as the basis for further internationalization of electronic procurement platforms through their mutual integration.

Keywords: Smart contract · Blockchain · Distributed registry · Public procurement · Electronic registration · International trade deals

JEL Code: K10 · K15 · K41 · O38 · L88

1 Introduction

Legal regulation of technology of distributed registries (blockchain) and smart-contracts is in its infancy not only in Russia but also abroad. In order to analyze such specific digital tools from a legal point of view, as well as to explore the possibility of using such tools in public (state and municipal) procurements, the authors turned not only to domestic legislation and doctrine, but also to foreign experience. In particular, normative documents and scientific publications in English and Italian were studied, since the European experience was interesting in this connection (using the example of the Italian Republic).

The logic of the research in this article is built from general to particular: in the first section, the authors turn to the analysis of the categories “blockchain” and “smart-contract”, evaluating them from a legal point of view. The second section is devoted to the study of the possibility of using technology of distributed registries (blockchain) and smart-contracts in such a specific sphere of public relations as public procurement.

2 Materials and Methods

In the course of the study of aspects, related to the legal regulation of public procurement in Russia and abroad, as well as the features and prerequisites for the introduction of separate digital instruments in the procedures of such procurement, regulatory legal acts and their projects were analyzed. The authors studied the provisions of the Digital Economy of the Russian Federation program, approved by Order of the Government of the Russian Federation of July 28, 2017 No. 1632-r (the order has expired); analyzed the provisions of the Cancun Declaration on the Digital Economy 2016, Communiqué of the Commission of the European Parliament on the effectiveness of public procurement, Federal Law of 05.04.2013 No. 44-FZ “On the contract system in the field of procurement of goods, works, services to meet state and municipal needs”, draft Federal Law No. 419059-7 “On Digital Financial Assets” dated January 25, 2018, Decree of the Government of the Russian Federation of September 30, 2014 No. 996 “On the distribution of powers between the Ministry of Economic Development of the Russian Federation and the Federal Treasury when creating a unified information system in the sphere of procurement”, Decree of the Government of the Russian Federation of January 23, 2015 No. 36 “On the procedure and terms for putting into operation a unified information system in the sphere of procurement”.

The scientific and theoretical basis was the research of foreign (Piselli P., Castrovinci Zenna S., Botto A., Di Guida GM, Naticchia B., Ciribini A.) scientists and Russian (Savelyev AI, Kharitonova Yu.S., Brykin K.I., Sergacheva O.A.) scientists.

Theoretical approaches to the legal nature of the blockchain were formed on the basis of A.I. Goncharov, A.O. Inshakova A.E. Kalinina; the nature of the smart contract was studied using Savelyev (2017), Di Guida et al. (2018), and other scientists.

The study of the possibility of using digital technologies in the sphere of state and municipal procurement was conducted taking into account Kutlina-Dimitrov (2018), Piselli (2018), Sergacheva (2017), Botto and Castrovinci-Zenna (2018), Brykin (2018), Kharitonova (2019).

The scientific development of the content of this chapter was carried out on the basis of the dialectical method: the study of the phenomenon in its evolutionary, dynamic development, using empirical description, classification, synthesis. The study also used special methods: dogmatic, comparative legal.

3 Results

3.1 Blockchain and Smart-Contracts: Legal Nature and Scientific and Theoretical Approaches in Russia and Abroad

Despite the fact that digitalization as a phenomenon over the past few years has been the subject of research not only of IT specialists, but also of legal scholars, the Russian legislator, and representatives of the scientific community have not yet developed a unified approach to understanding the essence and place in legal reality blockchain technologies in general, and smart contracts in particular (Kalinina et al. 2019).

Savelyev A.I. defines a blockchain as a decentralized distributed database (“accounting book”) about all confirmed transactions committed in relation to a specific asset, the operation of which is based on cryptographic algorithms. Touching upon the concept of a smart contract, the author writes: “the existence of an agreement on electronic interaction signed at the entrance to such a blockchain between the administrator and participants allows you to create legal conditions for qualifying records on the blockchain as an electronic document, valid evidence in the arbitration process, as well as qualify smart contracts signed under such an agreement as civil contracts signed with an enhanced unqualified signature. Such an agreement can be drawn up by participants with the administrator (operator) of the blockchain and be part of a more general agreement governing the rights and obligations of participants in the blockchain-project. In some cases, it can be qualified as a framework agreement. (Art. 429.1 of the Civil Code of Russian Federation)” (Savelyev 2017).

A smart-contract is defined as an agreement in the draft Federal Law “On Digital Financial Assets”, which states: “a smart-contract is an electronic agreement that fulfills rights and obligations under which it is carried out by automatically making digital transactions in a distributed registry of digital transactions in a strictly defined sequence and upon the occurrence of circumstances determined by him” (Draft Federal Law 2018).

An interesting point of view on the legal nature of a smart contract is Yu. S. Kharitonova. In her study, she emphasizes that a smart contract is a special case of the disposal of a digital asset, which includes the conclusion and fulfillment of an obligation; one of the options for a transaction as an operation in the blockchain

system. As the researcher notes, “it is incorrect to name smart contracts only as an electronic form of a contract. In this case, it should be precisely that the will of the parties to the agreement is expressed directly by drafting and executing a smart-contract. The execution of the contract is carried out not by a machine or code at its discretion, but strictly in accordance with those conditions that the parties determined by their will at the conclusion of the contract, and which the machine only monitors, based on the formalized nature of external circumstances (Inshakova et al. 2017). The will of the parties to the contract extends to the digital mechanism for the execution of the contract” (Kharitonova 2019).

A similar point of view is shared by some foreign researchers. So, it is noted that “a smart-contract as an information transaction is a written contract invested in computer code that can automate the fulfillment of obligations, like, for example, unlocking the payment of remuneration after checking the conditions digitized and recorded on the blockchain” (Di Guida et al. 2018).

In Italian law, in 2019, the definition of blockchain and smart contract was first enshrined. Item 1 of Article 8.3 of the Law of the Italian Republic of February 11, 2019 No. 12 (which introduced amendments and additions to the law-decree of December 14, 2018 No. 135) states: “technologies based on distributed registries are technologies and computer protocols that use a common distributed, replicated registry, accessible simultaneously, architecturally decentralized on a cryptographic basis, for example, to enable registration, verification, updating and archiving of data, both in open form and further protected by cryptography, verified by each participant, not subject to change”. In the same place, in item 2 of this article is fixed: “A smart-contract refers to a computer program that runs on technologies based on distributed ledgers, and the execution of which automatically connects two or more parties to the contract on the basis of predefined conditions. Smart-contracts are considered to be signed in writing subject to computer identification of interested parties through a procedure established by the Italian Digitalization Agency” (Legge 2019).

Thus, a smart-contract is a type of civil law contract *sui generis*, combining two aspects: formal (technical) and substantive (legal). Only with the simultaneous presence of these two aspects can we talk about the legal category of “smart- contract”.

3.2 Opportunities and Prospects for the Use of Blockchain Technology and Smart-Contracts in the Sphere of Public Procurement

A potentially effective area for the practical implementation and use of distributed registry’s technology (blockchain) is the provision of state and municipal needs, including when making purchases from foreign business entities. Currently, the Russian Federation is undergoing a full-scale reform of the public procurement system, focused on the gradual digitalization of this system (Baltutite and Davudov 2019). It seems that this kind of digitalization should be carried out in two key areas: (1) simplification of document’s circulation and increasing the effectiveness of internal control over the implementation of procurement procedures; (2) increasing the transparency of the process of satisfying state and municipal needs, developing external control over the system (in particular, public control over public procurement). Digitalization of

procurement processes in these areas is developing not only in Russia but also abroad (Sergacheva 2017).

The main problems of law-enforcement in the field of public procurement, which can be solved by using smart-contracts, include the following:

- (1) insufficient transparency of procurement procedures, leading to inappropriate and inefficient use of budget funds. “Transparency (openness) as a characteristic of the budget, which determines the level of “development of the budgetary and financial system as a whole”, is an important indicator not only within Russia, but also from the outside, since it is one of the most important factors in determining the investment attractiveness of the Russian economy for foreign assets” (Brykin 2018);
- (2) technical impossibility of the necessary level of control of authorized bodies (in particular, the Federal Antimonopoly Service of Russia, the Ministry of Finance of the Russian Federation) over the activities of state and municipal customers in order to ensure and protect competition.

Meanwhile, this area of activity is recognized as one of the priorities in the Protocol decision on the formation of competition policy in the CIS member states in the context of the development of the digital economy. The same document emphasizes that “the trend towards multinational corporations creating multilateral systems covering not only several markets in the traditional sense, but also several industries, its desire to form a colossal influence on the most sensitive spheres for the development of national welfare” necessitates the introduction of a digital tools to ensure and protect competition (Protocol decision 2018).

The need to use blockchain technology and smart contracts also becomes apparent when researching the features of public procurement from foreign companies, when concluding cross-border public contracts. As noted above, in the sphere of public procurement, including cross-border, smart-contracts can be used to achieve various targets.

In this connection, the point of view of Italian researchers in the sphere of digital procurement is interesting, highlighting the following advantages of using technology distributed registries in public procurement: “(1) anti-corruption through impossibility arbitrarily change data in the system and control distributed between all participants in the data chain for each stage of the procurement procedure; (2) elimination of “information asymmetry”, that is, equal access to information of both customers and business entities (in particular, information on economic analysis of the market, on evaluation criteria for procurement participants); (3) reducing bureaucratic costs, minimizing the ability of officials to abuse their position” (Botto and Castrovinci Zenna 2018).

If we talk about the substantive side of the smart-contract as a legal phenomenon in terms of its applicability to public procurement, it can be noted that the following is indicated in the specialized literature. “In the sphere of public procurement, a smart-contract is rather closely related to the category “cognitive procurement”, through which it is customary to define applications that perform functions that are usually performed by a person (supporting a procurement strategy, analyzing the reputation of suppliers, analyzing the text of a contract, compliance with compliance standards and

marketing principles of procurement)” (Piselli 2018). A smart contract should be understood as a computer program that allows you to execute and execute contracts in written (electronic) form automatically, by implementing an algorithm laid down in advance that is protected cryptographically from unintended intervention by third parties. It is possible to name a smart-contract as a contract, a contract in the civil law sense only if the unity of its form (software, technical component) and content (the content of the contract in the narrow legal sense) are indicated.

4 Conclusion

The introduction of smart contract technology will allow solving several problematic issues of state and municipal procurement, including when customers sign foreign-economic deals. Firstly, a significant increase in the efficiency of spending budgetary funds as a result of a technical limitation on the possibility of conspiracy of unscrupulous participants in procurement procedures among themselves (primarily in the form of digital cartels) and participants in procedures with customers. Secondly, reducing financial costs associated with the organization of procurement procedures, in particular, simplifying the procedure for obtaining a bank guarantee as a way to ensure the execution of the contract. Thirdly, with a sufficient degree of development of blockchain technology and the implementation of smart-contracts on an ongoing basis in practical activities, it will be possible to integrate the Russian Unified Information System in the sphere of procurement with similar systems from other countries, which in the future will serve as a sufficiently significant incentive for the development of the Russian economy by expanding the sphere of foreign economic activity.

The main advantages of using smart-contracts in the sphere of state and municipal procurement will be to increase the efficiency of budget spending, stimulate competition by minimizing the possibility of unscrupulous participants in procedures and customers to enter into conspiracies, including the formation of cartels. In addition, the digitalization of the sphere of public procurement will serve as the basis for further internationalization of electronic procurement platforms through their mutual integration. As rightly noted in the Review “Digital Agenda of the Eurasian Economic Union until 2025: Prospects and Recommendations” of the World Bank Group, “measures to simplify cross-border procurement, including the elimination of formal obstacles, launching a single electronic portal and switching to an electronic procurement format can provide overall economic growth exceeding 0.1% of the Eurasian Economic Union’s GDP by 2025”. The Union-level information system for cross-border electronic public procurement will enable the electronic filing of applications and auctions, as well as electronic billing and the exchange of electronic procurement’s documents between the government of one country and suppliers of another country. At the same time, the time and cost of public procurement are significantly reduced and the efficiency and transparency of decisions made on competitive procedures is increased (Eurasian Economic Union 2018).

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Experimental Legal Regimes (Regulatory Sandboxes): Theoretical Problems and Implementation Prospects in Modern Russia

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Abstract. The research objective is to study procedures of establishing experimental legal regimes in the Russian Federation.

The research methodology is based on applying formal logical methods, methods of systematic and structural analysis as well as comparative legal method, legal prediction and legal rule interpretation methods. The research is focused on legal experiment method applied by regulatory sandbox institutes in some modern countries including Russia. The research theoretical basis comprises well-known categories of legal science: “legal regime” and “legal experiment” receiving new interpretation due to introduction of the regulatory sandbox institute.

The research includes principles, objects, subjects, conditions, restrictions, types and phases of experimental legal regimes. Institutional bodies responsible for control and evaluation of experimental legal regimes have been studied. Arguments for termination of experimental legal regime implementation have been analyzed.

In conclusion, considering international experience the authors predict positive effect from implementing this legislative innovation able to provide quick checking of financial technology solutions and mitigate potential risks of their implementation.

Keywords: Experimental legal regimes · Regulatory sandboxes · Fintech · Digital economy · Digital innovation · Legal procedure · Legal experiment · Legal regime

JEL Code: K220 · K230

1 Introduction

In April 2019 the Ministry of Economic Development of the Russian Federation prepared the draft Federal Law “On Experimental Legal Regimes in Digital Innovation Field in the Russian Federation” (<https://regulation.gov.ru/projects#npa=90706>). This draft law is aimed at introducing “regulatory sandboxes” in the Russian Federation – special regimes that enable companies to test efficiency of innovative technologies in sales of their products and services without law violation risks. The Eurasian Economic

Union states have adopted the following definition of the term “regulatory sandbox” – a specially agreed regime of elaborating and piloting solutions including regulatory ones in order to identify an efficient model of collaboration and creation of business processes in any new area.

The Russian Federation is one of the few countries that have already launched regulatory sandboxes or are planning such launch. These experiments have been conducted since 2016 in Great Britain (Financial Conduct Authority 2017), Australia, Singapore, Indonesia, Malaysia (Vella 2017), Thailand (Kietduriyakul and Phongsathaporn 2016), Hong Kong (Hallatt et al. 2016) and the United Arab Emirates (Dostov et al. 2016). In 2018 the sandbox fintech was launched in Arizona (USA).

One of the factors defining the need to provide a legislative framework for regulatory sandboxes is the rapid development of the cryptocurrency market and digital economy in general. Thus, in order to build a competitive economy, the Russian Federation should create favorable conditions for fintech solution functioning.

2 Methodology

The research methodology is based on applying formal logical methods, methods of systematic and structural analysis as well as comparative legal method, legal prediction and legal rule interpretation methods. The research is focused on legal experiment method applied by regulatory sandbox institutes in some modern countries including Russia. The research theoretical basis comprises well-known categories of legal science: “legal regime” and “legal experiment” receiving new interpretation due to introduction of the regulatory sandbox institute.

3 Results

The term “legal regime” has been known in legal science for a long time and developed by many Russian researchers (S. S. Alexeyev, G. S. Belyayeva, V. A. Gorlenko, V. B. Isakov, A. V. Malko, N. I. Matuzov, L. A. Morozova, O. S. Rodionov, E. F. Shamsumova etc.). Legal regime (legal regulation regime) is normally defined as a special system of regulatory influence comprising specific methods of regulation – a special order of establishing and implementing rights and obligations – specific nature of sanctions and implementation methods, effect of uniform principles and general provisions (Alekseyev 1981). Legal regime is namely a special order of legal regulation put into effect due to specific motives and considering the distinctive character of a social situation, and not applied in the same form in any other fields. Its main distinctive features include obligatory regulatory framework; a specific aim; a special order of regulation; provision of favorable (unfavorable) conditions to comply with the legal subjects’ interests; systemic character; holistic character; a special structure. According to which legal means prevail in legal regimes, they can provide advantages for legal subjects or restrict their subjective rights and freedoms (Belyayeva 2012).

It is up for debate if the concept of legal regime includes, first of all, the standards establishing a special order of legal regulation or social interactions (the result of

putting these standards into practice). It seems that regarding experimental legal regimes this problem is solved unambiguously. The very concept of experiment suggests that new social interactions have not taken shape yet and the government is establishing some order of regulation for the first time defining a system of standards, principles and other regulatory means.

Experimental legal regimes covered in this article are related exclusively to the field of **digital innovation** defined by the draft federal law as a new tool supporting the use of digital processes, resources and services, or a new system of such tools including the ones based on big data technology, neurotechnology and artificial intelligence, distributed ledger technology, quantum technology, new production technology, industrial Internet, robotics and sensory components, wireless connection technology, virtual and augmented reality technology as well as other information technology or new application of an existing tool or an existing tool system. This definition reveals specific fields where an experimental regime can be implemented.

A distinctive feature of regulatory sandboxes compared to other legal regimes is the use of a **legal experiment**. In the literature it is commonly defined as a test of potential legislative innovation arranged by a competent law-making body in a restricted manner in order to evaluate efficiency, benefits and cost effectiveness of experimental legal standards and to fine-tune optimal variants of the future law-making decisions of general application. The reasons for conducting a legal experiment are 1) competition among various regulation models for new social interactions, and 2) the urge to demonstrate feasibility of a new regulation option for existing interactions to the society. Besides, there are situational factors that can become a reason to implement experimental legal regulation. Experts classify a challenging investment situation requiring bolder law-making decisions as such a factor. It is understood that one of the legal experiment types aimed at improving investment environment may be not only experimental implementation of new legal regulation but also rejection of legal regulation in the corresponding field and shift to self-regulation of business entities (Sivitsky and Sorokin 2016).

We shall analyze how the authors of the legislative initiative see conducting a legal experiment in the digital innovation field.

According to the draft federal law, the **principles** of establishing and implementing experimental legal regimes in the digital innovation field are transparency of the regime establishment and implementation; equality of candidates for status of the regime subjects; clearness of experimental legal regimes; voluntary nature; target orientation; flexibility; reasonable mitigation of deviations from the existing legal regulation; compliance of the experimental legal regime with the sources of law of supreme legal force; risk mitigation for consumers with establishing and implementing an experimental legal regime; legitimation of activities (actions) related to the experimental legal regime.

The **object** of this regime is a certain kind of activity that includes the use (potential use) of digital innovation. Meanwhile, objects of experimental legal regimes *cannot be*:

- activities involving federal executive bodies responsible for defense, security, internal affairs, foreign affairs, emergency prevention, disaster control, military

activity of the Russian Federation National Guard (however, a decree by the President of the Russian Federation can make exceptions);

- activities involving execution of criminal sentences and enforcement of other criminal law measures;
- activities involving legal proceedings;
- activities involving Class I dangerous production sites according to industrial safety legislation;
- other activities.

The **subjects** of experimental legal regimes can be legal entities, individual entrepreneurs, sector-specific or functional executive bodies, sector-specific or functional local administration bodies. In addition, the subject must be registered as a legal entity or an individual entrepreneur, not undergo liquidation or bankruptcy; the subject's activities must not be suspended for an administrative offence in recent two years prior to establishing the experimental legal regime. Besides, there must be no delinquent taxes or fees, any other obligatory outstanding payments; an individual entrepreneur or legal entity manager must not have an unexpunged or unspent conviction.

The lawmaker also determines the **conditions** that allow to establish an experimental legal regime.

- (1) There is no legal regulation for use of digital innovation; or there are obstacles (restrictions, conditions, other burdens) in the legal regulation to use the digital innovation;
- (2) The experimental legal regime object in the field of digital innovation complies with the abovementioned requirements;
- (3) The object has potential benefits including introduction of new kinds of economic activity, expansion of range and quality of goods, works and services, business profit increase and business cost reduction, state or local government efficiency improvement including provision of state or municipal services;
- (4) This beneficial effect is reproducible, i.e. it can be achieved by other subjects;
- (5) The digital innovation is ready to use;
- (6) Establishment of the experimental legal regime will comply with the statutory goals;
- (7) The potential experimental legal regime is not covered by the following restrictions:
 - (a) A regime must not involve easing the requirements related to legalization prevention for profits obtained by criminal means, to actions against terrorism financing, to provision of conditions for law enforcement intelligence operations, crime investigation and prevention;
 - (b) The experimental regime establishment cannot be applied to change terms of taxation or collection of other obligatory statutory payments. Additional restrictions can also be introduced.

An experimental legal regime can be of the following **types**:

- (1) *Trial experimental legal regime* – establishment of legal regulation for social interactions using digital technology (if such regulation does not exist).

- 2) *Alternative experimental legal regime* – renouncement of applying the obstacles established by law (restrictions, conditions, other burdens) for the use of digital technology or introduction of new rules instead of existing ones.

In addition, experimental legal regimes can be *individual* regimes (approved by antitrust authorities), *group* regimes (involving a number of experimental legal regime subjects) and *critical* regimes (defined on the basis of official criteria).

Implementation of experimental legal regimes is provided by four **authorities**.

- (1) *Authority responsible for experimental legal regimes*. One or more such authorities are established by the Government of the Russian Federation. A federal law or a decree of the President of the Russian Federation creates a legal entity under public law with functions and powers of statutory nature in the field of experimental legal regimes excluding financial markets.
- (2) *Organization representing the business community on experimental legal regime issues*. Such an organization is also defined or created by the Government of the Russian Federation and does not relate to financial markets.
- (3) *Regulator* – a federal executive body with functions of state policy development and legal regulation in the field where the experimental legal regime is initiated, established and implemented.
- (4) *Central Bank of the Russian Federation*. Although the Bank of Russia is not specified as a separate sandbox regulator in the draft law, the subjects' powers suggest that if the digital innovation is related to financial markets then the powers to provide its implementation within an experimental legal regime belong exclusively to the Central Bank of the Russian Federation.

It is worth mentioning that experimental legal regulation is already being implemented by the Central Bank within the Bank of Russia “Regulatory Platform” proposed in December 2017 and launched in April 2018. Implementation of innovative technology on this platform differs from the more detailed process provided by the draft law. It is currently taking place in two forms – *testing* and *limited regulatory experiment*. Testing involves simulation of the targeted process of applying innovative financial technology or service in the testing environment without risks for consumers. A limited regulatory experiment involves implementation of the targeted process of applying innovative financial technology or service under real-life conditions on a limited territory under control of the Bank of Russia, including in collaboration with interested federal executive bodies. Moreover, the second form is not applied until the Bank of Russia and separate federal executive bodies are not granted statutory powers to implement such experiments (The Central Bank of the Russian Federation 2017).

The literature highlights that development of a regulatory solution in the sandbox (applicable to the Bank of Russia regulatory platforms) includes lawmaking stages completely different from traditional ones (Andronova and Tarasenko 2018). Meanwhile, regulatory solution development and traditional lawmaking are essentially different phenomena. Implementation of innovative technology during an experiment represents simulation and evaluation of social interactions that later may become an object of lawmaking.

The procedure of experimental legal regime establishment includes the following **stages**: *proposal submission*, *proposal review* and *decision making*. The **implementation period** for the experimental legal regime must not exceed three years. The draft federal law also provides the possibility to join an experimental regime that is already being implemented. **Termination of participation** in an experimental legal regime in the field of digital innovations is possible both *upon its expiry* and *prematurely* in the cases provided by legislation. It is acceptable to **suspend** the regime for 1–3 months.

A legal act establishing an experimental legal regime is the program including descriptive and informative parts. Such a program can be changed by a regulatory body or the regulatory sandbox subject.

Experimental legal regime **implementation monitoring** is a system of observations conducted on a regular basis by collecting, summarizing, systemizing and evaluating information on the program implementation and experimental legal regime protocols. During the last 2 months of experimental legal regime implementation (1 month if the period of the regime is less than 1 year) its results are **evaluated** and based on the evaluation a competent authority may make one of the following decisions no later than 10 days before the experimental legal regime expiry:

- (1) It is recommended to make the experimental legal regime generally effective;
- (2) It is recommended to make the experimental legal regime generally effective on condition of making some changes;
- (3) It is not feasible to make the experimental legal regime generally effective (in case of a trial experimental legal regime it should be mentioned that no legal regulation in this field is feasible).

From the theoretical point of view, experimental legal regime implementation is characterized by all features of a legal procedure (Makarov 2017). The regime implementation bears official character and is aimed at achieving a legal result – the goals specified in the draft law. Meanwhile, the procedure consists of subsequent acts of behavior that have been officially pre-defined: proposal submission, proposal review, decision making regarding the experimental legal regime establishment, implementation monitoring, result evaluation, termination and adoption of a regulatory decision. Regime implementation is built hierarchically which means that each procedural decision provides implementation of another one. In addition, an experimental regime including a set of standards is dynamic. Moreover, each experimental regime established for a new participant is unique, thus social interactions are dynamic, constantly changing.

G. S. Belyayeva point out that one of the features of a legal regime is a special order of regulation. It represents specific combination of legal means and methods: permissibilities and prohibitions, obligations and recommendations, stimuli and restrictions etc. (Belyayeva 2012) Regulatory sandboxes as a specific type of regimes are characterized by prevalence of permissibilities (or rejection of legal regulation of some interactions). This combination results in benefits for the subjects of law, unlike legal regimes prevailed by prohibitive measures. Meanwhile, this regime is experimental/trial which suggests restriction in terms of the *object* and *period of validity*. If either condition is absent the legal regime cannot be experimental. Besides, the Russian legislation adds specific conditions defining the possibility to conduct an

experiment with regard to certain social interactions in addition to the conditions mentioned above.

4 Conclusion

Regulatory sandboxes have not gained their own status in the Russian Federation so far because the studied features of the regime are only reflected in the draft law. In fact, the Bank of Russia has implemented several projects, though by means of testing only (without conducting an experiment). Therefore, there are no statistic data that could be analyzed to determine efficiency of experimental legal regime establishment in the Russian Federation. Nevertheless, we can preliminarily predict a positive effect from providing a legislative framework for such regimes in Russia.

Firstly, the possibility to check rapidly emerging fintech solutions today is an important element in building digital economy.

Secondly, international experience demonstrates viability of similar regimes. For instance, after 1 year of implementing sandboxes in Great Britain 75% of firms completed the testing successfully. Around 90% of the firms that had completed the testing in the first group went on with expanded entry into the market after their testing. Most firms that had obtained a restricted permission for their test achieved a full permission after completion of their tests (Financial Conduct Authority 2017).

Thirdly, analysis of the draft law text enables us to make a conclusion that experimental legal regime mechanism is aimed at mitigation of potential risks in sandbox functioning. Such risks include (a) violation of competition principles driven by uncertainty of selection criteria and lack of transparency; (b) limited capability of the regulator to evaluate the technology behind the innovation; (c) infliction of harm on clients and other market participants as a result of failed testing; (d) threat to the regulator's reputation and loss of clients' trust to the financial system as a result of making wrong decisions (Jenik and Lauer 2017). The suggested mechanism provides participation of an antitrust authority as well as publication of the most information in the Internet which ensures transparency. Participation of several subjects in the regime implementation allows to conduct comprehensive evaluation of the projects. In addition, the experimental regime mechanism contains a certain list of conditions and restrictions aimed at prevention of harm towards individuals not participating in the experiment.

Obviously, no measures can fully guarantee success of an experiment. French researchers relying on significant empiric material (legal experiment obtained constitutional recognition in France in 2003) identify such inevitable side effects of this legal regulation method as discrimination and decline of authority prestige (Sivitsky and Sorokin 2016). Nevertheless, in facing completely new technology solutions the government has to be bold enough to experiment to avoid hitting rock bottom of digital revolution.




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Obligations in the Field of E-Commerce

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Abstract. Purpose: The purpose of the article is to show that the expansion of the scope of commercial activity on the Internet does not cause an urgent need to change the current civil legislation in the field of liability law and Supplement with new legal institutions.

Design/methodology/approach: The concept of “Commerce” covers, including trade relations arising through the Internet. In the legal literature, there is an opinion of scientists that the peculiarity of the obligations associated with the promotion of goods to the market causes difficulties in the legal regulation of such obligations. This provision arouses interest in studying the validity of this statement.

Findings: On the basis of the existing judicial practice, the article shows that the expansion of the scope of commercial activity on the Internet does not cause an urgent need to change the existing civil legislation in the field of obligation law and Supplement it with new legal institutions.

Originality/value: It is concluded that despite the existing features of the emergence and performance of obligations arising on the Internet to conclude that these obligations are special and occupy their own place among civil obligations, it would be incorrect.

Keywords: Commerce · e-Commerce · Obligation · Obligations arising on the Internet · The conclusion of a contract on the Internet · Internet law

JEL Code: O17

1 Introduction

The terms “commerce” or “commercial activities” are very common and are used as synonyms. In the legal literature, these terms are used to denote a particular type of human activity. Commercial activity, commerce (from the Latin. “Commercium” - trade) - this is a type of entrepreneurial, economic, economic activity related to trade, turnover. In a broad sense, commercial activity is an activity related to commodity circulation, that is, activity to complete transactions of turnover of civil rights objects acting as goods.

It is well known that the sphere of the goods traffic is the market. From an economic point of view, the market is any institution or mechanism that brings together

buyers and sellers of a particular product or service. The market is also understood as “a system of socio-economic and legal relations arising in connection with the acquisition of civil rights objects ...” (Shandra 2018). Traditionally, such relations arise between its participants (between merchants/merchants and consumers) in reality and are formed as civil law. Accordingly, the regulation of these relations is carried out by all legal means of civil regulation.

However, it should be noted that commerce is heterogeneous and with the development of the economy and the intensification of innovative activities, the scope of the commercial activity itself has expanded. L. V. Andreeva notes that “innovation activity is aimed at transforming the results of intellectual activity - inventions, industrial designs, utility models, know-how into products and their subsequent implementation. In the process of innovation, its necessary stages include the formation of the concept of a new product, positioning a sample of a new product at exhibitions, advertising, launching a new product on the market” (Andreeva 2014). Moreover, the subjective composition of those participating in commerce has expanded. For example, the participation of state corporations became possible in commerce (Agnessa et al. 2019). In addition, with the development of the global Internet, commerce participants began to make transactions regarding the information contained on electric information carrier and receiving information services and data, etc. Information and information services themselves began to be considered as goods of a special kind, and alternative payment electronic means began to be used as means of payment., which is subject to the category of goods, which entailed the expansion of the market itself, i.e., the scope of commodity circulation, and the complication of legal relations. These changes caused the emergence of commerce on the Internet - e-Commerce.

The term “e-Commerce” is most often used to refer to business activities related to the turnover of civil rights objects on the Internet. A. I. Saveliev writes: “e-Commerce is a set of relations arising in connection with transactions through the Internet, as well as in the promotion of goods, works, services and other civil rights objects on the Internet” (Savelyev 2016a, b). E-Commerce is also defined as an economic activity whereby a person remotely and through electronic communication channels offers to acquire or confirms intentions to acquire goods and services (Vasilyeva 2006).

At the same time, it is noted in scientific circles that there are currently problems in the legal regulation of e-Commerce relations. So, it is noted that Russian legislation governing relations on the Internet is at an early stage of development; it is said that there is no effective regulatory framework in this area (Glushkov 2007). At the same time, difficulties are noted in the contractual regulation of the obligatory sphere of commerce carried out on the Internet. For example, A. Abdulilov notes that “the technological features of the virtual environment, the electronic form of contracts complicate the application of the classical provisions of contract law to them” (Abdulilov 2016). Others note the inadequacy of the traditional provisions of Russian contract law in legal regulation, and sometimes the lack of a properly developed system of norms. An example is the scope of concluding so-called “smart contracts” (Savelyev 2016, b).

At the same time, the categorical nature of such remarks does not seem to be so substantiated. It should be said that any activity related to the transfer of property from one person to another (including commercial) becomes the subject of regulation by the

rules of law of obligations. And the civil contract is the organizing basis for such activities to fulfill the “mortgaged” obligations in it (Demin 2014).

2 Material and Method

The methodological basis of the study is the formal logical method, the technical and legal method that determined the interpretation of the norms of law and legal modeling. When analyzing the legal relationship, a systematic approach was used, which is a general scientific method of cognition.

3 Result

Traditionally, an obligation is understood as “such a legal relationship from which one person’s right to a certain act of another certain person is discovered” (Shershenevich 2001). I. A. Pokrovsky wrote in relation to the content of the obligation: “If property rights are forms of legal relations to things, then an obligation is a form of legal, private-law relations of individuals to individuals” (Pokrovsky 2009). O. S. Joffe, emphasized that “... if the economic essence of the property right is that it acts as the right of appropriation, then the obligation relationship in its economic content acts as a way of moving this property.” Obligations, - noted O. S. Joffe, “mediate the process of moving property or other results of labor, also of a property nature. Therefore, they always act as property civil relations” (Ioffe 2004). E. A. Sukhanov, supporting O. S. Joffe on the nature of obligations, notes that “the rules of law of obligations formulate the process of transfer of property benefits from one person to another person, i.e. the dynamics of civil law relations” (Sukhanov 2006).

Under current Russian law, an obligation is understood to mean the performance by one person (debtor) in favor of another person (creditor) of a certain action, for example: transfer of property, performance of work, provision of services, contribution to joint activities, payment of money, etc., or abstinence from a specific action, and the creditor, in turn, has the right to demand that the debtor fulfill his obligation (Article 307 of the Civil Code of the Russian Federation). Thus, the obligation represents a certain legal relationship between the individual entities. And it should be noted that “civil law regulation is aimed at streamlining the actions of entities that transform the surrounding reality, and any action performed in relation to social benefits leaves a mark in the social sphere. If such an action is governed by civil law, the trace is in the nature of civil law consequences” (Chegovadze 2012). Hence the fulfillment of an obligation, that is, the execution of actions conceived by the parties, leads to the transfer of property benefits from one person to another. At the same time, no one doubts that all relations arising through the use of the Internet related to goods exchange also develop as obligatory legal relations and are regulated in the same way, i.e., by the same regulatory structures used to regulate traditional obligatory relations.

The conclusion is confirmed by law enforcement practice. So, in one of the cases, a citizen placed an order for the purchase of goods and transferred a certain amount of money through an electronic payment system from his electronic wallet to the

electronic wallet of the seller. In connection with the seller's non-fulfillment of the obligation to transfer the purchased goods, the citizen went to court to recover the amount of electronic payment paid. Considering the dispute, the court proceeded from the fact that between the parties there were obligatory legal relations for retail sale with a remote way of acquiring goods. Moreover, the buyer requested that the paid electronic money be returned in a different (non-cash) form, since the electronic payment system has difficulty withdrawing funds from the electronic wallet. However, the court refused to satisfy this requirement, because, as the court indicated, the buyer, voluntarily joining this system, agreed to the settlement in this way (decision of the Balashikha city court of the Moscow region of 17.10.2018 in case No. 2-5356/2018) Thus, the court applied the existing regulatory structures for legal regulation of obligations arising from the retail sale contract to resolve the dispute. And as you can see, the court recognized the acceptable form of the goods turnover chosen by the parties, the procedure for fulfilling the obligation and the method of making settlements between the parties.

Another area of obligations legal regulation in the field of commerce is the legal regulation of "smart contracts". In the legal literature it is noted that at present it is necessary to adjust both the theory and civil regulation of obligations arising from smart contracts. It is said that "changes will be required in the Civil Code regarding the definition of automated contracts as a form of fulfillment of an obligation. Such contracts are concluded, for example, in the digital market when conducting algorithmic trading" (Vaypan, 2017).

The concept of a smart contract in the legal literature has not been established. Smart contracts usually mean a contract that exists in the form of program code that ensures the autonomy and self-fulfillment of the terms of such a contract upon the occurrence of circumstances predetermined therein. ... they can not only be concluded without human intervention, but also executed without human intervention (Savelyev 2016a, b). "A smart contract is an algorithm designed to automate the process of executing contracts. ... this is a set of rules and a sequence of actions for execution" (Osmolovskaya, 2018). And it is noted that "volitional activity is absent in smart contracts at the execution stage, and at the time of conclusion of the contract, you actually agree that its execution will occur automatically and that nothing will depend on you" (Bagaev 2018). It is also said that the regulation of relations between the parties within the framework of a smart contract is largely ensured by a fundamentally different regulator - program code that is self-sufficient and autonomous in relation to law and, strictly speaking, does not need the latter for its successful existence (Savelyev 2017). The concept of a smart contract is proposed to be introduced into federal Russian legislation. So, in the Draft Federal Law "On Digital Financial Assets" (prepared by the Ministry of Finance of Russia) under a smart contract it is proposed to understand an agreement in electronic form, the fulfillment of rights and obligations under which is carried out by automatically performing digital transactions in a distributed register of digital transactions in a strictly defined such a contract of succession and upon the occurrence of the circumstances determined by it.

As an example of the scope of application of smart contracts, the sphere of cargo transportation is given where automated tracking of goods becomes available,

verification of goods, issuance of permits for the import or export of goods, etc.; or purchasing goods remotely, where the receipt of the necessary goods, its shipment, automatic debit of the buyer's funds are automatically tracked (Savelyev 2016a, b). At the same time, it is overlooked that the fulfillment of the obligation under a smart contract is ultimately carried out by a specific business entity in favor of a particular person. The program itself performs the operation, that is, only that which is previously determined by these participants in the goods turnover, and cannot "make" a decision contrary to the attitudes (expressed will) of these persons. In addition, it is worth noting that in the fulfillment of the obligation no other executor appears and the norms on the fulfillment of the obligation by a third party are not applicable in this case (Article 313 of the Civil Code of the Russian Federation).

Of course, it must be assumed that actions can be carried out through the "participation" of a program. For example, advertising on predefined Internet sites (sites) can occur automatically, without the intervention of a specific subject. However, this will only happen to the extent that there is the will of a particular business entity that determines the amount of advertising, the duration of the advertisement, the cost of the advertisement. And in case of loss of interest in such activities, the program can be disabled or deleted. Or, for example, a bank transfer is also performed using a computer program. But this is precisely because the bank itself allowed the computer to perform such operations. In this case, the statement that "in a smart contract" is important is the behavior of the computer, and not the behavior of the debtor, which is the core of the concept of "obligation" (Savelyev 2016a, b). It cannot be said that the technical characteristics of a particular equipment or program determine or establish specific conditions of the contract.

Moreover, it is worth noting that for the fulfillment of ordinary civil obligations, the actual completion of actions is often sufficient, for example, transfer of property, performance of work, provision of services, etc. A feature of the fulfillment of obligations in the field of commerce is their mandatory support with primary accounting documents, based on the requirements of Article 7 of Federal Law dated 06.12.2011 No. 402-ФЗ "On Accounting". This article indicates that each fact of economic life is subject to registration by the primary accounting document. In this regard, it seems that the field of electronic commerce is no exception and any actions related to the fulfillment of obligations are included in the economic life of the subject of commercial activity and are subject to accounting with the obligatory execution of primary accounting documents. This is fully impossible without the participation of a specific business entity and the program code cannot replace the concept of the subject or party to the obligation.

4 Conclusion

We can conclude that the expansion of the scope of commercial activities on the Internet did not cause an urgent need to change civil law in the field of law of obligations. Of course, obligations in the field of electronic commerce have their own characteristics, however, to conclude that these obligations are special and occupy their own place among civil law obligations would be incorrect.

Moreover, obligations in the field of electronic commerce are subject to regulation by the same legal structures that are used to regulate commercial activities carried out outside the Internet. The effectiveness of legal regulation in this case often depends not on the improvement of civil legislation, but on its adaptation by the law enforcer. In addition, the views of those lawyers who believe that there is a need to redraw the theory of obligations in connection with the development of innovative technologies and focusing attention on the legal impact on the “behavior” of computer or software, and not the subject of commercial relations, seem erroneous.

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To the Problem of Tourism Resources Systematization in the Context of the Digital Economy Development: Legal and Economic Aspect

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Abstract. Purpose: The purpose of our article is to disclose the content of the established practice of legal regulation and systematization of tourism in the aspect of tourism resources at the federal and regional levels, as well as to identify the specifics of the system of information forms and means of developing the tourism industry in the Russian Federation.

Design/methodology/approach: To achieve this goal, the following methods were used in the work: dialectical, comparative analysis, comparative legal, formal legal, system analysis. Researchers analyzed regulatory documents governing the forms and methods of registry systematization in tourism. Initially, normative legal acts of a general nature were examined, on the basis of which conclusions were drawn about the qualitative features and formal functions of federal and regional public registers in the field of tourism in the Russian Federation. After that, an analysis was made of the priority information mechanisms for the development of the tourism industry. Based on a comparative analysis, a comparison was made of the nature and content of tourist information registries as special means of regulating tourism activities.

Findings: As part of the disclosure of the specifics of the system of information forms and means of developing the tourism industry in the Russian Federation, formed in the course of solving the priority tasks of tourism policy, the current state of the information accounting system in tourism, the specifics of legal regulation of the systematization activities of subjects of relations in the field of tourism, the main legal methods and means of regulation are determined and their legal nature, the subjects of registry activity in the tourism sector are identified, which form and implement the relevant information legal policy. The essence was revealed and the main forms of systematic registry activity in tourism were determined, and the content of developing tools for electronic information support of tourist relations was also disclosed.

Originality/value: Researchers identified priority areas of regulation and mechanisms for the development of systematic activities in tourism based on the analysis of registry practices in the field of tourism in the Russian Federation and the use of special tools for electronic information support of tourist relations. The purpose, tasks and subjects of the formation and maintenance of federal public-law registries in the tourism industry are disclosed. In addition,

the characteristic of private law forms and methods of the electronic information support system in tourism was presented, proposals were made on the nature and future directions of its modernization.

Keywords: Legal regulation in tourism · Systematization in tourism · Register activity in tourism · Tourist cadastres · Tourist registers

JEL Code: K15 · K23 · Z30 · Z32 · Z38

1 Introduction

The digitalization of the economy and the social sphere has had a significant impact on the tourism business. The role of tourism in the global economy is growing steadily. The modern tourism industry is one of the most highly profitable industries in the global economy. Acting as one of the most dynamically developing systemic inter-industry phenomenon, tourism, like no other field of activity, combines the developing digitalization tools (Inshakova et al. 2019).

In the context of solving macroeconomic problems in tourism, various extremely wide information resources are needed. It is in this regard that in the struggle for leadership in the tourism market, the state acts as one of the participants in the relationship, directing its attention to accounting and systematization, as well as the dissemination of information and the popularization of tourism resources.

It must be borne in mind that each of the tasks of systematic practice has a specific and well-defined goal. In particular, accounting and registry activities, as integral types of systematization, allow not only to provide statistical accounting of the state of the tourism industry and the nature of the use of resources. They are the basis for choosing a strategy, as well as developing programs for the development of the tourism industry as a whole. Equally productively they can be used with the same goals at the microeconomic level, when choosing a marketing strategy for a tourism company.

2 Materials and Method

Currently, in the context of growing competition in the tourism market, issues of effective accounting in the tourism sector are being updated in the aspect of promoting destinations and tourist products (Arenasa et al. 2019; Deng et al. 2019; Lebedeva et al. 2018). Researchers are particularly interested in the role of registry activities in the development of tourism in specific regions, as well as in the formation of conditions for sustainable tourism development (Kušen 2017; Bydłosz et al. 2018; Erislan 2016).

In addition, the essence of the registry activity, in the consideration of which, scientists often limit the research field to the status of the material object of the systematization of tourist resources, remains debatable. So, according to V. B. Zharnikov and A. V. Koneva. The main goal of registry practice in tourism activities is identical to the goals of cadastral registration of objects and patterns of ownership. This restrictive approach is clearly influenced by the research field of tourist and recreational geography (Zharnikov and Koneva 2017).

3 Results

Before proceeding to the discussion of the topic, it is necessary to specify the subject of research.

Tourism policy as a complex of various types of power practice, determined by the potential of tourist territories, clearly implies the use of a resource base systematized in the form of accounting. If in world practice at the state level an appropriate legal regime has been defined for systematizing tourist resources, in Russia this issue does not find proper implementation in state and municipal practice. We believe that the main factor complicating the process of a single registry activity is the lack of development and the generally unsystematic nature of the legal regulation of registry activity in Russia in the field of tourism. An exception is the declarative definition of tourism resources provided in the sectoral law (Federal Law of 24 November 1996 N 132- FZ «Concerning the Fundamental Principles of Tourist Activities in the Russian Federation»: art. 1).

Primary registry activity is carried out in Russia in the form determined by the need to ensure the preservation of historical, cultural and environmental resources. The regime for the protection of natural tourism resources is established by federal law (Federal law of 14 March 1995 N 33-FZ «Concerning Specially Protected Natural Areas»; Federal law of 10 January 2002 N 7-FZ «Concerning the Protection of the Environment»; Federal law of 23 February 1995 N 26-FZ «On Natural Health Resources, Medical-Recreational Areas and Resorts»).

The protection of cultural monuments is regulated by the norms of a special federal law (Federal law of 25 June 2002 N 73-FZ «On cultural heritage (monuments of history and culture of the peoples of the Russian Federation»)). It should be noted that the first edition of this law already included a short story, according to which the institute of the Unified State Register of Cultural Heritage of the Peoples of the Russian Federation was introduced into special accounting practice. According to Art. 15, this registry was created and functions as an information system that provides information and technological interaction of information systems used to provide state and municipal services in electronic form. Information on cultural heritage sites and their territories, contained in the register, is aimed at solving two key tasks: (a) popularizing the cultural and historical heritage of the Russian Federation, as well as ensuring the availability of information about objects; (b) information support for the protection and preservation of cultural heritage objects. Obviously, the solution to the first problem directly relates to tourism. In this regard, it should be noted that due to the functioning of the Unified Register of Cultural Heritage Sites in a special digital mode (Information from the Unified State Register 2019), the information available in open data not only simplifies touring, but also increases the interest of amateur tourists in the regions of the country.

Turning to the analysis of systematization practices in tourism, first of all, we should turn to basic public registers.

A special place in the registry practice has the registration of subjects of tourist activity. In connection with the deep differentiation of tour operator activities by direction and type of tourism, the systematization of data on tour operators is carried out both at the federal and regional levels. Moreover, in the first case, the registers act as a system of the mechanism of legal regulation of tourism activities and are purely

imperative. In the second, register accounting is carried out at the initiative of the executive authorities of the constituent entities of the Russian Federation and is aimed exclusively at solving economic problems in the field of regional tourism development. Let us dwell on some examples of federal registers.

To ensure legal control over the activities of tour operators, a new special legal instrument, the Unified Federal Register of Tour Operators, was put into effect on 5 February 2007, the Federal Law «On the Basics of Tourist Activities in the Russian Federation». Register practice on the Unified Federal Register of Tour Operators entrusted to Rostourism (Order of the Federal Tourism Agency of 01 January 2019 N 2-Pr-19 «On approval of the Administrative regulation for the provision by the Federal Agency for Tourism of the state service for the formation and maintenance of a unified federal register of tour operators»).

Information transferred to the register and provided in the form of public services allows subjects of tourist relations to avoid potential property, moral and physical risks. In connection with the above, it should be noted that the register of tour operators posted on the Association of Outbound Tourism Operators Association «Association of Tour» is of no less importance for all participants in tourist relations. As the Unified Federal Register of Tour Operators, the register of the Association «Association of Tour» performs the role of one of the most important imperative means of legal regulation of tourism activities (Federal law N 132-ФЗ, 1996). Similar tasks are solved on the website of the Association of Tour Operators in the Field of Outbound Tourism «Association of Tour» of the register of travel agencies (Regulations on the procedure for the formation and maintenance of information on Travel Agents (Register) by Association of Tour Operators in Outbound Tourism «TourAssist»).

The analyzed federal registry practice in tourism is exclusively mandatory and is aimed at ensuring security and protecting the interests of consumers and participants in tourist relations. However, the formation of federal registers of subjects of tourism activity represents only part of the system of electronic information accounting in tourism being created in Russia.

So, to protect the commercial and consumer interests of participants in tourist relations, the Ministry of Culture of the Russian Federation put in place a specialized portal (Specialized portal 2019). The main content of this site includes the electronic form of a single information window of the Federal List of Classified Hotels and Other Accommodation Facilities, ski slopes and beaches, accredited organizations and accreditation bodies in the constituent entities of the Russian Federation.

The main area of focus and form of comprehensive work on the systematization of tourist resources has been expressed in the creation by Rostourism of an automated information system of integrated support for the development of domestic and inbound tourism in the Russian Federation since 2013 (automated information system «Tourism») (The government regulation of the RF of 02 August 2011 N 644 (last updated 18.12.2014) «About the federal target program «Development of domestic and inbound tourism in the Russian Federation (2011–2018 годы)»)). One of the objectives of the system is the consolidation (integration) of industry information resources on the Internet and the creation of a national tourism portal. The automated information system «Tourism» was developed to solve it «National Tourism Portal Russia.travel» (Russia.travel 2019).

According to the Regulation on the subsystem AIS «Tourism» «National Tourism Portal», it is an information and service multimedia centralized Internet resource aimed primarily at ensuring access for all interested parties to information on tourist resources and the tourism industry of the Russian Federation (Order of the Federal Tourism Agency N 159-Pr-15 of 15 April 2015 on approval of the Regulation of the subsystem AIS «Tourism» «National Tourism Portal»).

It is important to note that in recent years specialized digital accounting resources have also been created. So, on the instructions of the coordinating council of the Federal Program for the Development of Domestic and Inbound Tourism, a portal was created - «Unified Tourist Passport» (Unified Tourist Passport 2019). This project is a consolidated electronic database of tourism resources and tourism industry facilities of the constituent entities of the Russian Federation. According to the main objectives of the project, its thematic structure was formed: statistical data; informational data; descriptive data; marketing information. In addition, tourist information is divided into special blocks according to the nature (goals) of consumers.

The global information resource, combining public and private participants in tourist relations, is the «Tourist Information Exchange System» (TIES). The system was created to combine the efforts of authorities and public organizations and businesses in the promotion and sale of tourism products of regions in the domestic and international tourism market (Tourism Information Exchange System 2019). In this regard, TIES participants are tourist information centers, hotels, travel companies, executive authorities, event organizers.

A systematic analysis of the volume and quality of tourist resources of the Russian Federation and registry activity at the federal level seems to us to be the final stage in the formation of registries in Russia. Its foundation should be the register of tourist resources of individual constituent entities of the Russian Federation.

The relevance of creating a register of tourist resources at the level of subjects, in our opinion, is confirmed by the vastness and species diversity of tourist resources of the regions (Unified Tourist Passport «Volgograd Region» 2019). In particular, the need to create registers of tourist resources of the Volgograd region is reflected in the declarative norms of a number of legal acts. So, in the state program «Tourism Development in the Volgograd Region» for the period 2019–2025, approved in 2019, it contains a list of a number of an informational and systematic nature events (Resolution of the Administration of Volgograd Region of 09 April 2019 № 168-p «On the adoption of the state program of the Volgograd region «Development of tourism in the Volgograd region»»).

At the moment, according to Art. 5 of the current law of the Volgograd region «On the development of tourism in the Volgograd region» to the authority of the executive authorities of the Volgograd region as part of the systematization of tourism include: participation in the tourism information support and establishing a procedure for the formation and maintenance of a register of tourist resources located in the Volgograd region (Law of the Volgograd region № 90-OD of 16 July 2018 «On the development of tourism in the Volgograd region»).

The executive authority in the field of tourism in the Volgograd region has identified the relevant profile Committee for the Development of Tourism. Obviously, to implement the norms of Art. 5 of the Law of the Volgograd Region «On the Development of Tourism in the Volgograd Region», the powers of this Committee include informational support of the tourism sector, which includes «monitoring the use of tourist resources, establishing the procedure for the formation and maintenance of a register of tourist resources located in the Volgograd region» (Resolution of the Governor of the Volgograd Region of 25 January 2018 № 703 «On approval of the Regulation on the Committee for the Development of Tourism of the Volgograd Region»).

The Volgograd Region Tourism Development Committee reports to the Volgograd Region State Autonomous Institution «Tourism Development Agency». According to art. 2.4 of the charter of ADT of the Volgograd region tasks on registry systematic practice in the Volgograd region found expression in the definition of special activities of the Agency (Order of the Committee for the Development of Tourism of the Volgograd Region № 20-OD of 11 December 2018 on approval of the «Statute of the state autonomous institution of the Volgograd region» Tourism Development Agency»).

The Agency's website contains the current registries of the Volgograd Region (Registers Tourism Development Agency 2019). An analysis of the Agency's registry activities showed that it was being conducted without appropriate regulatory support. The contents and forms of the registers did not receive proper regulation and are created, obviously, taking into account the conduct of statistical activities, and not the tasks of a special tourist profile, defined by the charter of the institution.

Statutory regulation of registry activities has been developed in several other constituent entities of the Russian Federation. The result of the study revealed the specifics of statutory regulation of registry activity both in the matter of classification of objects subject to registry accounting, and by the characteristic features of these objects. Given the format of the survey, it seems appropriate to dwell on the characteristics of private experience, expressed in the organization of the registry activities of several regions. Of course, accounting practices in the field of tourism in the form of AIS/UIS adapted for integration into the federal AIS «Tourism» deserve special attention.

In particular, we are talking about EGIS «Register of subjects and objects of the tourism industry and tourism resources of the Krasnodar Territory». According to the Procedure for the formation and maintenance of the register «the formation and maintenance of the Unified Register is carried out by the Ministry of Resorts, Tourism and Olympic Heritage of the Krasnodar Territory» (The Order № 129, 2018).

Based on the normative establishment, the formed register of subjects, objects of the tourism industry and tourist resources of the Krasnodar Territory should consist of the following sections: «Sanatorium-resort and health-improving organizations»; «Hotels and other accommodation facilities (except for campsites)»; «Tourist organizations»; «Camping»; «Beaches»; «Therapeutic and recreational areas (resorts) of regional and local significance»; «Objects of tourist display»; «Yacht ports (marinas)»; «Tourist routes» (Order of the Ministry of Resorts, Tourism and Olympic Heritage of the Krasnodar Territory No. 129 of 9 July, 2018 «On approval of the «Procedure for the formation and maintenance of a register of subjects, objects of the tourism industry and tourist resources of the Krasnodar Territory»»: art. 1.3).

The passport forms of objects (subjects) of the tourism industry and tourism resources of the Krasnodar Territory are also subject to normative determination (Order No. 129, 2018: Appendix No. 2). Each form contains information divided into three blocks: information about the applicant, information about the object, as well as additional information. It should be noted that the contents of the registry practically did not change in comparison with practice on the basis of a resolution of the governor of the Krasnodar Territory of 04 October 2012 (Resolution of the head of administration (governor) of the Krasnodar Territory of 04 October 2012 N 1162 «On approval of the Procedure for the formation and maintenance of a register of subjects and objects of the tourism industry and tourist resources of the Krasnodar Territory»). At the same time, it should be noted the emphasized principle of efficiency of updating information, according to which all changes to the registry data should be made within five days. In addition, it is certainly positive that integration of the registry into the Unified State Information System «Resorts of the Krasnodar Territory» form should be noted. Moreover, the filling of this information system is based on a deeper classification of objects and subjects of the tourism industry (United state system of the Krasnodar Territory» 2019).

The Decree of the Government of the Khanty-Mansi Autonomous Okrug - Ugra defines the goals of maintaining the register taking into account the public and private interests of participants in tourism relations: ensuring a unified accounting of tourism resources and organizations of the tourism industry of the Khanty-Mansiysk Autonomous Okrug - Ugra; providing tourists (sightseers) with the necessary information providing a competent choice in the field of tourism; improving tourism resource management; ensuring effective monitoring of the use, conservation and restoration of tourism resources (Resolution of the Government of the Khanty-Mansiysk Autonomous Okrug - Ugra № 545-p of 3 march 2017 «About the register of tourist resources and organizations of the tourism industry of the Khanty-Mansiysk Autonomous Okrug - Ugra» : art. 1.3). In this regard, the registry provides a wider classification of objects, as well as an expanded list of attributes of objects of registry accounting. According to the Decree, four sections are allocated in the register with the corresponding deeper classification subsections.

The generated register initially received the status of a unified information base containing information about tourist resources and organizations of the tourism industry of the Khanty-Mansiysk Autonomous Okrug - Ugra, it is also implemented in electronic form, posted on a special site. The electronic register of tourist resources and organizations of the tourism industry of Ugra is built on the administrative-territorial principle, the structure of which includes sections of the register declared in the Resolution. It should be noted that the unified and schematic construction of the electronic registry, expressed in the desire to keep the classification of accounting objects unchanged, seems to be optional for different municipalities (The Ugra register 2019).

The Decree of the Government of the Republic of Khakassia, as well as the Decree of the Government of the Khanty-Mansi Autonomous Okrug - Ugra defines the goals of maintaining the register taking into account the interests of a wide range of participants in tourist relations (Decree of the Government of the Republic of Khakassia № 436 of 15 July 2011 «On approval of the Procedure for the formation and maintenance of a register of tourist resources in the Republic of Khakassia»: art. 1.3).

At the same time, in order to achieve the set goals, the Procedure establishes normatively the maintenance of the register in electronic form and paper (The Decree № 436; 2011: art. 1.5).

According to the Procedure for the formation and maintenance of a register of tourist resources in the Republic of Khakassia, an acceptable classification of accounting objects is determined within the three sections of the registry structure: (1) natural; (2) objects of cultural heritage; (3) socio-cultural objects.

The electronic form of the registry is available on the website of the State Committee for Tourism of the Republic of Khakassia in the section «Travel Industry». Note that at the moment the electronic registry contains only part of the registry sections defined by the Procedure for the formation and maintenance. In particular, from Sect. 1 exclusively state nature reserves and reserves are placed (The State Committee of Khakassia 2019).

4 Conclusions

The disclosure of the specifics of registry activity at the federal level made it possible to highlight the priority goals of systematization in the field of information support: stimulating the development of the tourism industry by ensuring the availability of information about objects, as well as protecting the interests of participants in tourist relations. This approach to organizing systematic activities at the federal level contributed to the use of imperative and mixed methods of legal regulation.

Summing up the review of the practice of legal regulation of registry activities in the field of tourism by administrations of constituent entities of the Russian Federation, we consider it appropriate to emphasize that the development of regional systematization of resources in the form of registers or cadastres based on an officially approved form with a common system of attributes for all regions may become a necessary basis for creating a federal the registry. The results of the classification of tourist resources and criteria for the characteristics of the objects entered in the registers can be used to create the ideal form of the register, the most acceptable for the regions.

At the same time, the analyzed experience suggests that the development of a policy of legal regulation of registry activity in the tourism sector clearly determines the need to take into account the identified deficiencies in the registries. First of all, the principle of formalism should be overcome, which prevails in the systematization of tourist resources, expressed, firstly, in the inclusion of publicly available and well-known resources that do not require complex work in finding the necessary information, and secondly, in limiting the types of tourist resources included in the register. In addition, it is necessary to solve the problem of the lack of scientifically and economically sound passports of tourist resources in a number of registers, including in the form of descriptions of tourist resources or a descriptive part or identification information. The systemic shortcomings of regional registry practice include the optional principle of normative definition of registry forms, which leads to inconsistency of the content with the federal registry practice, or its duplication.

The limitations of the register activity indicated by us can be resolved taking into account the developments in the literature and the practice of private law, as well as mixed by the nature of the register activity.

Summing up the results of the study, it should be noted that we have identified the legal and economic necessity of conducting the register activity of tourism resources as one of the priority mechanisms for stimulating tourism activity, developing the tourism industry and tourism in general. An analysis of the current practice in Russia of legal regulation of the practice of accounting for tourist resources, as well as scientific and methodological developments, which are reflected in the specialized literature, allow us to formulate ways for the development and implementation of legal regulation of registry activities.

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Conclusion

The research findings offered in this book propose economic and institutional mechanisms for strengthening the nation's competitiveness in the context of the sixth technological paradigm and evolving digital economy, and its essential regulatory and legal provision.

Among many important issues discussed in the book, much attention is given to studying neo-industrialization effects on the enhancement of competitiveness of Russia on a global scale. The border is drawn between the processes of re-industrialization and neo-industrialization with the stress on the specific features of neo-industrialization under transition to the sixth technological mode that is characterized by the emergence of fundamentally new industries based on convergent (NBIC) and end-to-end technologies. The reader can also find how new technologies modernize traditional industries on a new technological platform. The problem of double transformation and transaction costs in transition to a new technology is examined, and ways to overcome them within the investment cycle are determined. Possibilities and modern systemic limitations that constrain the development of neo-industrialization processes in the sectors of the Russian economy are revealed. The necessity of using a multi-level system approach to the implementation of the neo-industrialization concept is proved. It is substantiated that large integrated structures with high innovative and investment potential that are capable of becoming full participants in global competitive relations play the leading role in the formation of the new technological mode.

Taking into account transaction cost theory, which defines transaction cost as a major factor responsible for formation and reshaping of value added chains, and production network theory, the book describes an impact of information and technological development on the forms of organization of production and firm strategies in the evolving digital economy. It is shown that digitalization process results in a dramatic plunge in transaction costs for both producers and consumers that, as a result, leads to breakdown of value chains or links in these chains, and brings producers and consumers into ecosystems. Being central to the digital economy, ecosystems are described as spatially localized complexes of

hierarchically uncontrolled organizations, business processes, innovative projects and infrastructure systems that interact with each other to create and circle material and symbolic goods and values, capable of long-term independent functioning due to the circuit of the benefits produced. Low production costs and zero marginal costs are identified as the key factors that provide leadership of platform-based ecosystems that tend to phase out companies with a traditional management system from the market.

As one of the main topics of the conference was enhancement of the Russian regions competitiveness under transition to Industry 4.0., the pivotal issue was to assess readiness of the regions of the Russian Federation for sustainable development in the context of the new industrial revolution and recognise obstacles inhibiting implementation of specific adaptive mechanisms to rapidly changing technological realities. Based on a systematic statistical analysis of the regional economic systems, challenges of demographic, financial, information and technological character have been identified and economic and institutional measures to ensure the competitiveness and sustainable economic growth in the regions have been proposed to reduce negative effects arising under transition to the new industrial model.

In order to eliminate potential risks that arise in the course of implementation of the new industrial revolution in Russia and quantify the risks for sustainable economic development of the regions of Russia, a risk management model has been introduced and an integrated risk indicator has been calculated, which are based on the economic system “development nucleus” theory proposed by Professor Inshakov.

Comprehensive multivariate assessment of the integrated risk in the regions of the South of Russia allowed ranking the regions according to the level of production factors endowment and potential risks to their sustainable social and economic development.

To study the impact of NBIC technologies on sustainable economic growth in the regions of the Russian Federation, methodology has been suggested that includes methods for investigating the relationship between basic economic indicators and indicators for the development of NBIC technologies (using information and communication technologies as an example), as well as identifying and quantifying the relationship between economic growth and structural and technological shifts in the economy of the regions. As a result of the study, general economic conditions that will promote economic growth and neo-industrial development at the national and regional levels have been identified. To achieve the desirable goals, it is recommended to enhance innovative component and proactivity in public administration and create an adequate institutional environment. The competitiveness balance indicator for regional business systems is introduced, according to which the Russian regions have been assessed and ranked.

Based on the assessment of current and prospective effectiveness of the import substitution policy that is being implemented in the Russian Federation to ensure competitiveness of the national economy on a global scale, strategic goals for export-oriented import substitution are outlined. It is highlighted that the current

model of state import substitution policy should be revised. Radical change of state export-oriented programmes based on revision of the target indicators that should be set on accurate and reliable assessment of their dynamics is required for successful implementation of import substitution policy.

The manifestation of innovative resonances as a result of import substitution projects implementation is considered as an important factor in enhancement of the competitiveness in the regions. An analysis shows that a lack of integrated approach to an import substitution strategy formation in the regions of southern Russia leads to an imbalance in the reproductive structure of regional economies and does not allow obtaining desirable innovative effects. Given a high degree of monocentricity in the regions of southern Russia that are characterized by structural imbalance of innovative processes along the center-periphery line, a need to institutionalize the rational distribution of modernization resources in the regions and develop industrial, transport and social infrastructure adequate to strategic imperatives and regional development priorities is argued in order to achieve synergistic and multiplicative innovative effects.

Among many other topical issues discussed in this book, assessment of industrial clusters and technology platforms effects on the implementation of neo-industrialization in Russia and other Eurasian Economic Union (EAEU) member countries is provided. It is confirmed that advantages of the cluster economy organization are characterized by transaction nature. Institutional and organizational barriers that impede development of cluster ecosystems in the regions of Russia are identified, and a modified method for the location quotient calculation to define the regional industrial specialization as the basis that determines industry cluster formation potential is proposed. The results obtained are aimed at the Triple Helix interactions improvement to foster industrial clusters performance and strengthen competitiveness of the regions of Russia.

A qualitative analysis of the Russian and Eurasian technology platforms performance that takes into account their organizational and functional relationship and cross-platform interactions is performed. In the course of the study, the key factors inhibiting the development of technology platforms ecosystems, thus causing a reduction in transaction benefits and the synergistic effect of the major stakeholders' participation in the platforms have been identified. The studies also supplement the subjects and sources of the public-private partnership mechanism for the financial support of the Eurasian technology platforms activities. The findings could facilitate platform-type ecosystems' performance improvement in accordance with the priorities and imperatives of neo-industrialization in the EAEU economies.

The development of the intra-EAEU trade relations and technological convergence in view of enhancing the competitiveness of the EAEU member countries is considered. It is stated that common economic, industrial and technological policy should be implemented for that purpose. The analysis of the technological convergence processes as a competitiveness factor of the EAEU as a whole aims at developing directions of cooperation, mainly in the sphere of high-tech products and industries. The authors offer a methodology approach to the assessment of the EAEU member countries technological convergence introducing a technological

convergence index that consists of two subindices: industrial relations index and industrial policy efficiency index.

Most of the contributions deal with theoretical and practical issues of digitalization in various industries and sectors of the economy (production, agriculture, finance, foreign trade etc.), seeking to identify significant trends in the digital economy, which will have great impact on the prospective social and economic development on the national and world scale.

The book clarifies the concepts and categories of the digital economy theory. It examines a plethora of approaches that are used to determine nature, forms, functions and structure of the digital economy as they are described in Russian and foreign publications. It reveals the logic of the evolution and internal contradictions of the digital economy, points out strengths and weaknesses of the economic and legal components constituting the process of the economy digitalization, highlights opportunities and risks under transition to a digital development scenario. Using a multi-level approach, it examines digital transformations in relation to changes at all nine (basic and intermediate) levels of the global economic system identified by Professor Inshakov. A conceptual model of a multi-level transition of the economy to a digital development scenario has been suggested for discussion. The focus of attention is given to the development of economic and legal regulation in foreign economic, primarily foreign trade, contractual relations, using the latest digital technologies in the context of international economic integration.

A comparative analysis of the currently dominant theoretical approaches to interpretation of the digital economy (within the framework of the Internet economy, the economy of digital content and the economy of digital technologies concepts) has revealed that their alternate nature is due to the multi-structure of the digital economy, the uneven generation structure of technologies in the evolving economic mode, its industries, institutes, organizations and business models.

It is proposed to refer the IT industry, the industry of online platforms and other industries of digital services, as well as the media industry to the institutional digital sector. In addition, it is proposed to single out the intrafirm digital sector of individual corporate entities, which is analytically formed from the total number of digital professions employed in traditional (non-digital) industries.

Within the framework of institutional economic theory, the book refines and develops the concepts and categories of the digital economy theory. It is proved that in the medium-long term, regulation and self-regulation institutions of the digital economy will form two large subsystems. The first subsystem will comprise smart institutes (norms and behavior models based on self-executing smart contracts); the second subsystem will consist of hybrid institutes (combining elements of traditional, written-in fixed law and algorithmic law, which are based on computer codes and programs). It is highlighted that digital institutional environment will require smart intermediaries, namely, lawyers for smart contracts, technical experts in digital technologies, auditors and managers of digital business processes.

Results of comprehensive analysis demonstrate that the digital economy is a complex adaptive ecosystem, therefore, its regulation should rather be based on shaping conditions, reduction of barriers, incentives, facilitation of the legal regime

than on formalization and direct subsidization. Moreover, it is shown that the digital economy, as an object of regulation, will always be ahead of the development of regulatory institutions and mechanisms. The regulation of the digital economy should take into account the reality of changes in the legal system initiated by its development – transition to smart contracts and formation of institutions based on programme codes and traditional law.

The distinction is made between digital and digitized sectors, which cover industries directly and indirectly related to digital technologies and products. It is proposed to implement promising institutional shifts using, among other things, experimental regimes – regulatory sandboxes, legal foresights, and public expert discussions.

In addition, it is noted that the structure of the new digital world economy determined by evolving digital technologies leads to a radical change in the directionality of demand and supply of goods and services, and, therefore, entails a change in the legal status of small and medium-sized businesses operating in this market. In this regard, the authors raise the problem of inconsistency of the legislation with the new economic reality. Undoubtedly, the creation of digital environment and a radical change in the information infrastructure pointed out in the state program “Digital Economy in the Russian Federation” should be supported by the relevant regulatory legal framework. The development of the digital economy consistently entails the formation of new principles and rules of conduct for businesses that need to be codified.

The book also deals with legal issues that are devoted to the study of law enforcement activities at various stages of digitalization process in the Russian economic system. The potential of integrating the paradigms of economics and law as the basis for modernization processes in the digital economy is revealed. The book outlines measures that are necessary to take in the field of the digital economy in order to increase the involvement of Russian entrepreneurs in international trade and raise awareness of challenges facing law makers and the legislative authorities. It has been established that as the market globalizes and electronic civil document turnover develops, the problems of unresolved emerging civil law relations and a lack of protection of the entities involved in these legal relations become apparent. An analysis of the legal regulation of new digital objects, the operations with which in recent years have been anonymously conducted in the Internet using computer programs by an unlimited number of people in different countries around the world has been performed.

The evolution of global information society concept is analysed, its main characteristics are defined and possibilities of its value-regulatory base development at the present stage are discussed. Deep interaction of the information society, the digital economy and law, as well as the factors underlying these complex relationships are pointed out. It is proved that in legal turnover, which is a special form of economic activity, relations, the object of which is information, and relations where handling information is regarded as secondary activity as compared to the main one are clearly distinguished.

Studies of law enforcement activities under digitalization processes in the Russian economy have revealed transformation of public relations that contribute to the emergence of fundamentally new subjects of civil legal relations, in particular information aggregators, which have a serious impact on the global economy and whose role grows with the development of information and communication technologies. Information aggregators, as new subjects of civil rights, are becoming active participants in various fields of the national and international markets including alternative financing carried out without the participation of credit organizations, which is becoming a new standard in the evolving digital economy.

Alternative financing methods developing on the basis of digital technologies, such as mutual (P2P) lending, which are currently in a legal vacuum due to the lack of special regulations establishing the legal status, rights, duties, responsibilities and guarantees of both the information aggregator and the participants of mutual financing, are examined as a means to enhance competitiveness of the Russian economy.

Significant changes in public relations, predetermined by the development of new Internet technologies, have necessitated an analysis of the problems associated with the creation and functioning of the intellectual exchange as a platform for transferring the exclusive rights of the author through a smart contract. An analysis of theoretical sources on the legal foundations of using block chain technology made it possible to single out the types of distributed registries and formulate these substantiating the need to use distributed registry technology with several authorized users when creating an intellectual exchange, where states, parties to the international intellectual exchange agreement, should act as authorized persons. The basic conceptual provisions aimed at creating the foundations of legal regulation of smart contracts used on the intellectual exchange are formulated.

Another field of research examines institutional possibilities and limitations of legal regulation of the digital economy in foreign trade in the context of international economic integration. Institutional changes in the Russian economy arising under the influence of digitalization are highlighted. Trends in changes in the financial sector are identified and the concept of regulation of the digital economy during the period of institutional transformations is proposed. A critical analysis of bills aimed at legal regulation of transactions with digital objects and their possible impact on the formation and execution of foreign trade contracts is carried out. Proposals are developed to improve bills and adopted legislative acts that are aimed at the legal regulation of foreign economic transactions using digital technologies. The essence and types of digital objects employed in foreign economic transactions are studied. Potential risks and legal base of smart contracts enforcement in foreign economic transactions are indicated.

Apart from economic issues related to the evolving digital economy, the book defines priority areas in legal policy and highlights fundamental principles for the development of common legal basis that is essential for digital technologies implementation in foreign trade activity with countries that form integration associations with the membership of the Russian Federation (EAEU, BRICS). Effective methods and legal mechanisms for the formation of an autonomous supranational

legal system in the field of digital technology in foreign trade of the countries that are members of the above mentioned associations are revealed. The analysis of the potential use of new objects of civil rights that go beyond the generally accepted theories in foreign trade in connection with the rapid development of digital technology has created the need to rethink the classical understanding of the category of funds. Considering applicability in international payment transactions, a distinction is made between the categories of non-cash, electronic cash and cryptocurrency, block chain based digital currencies.

Measures are discussed that are necessary to take in the digital economy in order to promote the involvement of Russian entrepreneurs in international trade, among which we can highlight the need for legislative consolidation of the legal status of the Internet of things, determination of their status and place in the system of civil rights, since in their absence the goods that are the subject of foreign economic transactions cannot be digitized. The authors stress the need to create integrated into the global network telecommunication infrastructure that will be connected to decentralized platforms for data accounting in distributed registries – block chain – throughout the entire territory of the Russian Federation.

Much importance is given to the creation of a secure identification system as the main means for protection of interests of foreign trade entities under transition to digital methods of recording and transmitting information, concluding and executing transactions. In order to solve the problem of establishing the subject's digital identity, two methods have been proposed: an introduction of a state system for registering IP addresses and use of human biometric data.

It is pointed out that the transference of business processes into a digital format dictates the need to reduce conflicts in economic activity on the international market, which can be done by applying a preventive and prophylactic approach using continuous maintenance of a distributed register of electronic registration of facts of business-contractual relations by several public entities and the parties themselves.

It is proved that the establishment of a unified approach to legal nature of smart contracts can significantly enhance competitiveness of Russian entrepreneurs in the international market. The authors highlight technological and legal approaches to a smart contract; the latter admits a broad and narrow interpretations. The specifics of a smart contract are disclosed, the need for legislative consolidation of a third (along with written and oral) transaction form – a computerized transaction protocol – is justified. It is concluded that when using smart contracts in foreign trade, it is necessary to rely on soft law norms and established business practice in combination with the imperative method of state supervision and control over the implementation of requirements for the protection of confidential information, and legitimate rights and interests of individuals who are involved in foreign economic activity.

Recommendations are formulated to expand electronic document management in international trade. It is revealed that foreign trade transactions, the intensity of which between business entities from the BRICS member countries has noticeably increased in the last five years, require, as a rule, the attraction of large financial

resources. It is shown that targeted financing by a group of investors can become an effective tool for financial support of a foreign trade transaction, and money can be raised remotely using new digital technologies.

It is pointed out that the growing popularity of “electronic money” and in recent years – cryptocurrencies that are widely used on the Internet – predetermined the emergence of international financial practice to invest virtual crypto funds in promising projects. Business entities are starting to actively use these financing tools, one of which is initial coin offering, ICO, to finance projects. It is believed that by the year 2022, tokens used in foreign trade transactions under BRICS jurisdictions will become common investment tools, similar to bonds or shares. The conclusions and recommendations on the adjustment of bills of the Russian Federation are formulated, suggestions are made for an improvement in distant investments via the Internet infrastructure in modern Russia.

It should be concluded that, to date, there is lack of books in Russia or abroad that are devoted to studies of legal support for the economy digitalization, in particular the development of digital technologies in foreign trade in the context of international economic integration. The present edition fills this gap and offers a novel comprehensive interdisciplinary approach to substantiate optimal algorithms for legal and economic regulation of foreign trade relations in international integration associations using digital technology.

A broad readership of the conference proceedings includes professors and lecturers, undergraduates and postgraduates at higher educational establishments, researchers and practitioners, executives, company lawyers and information officers, all those interested in the problems of new industrialization and digitalization in production and foreign trade, and their legal regulation to enhance competitiveness of economic actors at all levels of the global economic system.

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