



ACTUAL PROBLEMS OF DEVELOPMENT ECONOMIC, FINANCIAL AND CREDIT SYSTEMS

Collection of materials
VIII International Scientific and Practical Conference

Belgorod, September 15, 2020

Belgorod 2023

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«Belgorod State National Research University»

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The authors offer their own view on solving the problems of the development of economic, financial and credit relations in modern conditions. The issues of regularities of development of state, municipal, corporate finance, investment, banking, insurance, valuation and accounting activities were considered.

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SECTION 1. Financial and credit systems

Internal Control System in Credit Organizations

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Abstract—Credit institutions should very carefully manage risks, constantly adapt to the competitive environment, and develop their activities daily. At the same time, they have to comply with certain rules of conduct, which are controlled by both external and internal control bodies. In order to more identify weaknesses or problem areas in their activities, credit institutions use a system of internal and external control. The article describes the features of these types of controls and how they can integrate. The paper considers the modern structure of COSO, which consists of several components: control environment, risk assessment, control activities, information, communication and monitoring. The need for it by Russian credit structures has been identified. It has been determined that credit institutions that use an internal control system quickly respond to change external environment conditions and easily increase their capital. In Russia, 10 large banks use COSO that maintain their leading positions in the domestic credit market.

Keywords — internal control, banking supervision, auditing, COSO framework.

I. INTRODUCTION

Lately, the banking sector exist in a complex competitive environment. Therefore, banks should carefully manage risks, constantly adapt to the competitive environment, developing their activities daily.

Many scientists, such as G.N. Beloglazova, O. V. Vaganova, G.G. Korobova, L.P. Krolivetskaya, O. I. Lavrushin, A.M. Tavasiev, S.D. Yushkov. Research on theoretical issues related to internal audit of commercial banks and businesses was carried out by Edward W. Reed, Kichard V. Cotter, Edward K. Gill, Richard K. Smith and others.

According to the works of scientists, we find that the banking supervision system is constantly updating the legal framework, regulations and rules that control banking operations. The purpose of all these laws and regulations is to protect customers and shareholders from financial losses, as well as neutralize the risks that can arise from weak internal controls. To strengthen internal control in banking structures, an internal audit is carried out.

II. METHODOLOGY

The research was carried by using financial methods and principles. Thus, using the method of scientific knowledge method, the systemic and logical-semantic analysis, the quantitative characteristics of credit institutions of the Russian Federation were studied on the basis of a historical approach, internal control abroad was studied, on the basis of the comparison method and the principle of comparison, the components of the COSO internal control system were presented. On the study, the method of statistical data processing, as well as the synthesis of theoretical and practical material were used.

III. RESULTS AND DISCUSSION

“Internal control is a set of policies and procedures that are used by management to ensure the safety of the company's assets and confidence in the accuracy and reliability of accounting data” [1]. "The internal control system includes a set of various interrelated methods and procedures that the administration develops and uses to ensure the reduction of unwanted risk in business and financial activities, as well as in accounting and reporting" [2].

At banking sector, the internal control system is an integral part of the audit process activities. In general, the internal control system can be viewed as a system of processes and procedures that ensure the efficient operation of the bank and complies with the legal framework applicable in the banking sector.

The internal control system improves the efficiency of functioning and economic development, representing a way of business expertise [17]. The recommendations of the Basel Committee on Banking Supervision is considered the theoretical basis for organizing internal control at the present that defines internal control as a process carried out on a continuous basis by the Board of Directors, management and employees of the bank at all levels. The bank's internal control system organization provides for the coverage of all areas of the bank's activity by control procedures without exception. Internal control of commercial banks in the Russian Federation is organized in accordance with Bank of Russia Regulation No. 242-P "On the Organization of Internal Control in Credit Institutions and Banking Groups", which reflects the principles of Basel Committee on Banking Supervision and international practice of organizing internal control in credit institutions. The Bank of Russia has developed a methodology to verify the organization of internal control system, which defines uniform approaches to assessing this system. Significant attention is also paid to internal control issues during inspections of banks as part of the implementation of Federal Law No. 177-FZ "On insurance of deposits of individuals in banks of the Russian Federation" and Ordinance of Russian Central Bank No. 1379-U "On assessing the financial stability a banks in order to participate in the deposit insurance system”.

Control system functions must be implemented in relation to the past, present and future periods. Having analyzed the quantitative characteristics of credit institutions of Russian Federation, presented in the diagram (Fig. 1), over a two-year period, we can say that control over the banking sector is exercised not only at the internal level, but also by Russian Central Bank, which prevents the emergence of systemic banking crises and protects the interests of bank customers. [5]

The graph shows a slight decrease in the number of commercial banks. This decrease due to the tightening of the supervisory policy of Russian Central Bank, which aims to improve the banking sector.

The activities of banks are controlled not only by the Central Bank, but also by the credit institutions themselves, as a rule, carry out internal control and internal audit of their activities. For a more understanding of the relationship between these concepts, it is necessary to distinguish between these concepts from a scientific point of view.

Internal control aims to create a system of inspections, regulation and assessment of banking risks and making sound strategic decisions, since the effectiveness of internal control system organization is reflected in the quality of transactions performed by the bank, compliance with economic standards and financial performance.

Internal audit is also a control activity that carried out by the internal audit service. Internal audit functions include monitoring the adequacy and effectiveness of the internal control system. Internal audit is viewed as a periodic and independent assessment of control system organization itself. An audit allows to determine the effectiveness of a credit institution, identify risks and assess the internal control system. All audit results allow building effective management of the credit institution, monitoring the adequacy of activities and informing shareholders about the results of activities.

TABLE I. QUANTITATIVE CHARACTERISTICS OF CREDIT INSTITUTIONS IN RUSSIA (UNITS)

Indicator	1.01.19	1.01.20	1.07.20	1.08.20	1.09.20	1.01.19
Existing credit organizations – in total:	484	442	427	420	417	484
Banks:	440	402	388	381	378	440
- with a universal license	291	266	257	255	252	291
- with a basic license	149	136	131	126	126	149
Non-Bank credit organizations	44	40	39	39	39	44
Credit organizations registered by the Bank of Russia, but have not yet paid the authorized capital and have not received a license (within the legally established period)	0	0	0	0	0	0
Credit organizations that have had their licenses revoked (revoked) since the beginning of the year	67	31	6	13	15	67
Credit organizations reorganized since the beginning of the year	10	12	9	9	10	10

Consequently, there is a fine line between the concepts of "internal audit" and "internal control", which is often erased due to the identity of control procedures, so we should understand these two concepts in more detail.

The internal control system is an indicator of banking reporting process. Internal controls include scheduling administrative functions and preparing a complete and accurate annual report. Since mistakes and fraud can occur in the activities of credit institutions, it is important to establish precautions to ensure adequate performance of the functional duties of employees. In the absence of an established system of effective internal control, employees can misuse assets, so the assets can be distorted and the bank itself can violate laws. Consequently, effective control reduces the risk of assets losing and helps to ensure the completeness and accuracy of information about the plan, the reliability of financial statements in accordance with law and regulations.

By studying the history of banking, it is possible to identify the beginning of internal control concept development, which begins to evolve as the development of financial reporting. The first control procedures appeared in the United States at the beginning of the 20th century. Of course, these procedures have evolved over time in accordance with changes in business processes. So at the beginning of the 20th century, when the Spanish-American War brought significant changes to the US business environment, "selective testing" was introduced and system checks were established, which marked the birth of internal control [3].

Between 1930 and 1940, control becomes mandatory and manifests itself in the form of an audit of financial statements, and the role of the auditor is to check the financial statements for compliance with the law. In 1949, American Institute of Certified Public Accountants (AICPA) published a special report, "Internal Control", which demonstrates the importance of "protecting

assets" and "ensuring the reliability and accuracy of financial data." However, this report expands the scope of the auditor's management function and responsibility.

In 1977, internal controls were first made mandatory by the Foreign Corrupt Practices Act (FCPA). The idea of internal control has expanded and considered the main tool of the audit process. In 1980, the AICPA Commission issued a report "Fraudulent Financial Reporting", which emphasizes the importance and necessity of internal control [4].

Finally, in 1992, the COSO (Committee of Sponsoring Organizations of the Treadway Commission) system was created and released its first publication mentioning three objectives of internal control; Business Effectiveness and Effectiveness, Financial Integrity and Compliance with Applicable Laws. The COSO system has expanded the scope and perspective of internal controls. COSO's internal control system has five components; "Control environment", "Risk assessment", "Control activities", "Information and communication" and "Monitoring" (Figure 1).

In 2010, due to the changes and improvements in the business environment, COSO updated its first version of PriceWater house Coopers.

Considering the initial nature of internal control, then it was originally a prototype of accounting, which has been expanded and modified. Currently, the internal control system not only prevents and detects fraud and errors, but also creates a management system and procedure to achieve the organization's management objectives.



Fig. 1. Components of COSO Internal Control System

Internal control is initiated by the board of directors, management and other personnel of the organization, designed to provide reasonable assurance about the achievement of objectives related to operations, reporting and compliance with the regulatory framework [5]. COSO's Integrated Internal Control Framework is recognized internationally, and some of its recommendations were used in the Sarbanes-Oxley Act of 2002, which mentions that the primary responsibility for internal control rests with management.

The role of credit institution's internal control is determined by the COSO control structure, which was developed and published in 1992, and was updated in 2013, which provides comprehensive knowledge on this issue. The modern COSO structure has several components consisting of a control environment, risk assessment, control activities, information, communication and monitoring, it is presented in the form of a matrix in Figure 2.

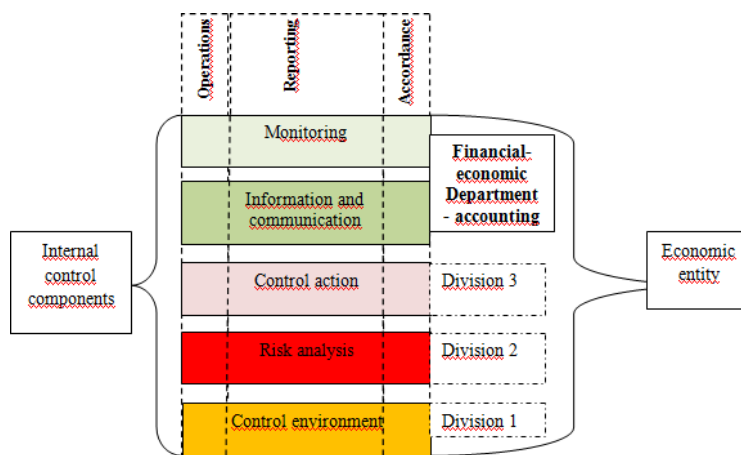


Fig. 2. COSO model in matrix form

The first component, "Control environment" reflects the internal beliefs, ethics and values of the control system, in particular, the behavior of management in relation to the control system.

The second component, Risk Assessment, identifies management's risk assessment efforts and highlights areas where higher risks may exist.

The third component "Control activities" refers to the control system, which consists of division of duties among employees of a banking institution.

The fourth component "Information and Communication" defines the internal and external methods of communication between bank employees and customers, and also organizes information exchanging.

The fifth component, "Monitoring," raises managerial monitoring of the management system and provides problem reporting and solutions.

Considering the internal control system of financial reporting, it should be noted that its function is to proactively influence the activities of employees who correct their work. The main goal of preventive action is to avoid the appearance of distortions in the financial statements, to correct management methods. To correct the methods of management, a credit institution allows detective control that detects distortion in management activities and requires corrective action to correct the situation.

Modern methods of analysis allows each commercial bank to form its own internal control system. Let us formulate the main elements of internal control of activities and present them in Figure 3.

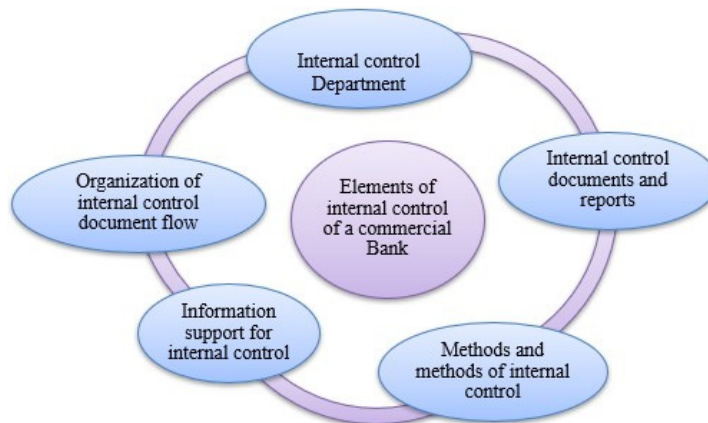


Fig. 3. The main elements of internal control for a credit institution

The reliability of any credit institution largely depends on the correctness and efficiency of the internal control service [18]. Therefore, the main role of internal control is to help the organization achieve specific goals and objectives. It is imperative that the structure of the organization uses components of internal control that adhere to standard procedures, rules and regulations. Only then will the internal control system ensure the safety of assets and promote the development of the credit institution's activities. On the Russian credit market, only a few credit institutions are best prepared to identify various banking risks through internal control and can quickly respond to changing environmental conditions, while increasing their capital (Table 2).

TABLE II. QUANTITATIVE CHARACTERISTICS OF CREDIT INSTITUTIONS IN RUSSIA (UNITS)

№	Bank	08.2020, thousand rubles	08.2019, thousand rubles	The change, %
1	Сбербанк России (Sberbank of Russia)	32038692505	28829391091	11.13
2	ВТБ (VTB)	15812570376	14362664764	10.09
3	Газпромбанк (Gazprombank)	7464298277	6280851891	18.84
4	Национальный Клиринговый Центр (National Clearing Center)	4758431795	3477018146	36.85
5	Альфа-Банк (Alfa-Bank)	4045250732	3352124069	20.68
6	Россельхозбанк (Russian Agricultural Bank)	3669968288	3409211256	7.65
7	Московский Кредитный Банк (Credit Bank of Moscow)	2897123280	2167278996	33.68
8	Банк Открытие (Bank opening)	2860035302	2251015939	27.06
9	Совкомбанк (Sovcombank)	1592289496	1055460722	50.86
10	Росбанк (Rosbank)	1432371007	1217502469	17.65

As a result of the research, current directions for improving the competitiveness of banks in order to strengthen their positions in international financial markets are proposed [15]. Carrying out activities in the internal control system helps to speed up the audit process and helps auditors to prepare and present financial statements for interested parties. Moreover, auditors gain insight into lending institution and its internal environment and perform various audit procedures at a faster pace. For example, auditors use a risk assessment from the internal control system [6].

In summary, we can say that the ideal system of internal control for a credit institution can be developed with a large number of elements that take into account the division of duties between employees. For example, when not one person will process one transaction from start to finish, but several, which will allow achieving an effective internal control system and will help to find problem areas in the work.

IV. CONCLUSION

Strict internal control is the key to business success and is essential for maximum profit in any organization, including credit. The external audit process is mainly based on the internal control system and if the credit institution has a clear delegation and division of duties among employees, it is easier for auditors to carry out control activities, form conclusions and conclusions. Auditors perform various types of procedures and try to accumulate information about the activities of a credit institution based on data from the internal control system.

One of the most advanced control systems is the COSO structure, the emergence of which was a major event in the field of audit. It contains guidelines for auditors, spelled out the algorithm for conducting the audit procedure and formed a methodology for assessing various aspects of the business, which contributes to the formation of an opinion about the internal environment of the studied organization.

In Russia, 10 large banks use COSO that maintain their leading positions in the domestic credit market.

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Digital Transformation of the Russian Banking Sector in Terms of Pandemic

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Abstract—The article discusses the issues of development and implementation of digital technologies in the banking sector in the context of a pandemic. The concepts of “digitalization” and “digital transformation”, which underlie the transformation processes of banking activity, are defined. The authors have identified the most popular remote banking channels during COVID-19 pandemic. The extent of the impact of the pandemic on the Russian banking industry and the main electronic banking products and services contributing to the transformation of the banking business are noted. Among the most promising are virtual and digital cards, the introduction of a simplified digital signature, and the development of open banking. The most competitive participants in the banking services market – fintech companies and virtual banks – have been identified. In addition, special attention is being paid to promising areas of their development through the introduction of digital platforms and ecosystems. Particular attention is paid to the analysis of digital transformation strategies of such large banks as Tinkoff Bank, Sberbank, VTB. The authors of the article emphasize that the pandemic has accelerated the development of the banking industry towards digital banking and the creation of digital platforms, especially financial ecosystems, which are complex platforms designed to serve the financial and non-financial needs of customers. The main reasons for the increased interest from banks in relation to ecosystems are due to competition in the market of traditional banking services, the search for additional sources of income, and diversification through the sale of non-banking services.

Keywords — digital transformation, digitalization, digital banking, financial ecosystem, COVID-19 pandemic.

I. INTRODUCTION

The coronavirus pandemic has significantly accelerated the process of digitization, affecting consumer behavior, and changing business processes around the world. The situation in the first half of 2020 – a lockdown regime and the forced transfer of employees to remote work for a large number of organizations – increased the importance of digital interaction between people, businesses and government authorities.

Business responded quickly to the need for social exclusion measures: many office employees have been given the opportunity to work from home. Authorities and local governments have been also actively embedded in the digital environment – a lot of state and municipal services have been provided electronically. With the help of specialized sites or mobile applications people can buy almost any goods, get training, have an interesting time (visit the online cinema, museum, library, meet friends and acquaintances in social networks or messengers).

II.METHODS

The research methodology is based on the materials of Russian and foreign economists on the problem under study. The study of the selected topic is based on the methods of generalization and comparison, analysis and synthesis, the method of groupings, as well as the models of banking management applied in practice by modern Russian banks.

III. RESULTS AND DISCUSSION

In essence, digital transformation is a profound modification of economic and organizational activities, business processes, competencies and business models that take full advantage of the changes and opportunities of digital combinations and their increasing impact on society in a strategic and priority manner, taking into account current and future changes.

The development and use of digital platforms based on innovative digital technologies has become the main direction of development of the digital economy. The modern technology platform is based on four key information and communication technologies - mobile communications, social networks, Big Data and Cloud Computing technologies - and is complemented by innovative accelerators - robotics, cognitive systems (“Artificial Intelligence”), Internet of Things, 3D printing, Next Generation Security solutions and Advanced and Virtual Reality technologies [11]. All this together significantly expands the scope for innovation and transforms all sectors of the economy, including the banking sector.

In banking, the concept of “digitization” can be defined as the introduction and strengthening of the use of digital technologies by banks in order to create a new digital business model and provide opportunities for generating new sources of income and creating value. This is the transition to digital banking.

The main advantages of digital banking are: new, improved user experience for the client; and an efficient and effective operating model for the bank. The new user experience of the client implies providing new opportunities for the client to interact with the bank via digital communication channels; a huge choice of customized products and services at affordable prices; transparent pricing and the possibility of comparative analysis with competing banks; prompt processing of requests and security of banking operations; instant service at a high quality level [5].

The transition to digital banking is accompanied by profound and far-reaching changes in the fundamentals of the bank itself and in all its activities. Digital transformation means a total transformation of the economic and organizational activities of the bank, its processes, competencies, models based on the fullest use of the possibilities of innovative digital technologies in order to provide the bank's customers with an improved user experience and meet their individual needs. The use of remote banking channels in Russia in 2020 is presented in Fig. 1. [8].

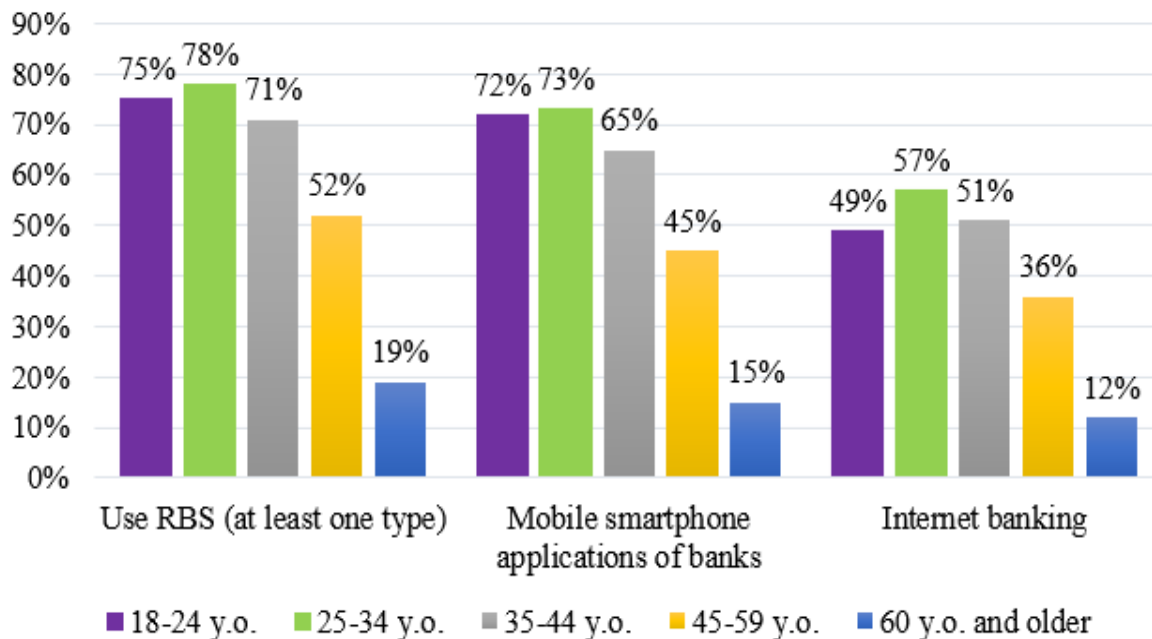


Fig. 1. Use of remote banking service (RBS) channels in Russia in 2020, distribution by age

Analyzing the dynamics of the number of users in Fig. 1., it is possible to conclude the most active users of digital banking services are young Russians of 18-24 years old: 75% use either banks' mobile applications or Internet banking, and mobile banking in this age group is much more popular than Internet banking (72% vs. 49%). For older Russians, this gap is smaller. Thus, at the age of 45-59, 45% use mobile applications, 36% use Internet banking, i.e. the older a person is, the less often they use digital financial management channels.

With the help of mobile smartphone applications of banks, it is possible to manage cards, accounts, order bank statements and other financial services. Nowadays, 51% of Russians use mobile banking apps, and the share of users has grown significantly over the past few years (26% in 2018).

Internet Banking is a website where a bank customer can manage their accounts and use financial services. Internet banking services are less in demand than banks' mobile applications: 37% versus 51%. In 2018, the share of Internet banking users was 16% of Russians.

The introduction of digital products and the use of platforms based on innovative banking technologies and the formation of financial ecosystems capable of uniting people, resources and information and thus creating new ways of consuming goods and services are becoming a key area of development for the modern financial market [12].

Lockdown regime during COVID-19 pandemic has forced many services to become online. We can note the increase in the number of virtual and digital cards, the introduction of simplified digital signature, the development of open banking.

A digital card is an independent fully functional product that retains all the capabilities of a bank card in the absence of a plastic carrier. Unlike a virtual card, a person can add it to Apple Pay, Google Pay and other wallets, make payments online and offline, make and receive transfers. In the context of the pandemic, the demand for digital maps has increased. Such growth has been recorded by many large banks, including Sberbank, VTB, Russian Standard Bank, QIWI. Table 1 presents a comparative characteristic of the most popular digital cards in Russia [9, 10, 14].

**TABLE I. COMPARATIVE CHARACTERISTIC
OF THE MOST POPULAR DIGITAL CARDS IN RUSSIA**

The name of the digital card and the issuing bank	Main characteristics	Terms of service
<p>Visa Digital (Sberbank)</p>	<ul style="list-style-type: none"> - Opening via the Internet bank or the Sberbank Online mobile application (if a person has an active debit card connected to the Mobile Bank service) - Issue fee: no - Payment system: Visa - Currency: rubles - Validity: 3 years - Service fee: no - Ability to withdraw cash: through ATMs - no, through the cashier - yes (commission 0.5-0.75%) 	<p>Transfer limits: up to 1 million rubles per day can be transferred from the card through Sberbank Online. For a transfer by card number to another bank, a commission of 1.5% of the amount is charged, at least 30 rubles</p> <hr/> <p>Transfers through the Faster Payments System: free up to 100 thousand rubles per month, then the commission will be 0.5%, maximum 1,500 rubles</p> <hr/> <p>Loyalty program: “Spasibo from Sberbank” for digital cards is not provided</p>
<p>Digital Multicard (VTB)</p>	<ul style="list-style-type: none"> - Opening via the Internet bank or the VTB-Online mobile application (if a person has a card opened within the “Multicard” package) - Issue fee: no - Payment system: Visa, MasterCard - Currency: rubles, US dollars, euros - Ability to withdraw cash: via ATMs equipped with NFC - yes 	<p>Operations (transactions) limits: for 1 operation - 100,000 rubles; for operations per month - 300,000 rubles.</p> <hr/> <p>Transfers through the Faster Payments System: free of charge up to 100,000 rubles, then the commission will be 0.5% of the transaction amount, minimum 20 rubles, maximum 1,500 rubles</p> <hr/> <p>Loyalty program: “Multicard”, within which the cardholder can choose one of the options: cashback for any purchases (1.5%), “Cash Back and auto” (up to 4%) and “Cash Back and restaurants” (up to 4%), “Collection” (up to 3%), “Travel” (up to 3%), “Savings” (up to +1.5% to the rate on the account or deposit) and “Borrower” (up to -10% to the rate on loan agreement)</p>
<p>Bank in Your Pocket Digital (Russian Standard Bank)</p>	<ul style="list-style-type: none"> - Opening via Internet bank or mobile application - Issue fee: no - Payment system: MasterCard - Currency: rubles - Service Fee: No - Ability to withdraw cash and top up an account: via ATMs equipped with NFC - yes 	<p>Transfer limits: the maximum amount of one money transfer is 50,000 rubles; maximum amount of money transfers (per month) 600,000 rubles.</p> <hr/> <p>Transfers through the Faster Payments System: free</p> <hr/> <p>Loyalty program: 15% cashback for purchases</p>

Thus, after analyzing the data provided in Table 1, a number of advantages of digital cards of the considered commercial banks can be highlighted, in particular, the absence of payment for issuance and maintenance, as well as speed and convenience: cards are issued remotely via the Internet bank or a mobile application within a few minutes. It is also important to note that, unlike Russian Standard and VTB, there is no loyalty program for digital cards from Sberbank.

However, with all the undeniable advantages, digital cards have several disadvantages. The main one is the strict technical requirements for the payment infrastructure:

- without a smartphone with an NFC (Near field communication) module, the card cannot be used to pay in ordinary stores and to withdraw cash from it. In this case, the card can only be used to pay for purchases in the online space;
- even if a person's phone is equipped with NFC, not all terminals and ATMs are equipped with an NFC reader, which allows a person to make payments and withdraw cash without a card.

Another feature of digital cards is that only active bank customers can open them. To issue a card, a person needs access to their personal account. This limitation is connected the requirement for mandatory identification of the client to open an account.

One more necessary online service is the confirmation of transactions using a simplified electronic signature, which is stored in a smartphone. It will replace the use of one-time codes from SMS or push notifications. The new method works by analogy with the electronic signature that is stored in a smartphone: the client is sent a notification about a money transfer or payment in an online store, after clicking the "confirm" button, a signature is generated, controlling authorship and continuity of the operation. It can only be installed on a specific smartphone owned by a client.

Moscow Credit Bank has already introduced such technology for mass use. Sberbank's immediate plans include launching new products new products that allow to dispense with the verification codes in SMS. Zenit Bank has reported they are considering the introduction of such technology. The ability to confirm transactions without a code from SMS has already been implemented for Otkritie Bank's VIP clients. A similar technology is used at VTB. It is valid only for money transfers, but not for payments in online stores. Smart-logic is already used by Tinkoff Bank to confirm payments.

Representatives of credit institutions note that a document signed with the help of a new solution cannot be substituted or accessed by third parties. The signature key is located directly in the smartphone and cannot be reproduced on another device. The technology for confirming transactions without a code in SMS will be effective in combating SIM card substitution schemes and attempts to enter an online bank from someone else's device – the signature for confirmation is stored on another smartphone, so the fraudster will not be able to conduct a transaction.

According to experts, the key advantage of the new method of confirming operations over the classic one is protection against interception of a message with sensitive information by an attacker. However, the risks of loss or theft of the device should not be forgotten. To enter the mobile bank, where the transaction is confirmed, it is necessary to set long, complex passwords that will not allow a fraudster to gain access to data in a short time [2].

Open banking is a tool for fast and secure data transfer between different companies. In the financial market, it is used primarily for banks to open access to their data and services to third-party companies. Currently, the Bank of Russia has begun to implement open banking technology: at the first stage, banks will exchange information on accounts of legal entities in a test mode using the technology of open program interfaces (Open API). This should make it easier for companies to obtain loans. The exchange can then be extended to individuals. The pilot version of the service was launched at the basis of the FinTech Association, created by the Central Bank of the Russian Federation. As of September 2020, there are 13 banks participating. This is the first service launched as part of testing the Open API technology, a Bank of Russia project aimed at digitalizing financial services and increasing competition in the financial market [3].

As for the strategic directions of development of banks themselves, their activities were changing rapidly, due to the use of the latest digital technologies. Some regions of the world have already identified leading digital transformation banks that have achieved significant success in a short time and are actively developing the global banking industry at the regional level.

The world's leading position in the field of digital banking is currently occupied by the Chinese Ping An Bank, which was named "The Best Global Digital Bank 2020" by Euromoney magazine [15].

The innovative development of the economy of the Russian Federation contributes to the successful promotion of digital banking in the Russian market, led by Sberbank and Tinkoff Bank. Sberbank retail digital bank was ranked as the best bank in Central and Eastern Europe in the categories "Best Bill Payment & Presentment" and "Best Information Security and Fraud Management" by Global Finance magazine in 2019 [16]. Tinkoff Bank is considered the largest neobank in Russia. In 2020, it headed the Internet Banking Efficiency Ratings for private clients of Marksw Webb Analytic Agency, including the "Internet Banking rating for daily tasks" and the "Internet Banking rating for the level of the digital office" [7].

However, not all banks consider the complete transition "to a digit" to be optimal. Traditional banks are also forced to transform their business processes, but the format of paperless offices is generally preferred, as human communication can become more sought after after a pandemic.

Alfa-Bank, the largest private bank in Russia, offers a different format of functioning: phygital offices (physical+digital), which contains a combination of digital and physical channels.

In the mobile application, client can see the workload of the department and select the preferred time for a visit. Using facial biometrics and smartphone geolocation, the bank will recognize customer at the entrance to the office, and its employees will be able to understand in advance what service can be offered to them. Face recognition accuracy is 98% [1]. The information obtained will be displayed on the tablet or in the computer of the employee who will see the client's profile and the services suitable for them. It will be possible to confirm transactions using biometrics without submitting documents. All documents will be signed and stored on the smartphone. Each office will save up to 10 tons of paper per year. The interior of the phygital office resembles a coworking space, there are no staff counters and no separate work area; employees and clients can choose any place convenient for work in the office space and comfortably resolve all issues.

In the autumn of 2020, Alfa-Bank will begin a gradual transformation of its entire network of branches, which, as of August 2020, has 525 offices in Moscow and the regions of Russia. Alfa-Bank plans to introduce phygital-format in 100% of its branches within 3-5 years.

VTB Bank plans to implement a similar branch format in the near future. It will be possible to sign up to the bank through a chat bot in WhatsApp, and the employees will prepare the necessary documents for the client's visit. The bank will identify clients by the MAC address of the phone and send them directions to the desired table or meeting room via WhatsApp. To use identification by smartphone, the client must go through the initial registration at the office, during which the user's phone remembers VTB's Wi-Fi as a home network. When a client visits again, his phone is automatically connected to VTB's network. The visitor receives a notification about the service menu in the department. If the client comes by appointment, the system will automatically activate the recording. Visitors choose the required service on their phone and receive electronic coupons. After that, the system prompts the client what he needs to do.

Up to 80% of standard actions on loans, deposits, payments and transfers can be independently carried out by the client via VTB-Online, up to 95% of all cash transactions – via ATMs. When a client requires a more sophisticated service, for example, a mortgage or car loan, they will be able to receive video consultation and make an application even if the office does not specialize in these products.

There will be no fixed workplaces in the retail service area of the new offices: the bank's

specialist will suggest the client to choose a convenient place. Automatic parameter control (Smart-office) technology will be applied in the branches, allowing optimization of temperature, humidity, illumination and concentration of carbon dioxide in the office. This will reduce by 10% both the emissions and the cost of maintaining 1 square meter space compared to the standard office. The use of paper is being significantly reduced. Currently 40% of all documents in the office are processed electronically using the technology of paperless service. Only the refusal of coupons through the use of the WhatsApp chat bot will allow to spend 2.63 cubic meters of paper per year less.

According to VTB forecasts, the average waiting time in the office will decrease by 33%, and the office efficiency will increase by 40% [13]. By the end of 2020, similar offices will appear in Moscow and in five other regions. From 2021, all VTB Bank offices will be opened in a new format.

All of these achievements of Russian banks demonstrate the importance of continuous innovation in banking products, systems and services that are driving the global banking industry digitally. Customers are looking forward to new solutions that will transform their lives and businesses, and the leading banks in digital banking are constantly striving to meet these expectations.

Another point requiring attention is that the pandemic has increased the impact of financial ecosystems on the economy. Ecosystems are complex platforms where different services, goods, services are combined for the convenience of the consumer [4]. Such systems are currently being built on the basis of large banks such as Sberbank, Tinkoff Bank, Alfa- Bank, VTB, Russian Agricultural Bank, Post Bank and others on a smaller scale. This is not only about loans and online transfers, selling insurance policies and opening deposits. Ecosystems are increasing their presence in all segments, not only to the share of financial markets. They succeed in selling other related services, sometimes far removed from the financial sphere. Financial-digital ecosystems gradually begin to “spread” to all markets. Any service where payment is made falls within the scope of ecosystem interests: booking cinema or plane tickets, buying gifts, food delivery.

The reasons for such an increased interest of banks in expanding ecosystems through non-banking services are quite understandable. Firstly, competition in the traditional banking market is intensifying. Secondly, banks are looking for additional sources of income, which can be diversified by selling non-banking services. Third, ecosystems create powerful barriers to market entry. New entrants must not only improve the main product, but also compete with existing systems of complementary services. In addition to banks, large technology companies like Yandex, Mail.ru Group, mobile operators such as MTS, Megafon are currently working on the development of ecosystems. Table 2 shows a map of the largest Russian ecosystems [6].

Based on the data in the Table 2, it can be concluded that that Yandex, Tinkoff, Sberbank are leading in the amount of financial and non-financial services provided. At this stage, MTS has not yet sufficiently revealed its potential and has not developed a comprehensive ecosystem. It is also important to note that all the ecosystems considered (built by both banks and non-bank companies) are actively developing financial services.

Thus, the landscape of the banking services industry is changing dramatically. The boundaries between various industries (both financial and non-financial) are being blurred due to a shift in focus from products towards to customers and their needs. While previously users were looking for specialized financial products, now platform solutions that combine different financial instruments will be in demand. Moreover, it is not important for the client who will be the supplier of such solutions: a bank or a fintech company.

TABLE II. COMPARISON OF SERVICES PROVIDED
WITHIN THE LARGEST RUSSIAN ECOSYSTEMS

Services provided	Service name				
	<i>Sberbank</i>	<i>Tinkoff</i>	<i>Yandex</i>	<i>Mail.ru</i>	<i>MTS</i>
Finance	Sberbank Online, Sberbank.Investor, SberCredo, Yandex.Money	Tinkoff Investment	Yandex.Money, BCS Investment, Yammi	Money@Mail.ru, VK Pay	MTS Money, MTS Investment, MTS Bank
Purchases	SberLogistics Yandex.Market Supercheck Beru	Tinkoff SuperApp	Edadil, Yandex.Market, Supercheck, Beru	Youla Pandao	
Media and entertainment	Rambler / Cashier, Afisha, LiveJournal, Lenta.ru, Gazeta.ru, RNS, Secret Firmy, Championat.com, Okko	Tinkoff SuperApp	KinoPoisk, Ya.Streamer, Yandex.Afisha, Yandex.Video, Yandex.Zen, Yandex.Music, Yandex.News, Yandex.Radio, Yandex.Efir	Media projects@Mail.ru, Boom, My.Games	MTS Afisha, MTS Games, MTS Media, MTS TV, MTS Music, WASD.tv
Communications	SberMobile	Tinkoff Mobile	Aura, Yandex.Mail, Sloy	VK.com, My World@Mail.Ru, ICQ, TamTam, Mail@Mail.ru, Odnoklassniki	My MTS, MTS Mobile
Home	DomClick		Smart home: light bulb, remote control, socket; Yandex.Module; Yandex.Station Yandex.Realty	Realty@Mail.ru	MTS Intercom, VDome
Education		Tinkoff Education	Yandex.Practicum, Yandex.Tutor	GeekBrains Skillbox	Smart University
Job	Rabota.ru		Yandex.Jobs + Services + Talents		YouDo
Health	DocDoc	Tinkoff SuperApp	Yandex.Health	Vseapteki.ru, Health@Mail.ru	SmartMed 120/80
Food	SberFood, Delivery Club, SberMarket	Tinkoff SuperApp	Yandex.Lavka, Yandex.Eda	SberFood, Delivery Club, SberMarket	
Children	Sber Kids	Tinkoff Junior			MTS Razvivajka
Travel	Spasibo from Sberbank.Travel	Tinkoff Travel, Tinkoff SuperApp	Yandex.Travel		
Car	Sber.Auto, Cetelem	Tinkoff of gas station, Tinkoff SuperApp	Yandex.Auto, Auto.ru		
Mobility	Citymobil, Youdrive		Yandex.Taxi, Yandex.Drive, Uber Russia	Citymobil, Youdrive	
Search and maps			Yandex, Yandex.Search, Yandex.Maps	Search@Mail.ru Maps.me	
Technology	Sberbank ID	Oleg	Alice, Yandex.Disk, Yandex.Passport, Yandex.Phone	Marusia, Cloud@Mail.ru, Mail ID	MTS 2memory
Loyalty program	Spasibo from Sberbank	Cashback	Yandex.Plus	Combo	MTS Cashback

IV. CONCLUSIONS

Having studied the main products and services of commercial banks in the context of digital transformation, it should be noted that innovative digital technologies have provided a variety of opportunities for the development of the banking industry towards digital banking and the creation of platforms and ecosystems to serve the financial and non- financial needs of customers. The activities of banks in the digital age go beyond traditional banking services, everything will be done for the sake of the client and to meet their financial needs, as well as to support their lifestyle. Digital transformation will enable banks to stay in line with trends and be able to compete

in a new environment where active market participants have emerged and offer consumers more innovative financial solutions. Leaders in the banking services market will largely depend on the success of the implementation of the strategy that banks will choose for their further development.

It can be expected that, in particular, due to the consequences of the COVID-19 pandemic, more transactions will soon be carried out through digital channels and the network of bank branches will be optimized, but there will be operations that require physical interaction. It is worth noting that such a phygital model is logical in a context of widespread digitization, but it is difficult to call it a target for banks that focus on serving the most massive segments. In addition, the creation of such branches requires significant investments in IT technologies, personnel training and infrastructure (which is not available to all banks), and biometrics still carries certain risks for customers, in particular, risks of personal data leakage.

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Transformation of Industrial Enterprise Management to Support Its Sustainable Development

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Abstract—Modern management by the company oriented on principles and requirements standards The ISO 9000 series. In present time organization management industrial businesses represents a system of interconnected processes, the purpose of which is sustainable development and upgrade efficiency based on leadership managers, getting involved and responsibility personnel and active applications methods of constant monitoring improvements. The paper determines that as a result implementation the business process- production process enterprise incurs expenses. Consequently, accounting and analysis expenses on production products necessary implement based on concepts and methods management level accounting with the application system level approach. Like this the approach implies: input control, cost control in progress production facilities and analysis of the main indicators at the exit. Purpose builds internal management level accounting is optimization costs, which means that reduce costs. This will help managers transform management process for effective use execution options their professional interests responsibilities, which are oriented on a sustainable basis development and upgrade efficiency activities businesses.

Keywords—management system, management quality, business- processes, managerial level accounting, sustainable development.

I. INTRODUCTION

In current changing ones conditions for enterprises it is important to build convenient efficient flexible system management. Industrial applications companies create management system, relying on requirements and recommendations standards ISO 9000 series, use process level approach and national priorities regulatory requirements documents for accounting Department accounting. But often there is no difference between them relationships, no interaction and understanding. Management system it must match V. Pareto's rule 80/20: result it depends on 80 % from the organization process and on the 20 % from the performer this process.

On every company on quality products such as result literate management affect internal processes and external links components. Internal factors depend from the activity the company itself and include the following groups: technical (production), organizational features (managerial), economic factors (financial), social – psychological tests (corporate climate) [1].

Production facilities features businesses significantly affect the result production, definable quality issued products, so how to use it the basis competitive advantages is an implementation new technology, usage better quality raw materials, application new materials.

Management issues features related to transformation organizations production facilities and labor, growth responsibility, qualification level and production line disciplines, security corporate employee culture.

Financially- economic factors features defined by the cost of production and implementation products, the system pricing and policy economic development incentives HR Department capacity building per issue high-quality products.

Internal social network responsibility businesses contributes to creating a comfortable environment working conditions, incentives employees, strengthening pride in the enterprise and loyalty its goals.

Work managers organizations for all internal purposes components with the use of principles, requirements and recommendations standards by system management quality contributes to creating innovations in management your company [2].

The problem for development "perfect management systems" is the absence of regulatory requirements documents with requirements, unambiguous ones methods and approaches. Alternatives theoretical issues and practical ones methods gives possibility develop adapted version internal the management system, what is a the purpose of this policy jobs.

To issues the works include:

- 1) definition and justification basic elements, included in the management system;
- 2) details by construction working with everyone from elements;
- 3) build General scheme innovative management.

II. METHODOLOGY

Quality company operations defined by business processes forecasting, production facilities and implementation products [3]. "Quality loop" "it's a closed system cyclical the sequence business stages- process, defining features product quality, represents main stages creating and support services the quality of the output products. The quality is determined and supported on each of the loop stages the quality begins from the study requirements consumers and features manufacturer's name and end after-sales service (guarantee) and recycling after use [4]. However, it is important pay attention to quality sufficient attention to the first stage marketing services research so as not to lose it product quality at the exit of the business- the process. So definition the cost of quality starts with the analysis suppliers. In management it works the tenfold rule costs". It says that expenses for Corrigendum product quality from poor quality raw material supplier they grow tenfold from the marketing stage, design features before the transition to the stage production, and also when later moving inside business process management (from production before operation). If you want to eliminate some kind of flaw in the first stages design features it costs 1,000 den. units, then in production this will require 10,000 den. units, and on the at the service stage after delivery- 100,000 den. units of Components innovation in the management areas submitted by in figure 1.

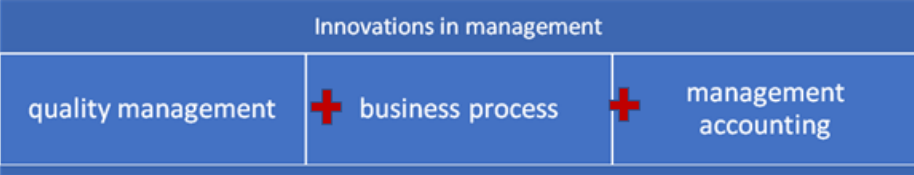


Fig. 1. Components innovation in the management

For the following purposes improvements management systems suggested apply methods for potential assessments suppliers, submitted by in figure 2 [5].

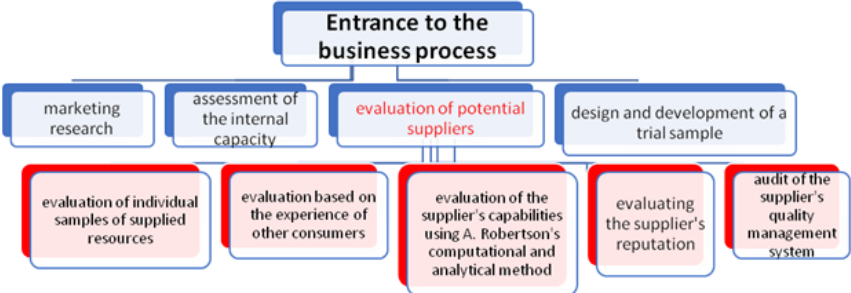


Fig. 2. Sages of the " loop the "login" quality into the business process. Evaluation methods potential customers suppliers

Rating individual samples supplied resources for definitions and classifications incoming defects raw materials and supplies assumes definition the indicator penalty points depending from significance the defect. Indicator defined by every month or a quarter in accordance with a character deliveries and calculated next thus: calculated total quantity set up raw materials and supplies; evaluated penalty points the entire party; received value of penalties points are divided on the value actually verified ones.

Rating based on experience other consumers assumes getting it information about reliability supplier's name from its partners for contractual purposes obligations.

Rating features supplier's name with the use of calculated- analytical A. Robertson's method takes into account quality and price deliveries, timely delivery and provided services supplier maintenance. Components scores are distributed next thus: for quality-44 points; per price – 30 points for timely delivery deliveries – 16 points; for maintenance – 10 points. In the sum – 100 points. Overall evaluating opportunities potential customer supplier's name is being implemented by adding up four indicators. Received the value should be strive by 100 points, then there is a key to reliability the supplier.

Rating reputations potential customer supplier's name is being implemented by indicators: compliance terms of contracts, delivery schedules "just in time" (organization), openness for the society (partnership), mastering new technologies (perspective).

Audit management systems supplier's quality management system conducted by for confirmation quality assurance products in your link supply chains.

Comprehensive information analysis, related to processes activities supplier's name allows you to get enough information at the entrance to the business- the process.

"Body" the business process, i.e. the process itself production facilities based on internal pages opportunities manufacturer. They are spent here resources and accumulated costs. Therefore at this stage "quality loops" it is important to use advanced features methods of management planning accounting in combination with their own experience. A key challenge enterprise is to optimize costs.

For optimal organizations cost accounting they stick to it their classifications. In practice distribution received the following dimensions by: elements; calculation items; places of origin; processes; the activation method C cost of production; depending from the volume production facilities (figure 3).

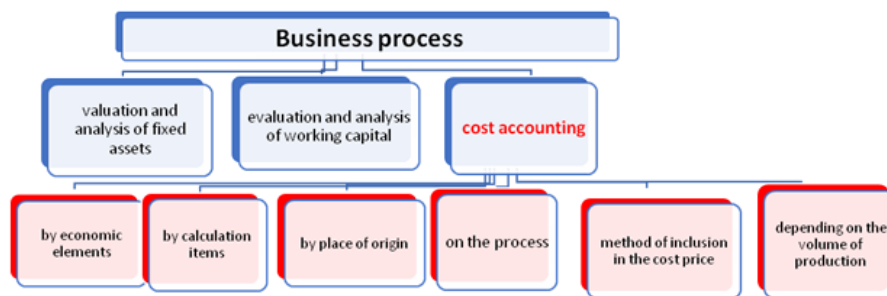


Fig. 3. Stages of the " loop quality" "bodies" business- the process. Methods management level accounting.

Classification for economic reasons elements directed on the definition types and sizes (specific weight) of individual resources in their own the total value. They calculate: material costs; expenses for labor remuneration; deductions on social networks needs; depreciation; other expenses. This grouping does not show destinations production facilities costs, their connections with results production facilities and expediency, but it defines their total values and structure.

Details the cost is determined by classification expenses by item cost of production and highlights expenses for production individual types products. Such expenses carried over C cost of production products direct or indirect methods.

For analysis efficiency separate divisions defined by classification costs by location their

origin. On industrial sites businesses this is the main thing and auxiliary equipment production, administrative services and commercial ones departments.

For implementations main stages "quality loops" within the framework of the business program processes assumed usage dimensions process costs. As a result costs are defined in prosvoDSTV, implementations products and services in management industrial an enterprise. This allows you to define cost of production individual business processes businesses, what in turn it is the basis production line cost of production issued products (works, services).

In accordance with the strategy the development of enterprises, recommendations standards ISO 9000 series it's happening development activities, build-up production volumes, what affects the organization's expenses [6]. At the same time, the size direct costs in the cost of production products decreases, while invoice size expenses are growing. In this situation common features approaches applied during distribution common invoices expenses can be influence on acceptance suboptimal values management issues solutions. For warnings such a situation recommended use functional raseta method cost of production products (Activity Based Costing, ABC), designed by R. Cooper and R. Smith. Kaplan. Functional the method is based on distribution available volume of resources proportionally drivers costs. When production products according to " loops quality" and business model- the process is required organizational features and financial institutions expenses. To drivers include production facilities components: quantity hardware adjustments, components and materials, software checks quality control and operations for fix it marriage. Managerial level accounting with the use of functional this method allows you to timely define cause of occurrence specific invoices expenses and assign them to cost of production of the same type products [7].

One from the principles standards ISO 9000 series is an improvement [8]. for implementation this function in the organization management by the company suggested enable in General innovation policy management system indicators assessment of competitiveness products and services businesses in General. Data indicators number of tests results exit business- the process.

Indicators product quality allow define quantitative assessment a characteristic one or more several product properties. In this case, the number such indicators depends on destinations products. Product multi-purpose destinations must have more numerous inventory item such indicators.

Indicators software quality characterized by properties these indicators include: destinations (show useful effect from the use of products); reliability (define ability perform installed functions), maintainability (evaluate retention rate and durability), processability; ergonomic features and aesthetic ones; economic; environmental issues (figure 4) [9].

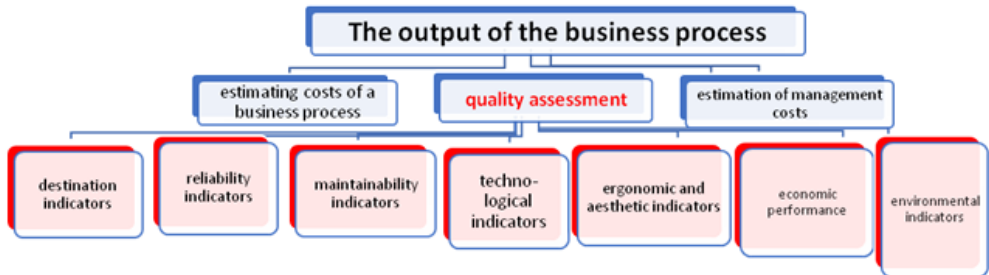


Fig. 4. Stages of the "loop quality" exit business- the process. Indicators the quality of products

For estimates of the obtained results indicators you can set the following parameters your own landmarks (base values), specified in internal regulatory information documentation, as well as indicators product quality the best domestic ones and foreign ones samples.

Implementation stages of the " loop quality" in within the framework of business- process (Fig. 2, 3, 4) recommended implement with the use of next steps methods:

1) calculated- measuring device. Allows you to define costs with the help of installed calculated values standards spend and evaluate indicators quality control by comparisons with

accepted optimal for the company values;

2) registration. Allows you to define costs on based on observation and fixing it and counting the number of defined numbers events and items or costs;

3) expert level. Definition expenses and indicators with the use of and evaluation alternatives costs and indicators;

5) sociological. Allows you to consider requirement and opinions of actual users or possible ones consumers products;

6) statistical. Allows you to define costs, control during the whole process business process management and analyze it with the use of rules for mathematical statistics.

Process management costs in the management system quality assurance industrial businesses contributes to creation economic factors conditions that encourage employees enterprises optimize, raise, provide sufficient and necessary quality level.

Scheme innovative management businesses it is built on organizational and administrative issues, social- psychological, technical issues and economic ones components (figure 5) [10].

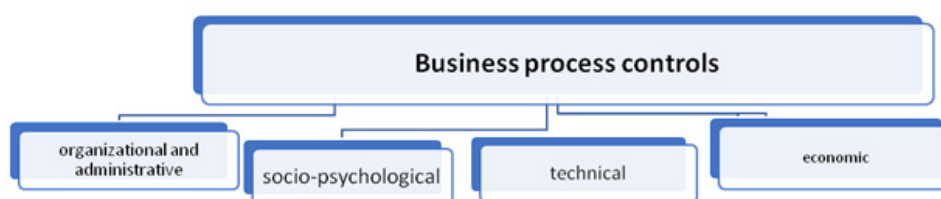


Fig. 5. Components management business process management

Organizational and administrative measures elements process management industrial businesses applied in guidelines, orders and instructions guidelines and other regulations, contributing factors increase and providing necessary the quality level. These methods built on principles "Leadership" and " Engagement staff" [8]. They include these include: regulations (by function, positions, structure); standardization; planning (rationing); introduction (explanation, explanation); instructing (orders, instructions, instructions, resolutions).

Social and psychological factors elements process management costs in the management system quality assurance industrial businesses influence on the internal page climate of labor the team, implementing the principle "Achievement results and improvement" [8]. These include: incentives high quality results labor; work how to improve it psychological climate change (resolution conflicts, software psychological adaptations and compatibility issues employees). delegation permissions; creating conditions to increase your sales personal responsibility.

Organizational and technical features methods process management industrial businesses methods they include methods regulation and monitoring business- processes [11, 12]. To do this, go to enterprise optimized tasks: planning business processes, establishment resource usage, development internal standards; creating internal links standards to measure the quality of all types of work and their results; definition and measurement parameters quality of work and products; conducting organizational issues events in the field of quality.

Economic method process management include creating conditions, motivating factors employees and whole teams enterprises constantly promote and provide optimal quality level business processes [13, 14, 15]. To these methods these include: software financing in the management area quality; material promotion employment incentives production, business planning new ones and upgrades available types products and services; usage economic factors impact measures on suppliers, flexible pricing.

The system management, combining them in itself, the principles are management quality, components business processes and management accounting contributes to creating and development of a sustainable basic operating principles businesses.

III. RESULTS AND DISCUSSION

As a result research developed by control scheme, based company on the main pages principles ISO 9000 and includes main components management level organization tracking (figure 6).

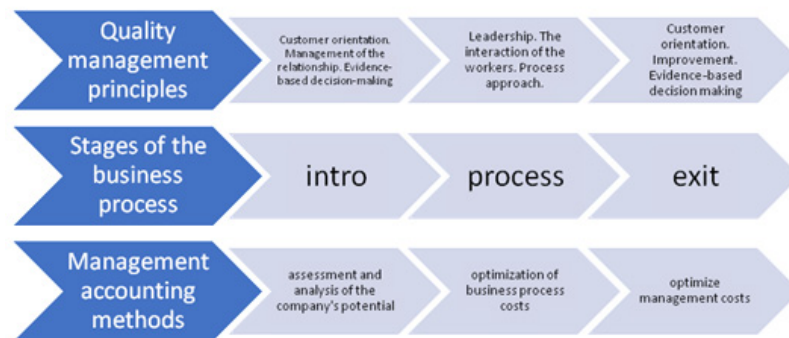


Fig. 6. Innovative control scheme industrial by the company

Developed by the scheme is based on trends modern management, accounting principles planning, monitoring and activity analysis within the framework of sustainable development enterprise development. The scheme combines includes an internal potential, strategic development and economy- social the result. Allows you to warn login errors in the business process, monitor flow rate production cycle and analyze output indicators. The scheme allows you to in detail and many-sided evaluate stages activities, it has a cyclical mode character.

Based on requirements and recommendations standards ISO 9000 series, suggested price management methodology applicable for industrial enterprises a number of industries.

IV. CONCLUSION

Build management systems industrial businesses should be based on based on standard ISO 9001 and the rules tenfold shares expenses; definition, accounting and analysis expenses on implementation business processes and their economic value evaluation with the use of indicators quality [10].

The main one directions management's work at the entrance to the business- the process should be an estimate relationships requirements and customers ' wishes with features manufacturer, as well as verification suppliers on quality delivered items resources.

Definition key indicators capability assessments and modernizations management systems based on tooncept and management methods quality. In implementation process innovative management applied analytical tool approach. This one the approach allows you to identify and comprehensively submit accounting process costs.

Application events management business assessments processes on the enterprise allows you to evaluate the result, optimize it material expenses for production products and services they raise it efficiency management's work organizations.

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Payment Services Availability in the Context of Digital Transformation of Financial Markets

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Abstract —The article discusses the issues of increasing financial inclusion based on the development of payment services, taking into account modern processes of digitalization of the economy. Various approaches to the content of the concept of "financial inclusion» and their evolution are presented on the basis of Russian and foreign authors' researching of scientific publications, as well as its definition in materials of central banks and international organizations. The necessity of developing a toolkit for a comprehensive assessment of the development of the level of accessibility of payment services as a component of monitoring financial accessibility in various countries has been substantiated. Based on the data on the statistics of payment, clearing and settlement systems BIS, an integrated index of the sustainability of the development of financial accessibility of payment services of the G20 countries was determined, reflecting the level of development of each country, the level of development of the infrastructure of its payment system and payment services and their adequacy to the problems of digital transformation of financial markets, as well as the level of demand for payment services. According to the proposed method, a rating was compiled for a comprehensive assessment of the level of financial availability of payment services in the G20 countries, which made it possible to distribute the latter according to the stability groups of the process of increasing the availability of payment products and services.

Keywords — financial inclusion, digital transformation, G20 countries, payment system, payment services availability, payment products and services, bank card, ATM, fast payments, electronic money.

I. INTRODUCTION

In the last decade, in many countries of the world, more and more attention is paid to the problem of increasing the availability of financial services. This is largely due to the processes

of transition to a new technological order, the maintrend of which is the digitalization of the economy.

For the first time at the international level, the problem of increasing financial inclusion was raised by Kofi Annan when he was the UN Secretary General, calling the inaccessibility of financial services for a significant part of the world's population “a serious barrier to the development of the world economy” [1].

The Alliance for Financial Inclusion (AFI) was established in 2008 to help developing countries engage the poor and small businesses “in making wise use of financial market services” [1]. At the moment, the Alliance includes central banks, supervisory and controlling institutions, associations from nearly 100 countries. Its activities are supported and coordinated by the World Bank, the Big Twenty (G20), and the UN. The unifying structure for international organizations in the field of financial inclusion was the Global Partnership for Financial Inclusion (GPII), which was formed at the end of 2010. In 2011, the Mayan Declaration was adopted at the World Political Summit in Mexico City, which outlined “the priority tasks of the world community as a whole and individual countries to improve financial inclusion” [1]. The Bank of Russia joined the Declaration in 2014.

Financial inclusion is one of the significant factors in improving the quality of life of the population, and therefore increasing the level of availability of financial products and services while ensuring the protection of consumer rights and financial stability undoubtedly seems to be the most important task of the state, which the issues of providing financial services are in the area of close attention of the World Bank. To monitor the population's availability to financial services, together with Gallup, Inc. a large-scale complex of Global Findex data was created, which allows obtaining this information for 144 countries. Moreover, every three years the World Bank publishes changes in financial inclusion indicators in these countries.

The issues of increasing the availability of financial services in Russia were raised at the state level and fixed as a priority since 2016. Development of the financial market was included in the number of priority areas, the Strategy for increasing financial inclusion in the Russian Federation for the period 2018-2020 was adopted, which in fact, it became the first strategic program document to address the problem under consideration at the macro level.

Financial inclusion can be determined by the level of development of the financial market, at which the population and small and medium-sized businesses are provided with a full-fledged opportunity to receive a basic set of financial services, characterized by the presence of a set of conditions: provision of infrastructure for the provision of financial services, quality of financial services, demand for financial services and their usefulness. The basic set of financial services is adopted by the G20 global partnership: credit, insurance, payment and savings services [2].

The need for financial accessibility for the development of states and the standard of living was quite accurately substantiated by K. Sukumaran (2015), noting that “financial inclusion paves the way for mobilization of untapped savings in the society and channelizing these savings towards investment and results in growth of different sectors of the economy” [3].

Scientist K. Sukumaran defines full financial inclusion is a state in which all people who can use them, have access to a suite of quality financial services, provided at affordable prices, in a convenient manner, and with dignity for the clients [3].

The idea of a significant link between financial literacy and financial inclusion has been articulated relatively recently in international scientific research and working papers of international organizations. Financial literacy as a characteristic of the usefulness of financial services is studied in the works of scientists Almenberg J., Widmark O., Clapper L., Lusardi A. et al. [4].

The issues of public demand and satisfaction with financial services are discussed in the publications: Garcia M.J.R., Demirguc-Kunt A., Clapper L., Singer D. Ossandon Busch M., Heng D. [5, 6].

Scientist Gortos S.V. (2016) in his study notes and reveals the relationship between financial inclusion and ensuring the integrity and reliability of the financial system [7].

The influence of financial inclusion on financial stability and development of countries is also studied by M.J.R. Garcia in "Can Financial Inclusion and Financial Stability Go Hand in Hand?" (2016). At the same time, he draws conclusions about the ambiguity of the impact of financial inclusion. On the one hand, it has a positive effect on the development of the economy, leading to a decrease in interest rates, an increase in the share of users of financial services. On the other hand, increasing financial inclusion increases the debt burden of businesses and the population, leads to the growth of new financial institutions and instruments from among the unregulated areas of the financial system [8].

Increasing financial inclusion is directly related to the development of the payment systems market, payment services and payment infrastructure. It is the payment industry that is a necessary component of the provision of any services to the financial industry. So in the journal "Payment Systems" (2017) it is noted that "payment systems are extremely important for the financial system as any failure in these systems may result in the non-availability of funds, in terms of amount or time, preventing economic agents from meeting the commitments that they acquire in the ordinary course of their business" [9].

Studies of trends and problems of increasing financial accessibility, to study the impact of the development of payment systems on the monetary policy of the state in Russia, became widespread in the 2000s: E.V. Sinelnikova-Muryleva [10], A.A. Gulko [11, 12], L.A. Bondarenko [13], E.N. Pashkova [14] and others.

At the same time, establishing the nature of the relationships and interdependencies between the components of financial inclusion will improve the objectivity of assessing financial inclusion and its impact on the development of national economies.

II. METHODS

To study the financial availability of payment services, as well as the state of their development, we use the resources of the BIS statistical database, the Google Books Ngram Viewer service, mathematical models for analyzing and assessing the level of development of financial systems.

Using the Ngram Viewer service makes it possible to assess the frequency of mention in the literature of the above-mentioned components of ensuring the financial availability of payment services, to establish the time period for the growth of their demand. This service is used to analyze publications of the time of occurrence and frequency of application of concepts [15]. For research, we use the most massive database of publications - publications posted in English. (fig. 1).

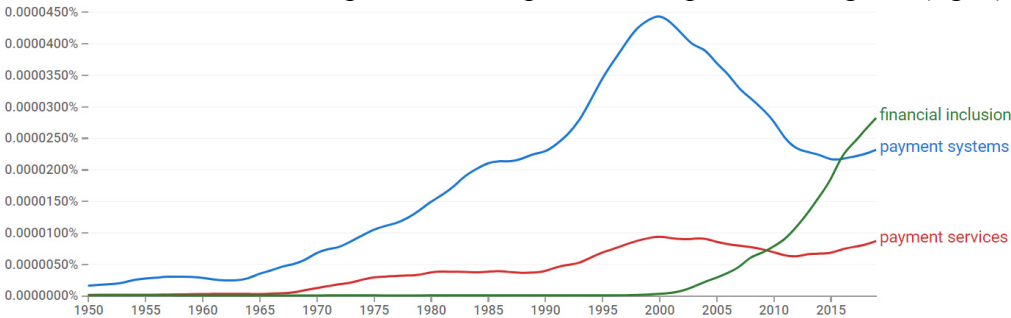


Fig. 1. Analysis the concepts' occurrence characterizing financial inclusion using the Ngram Viewer service

The resulting graph (Fig. 1) clearly shows that the mention of the availability of payment services, an analysis of their development and application refer to earlier periods, and there is a greater amount of literature studying this problem. Here we can talk about the needs for receiving

payment services of both organizations and other structures, and just individuals, as well as the readiness of the financial sector to satisfy them.

The results of the analysis show that the “surge” in the mention in publications of the concept of financial inclusion and, as its component, the availability of payment services, falls on the beginning of the 2000s. We associate this process with the creation of the G20 group - in December 1999, a founding conference was held in Berlin, and since November 2008, meetings of the G20 have been held annually.

Actually, due to the introduction of a number of restrictions to the epidemic situation in COVID-19, the demand for the using of financial instruments, payment transactions in remote mode is increasing. That should ensure the availability and ease of using of the resources of the payment system not only for organizations, but also for the population.

The calculation of the level of sustainability of the development of financial availability of payment services in the G20 countries is based on data from the database on statistics of payment, clearing and settlement systems in individual countries provided by the Bank for International Settlements.

For determine the level of development of the country, the infrastructure of the payment system, as well as the demand for payment services of the G20 countries, the authors used the indicators presented in Table 1.

**TABLE I. INDICATORS FOR ASSESSING
THE INTEGRATED SUSTAINABILITY INDEX OF FINANCIAL INCLUSION
OF PAYMENT SERVICES**

Key assessment indicators of countries' development	Payment system infrastructure assessments indicators	Indicators for assessing the demand for payment services
GDP, USD billion Population, thousand people GDP per capita, USD per inhabitant Rate of inflation growth, % Average exchange rate against the dollar, per US dollar	Institutions offering payment services / instruments, units. Number of institutions offering payment services / instruments per 1 million inhabitants Number of payment accounts, units Number of banks offering payment services / instruments Non-banking institutions offering payment services / instruments ATMs terminals, thousand units POS terminals, thousand units Number of ATMs terminals per inhabitant, pcs. Number of POS terminals per inhabitant, pcs. Participation in SWIFT domestic institutions, units	Volume of non-cash payments, mln USD Average number of non-cash payments per one inhabitant, pcs. Cash withdrawal, mln Number of cards, thousand pieces Number of cards per inhabitant, pcs.

The particular indicators shown in Table 1 are used to calculate the integrated index of the sustainability of the development of financial inclusion of the payment system of the G20 countries. The method is based on a multidimensional comparative analysis, which allows taking into account both the absolute values of the indicators of each country and the degree of their location in relation to the benchmark indicator.

In accordance with the chosen methodology, the coordinates of the compared countries are expressed in fractions of the corresponding coordinates of the standard taken as a unit [16]:

$$K_i = \frac{x_i}{\max x_i} \quad \text{or}$$

$$K_i = \frac{\min x_i}{x_i} \quad (1)$$

where K_i – is the assessment of the level country's development i for each indicator; x_i – value of the indicator for country i ; $\max x_i$ - the maximum benchmark indicator, which can be selected as the optimal (or threshold) values of the country's development indicators; $\min x_i$ - the minimum benchmark indicator, which can be chosen as the optimal (or threshold) values of the country's development indicators.

We find the value of the index of each indicator under study by the formula:

$$I_j = \sqrt{\frac{\sum_{i=1}^n x_i^2}{n}} \quad (2)$$

where n - is the number of indicators;
 I_j - is the index of stability of each indicator.

It is expedient to calculate the Integrated Sustainability Index for the financial inclusion of payment services in the G20 countries (I_s) using the following formula:

$$I_s = \sqrt[3]{I_c * I_i * I_d} \quad (3)$$

where- I_c - is the index of the country's development level; I_i - index of the level of development of the country's payment system infrastructure; I_d is an index of the level of development of the demand for payment services in the country.

The authors believe that a definition of the integrated sustainability index for the development of financial inclusion of payment services for countries makes it possible to take into account the importance of each indicator characterizing the level a country's development and its payment system, as well as the level of demand for payment services in the country.

III. RESULTS

The multivariate comparative analysis, based on the Euclidean distance method, made it possible to compile a rating of the G20 countries and reveal the level of development for each country in the G20, the level of development of the payment system infrastructure in these countries, as well as the level of demand for payment services in them.

To determine the values under study, we use the data of the Bank for International Settlements system on the indicators of the G20 countries for 2017, which is associated with the peculiarities of data placement in the system. Note that the databases contain limited information on the USA and the Eurozone, which does not allow applying the method in full. The results obtained by the authors on the basis of this technique are presented in Figure 2.



Fig. 2. Values of indices of levels indicators' development of financial inclusion of payment services

Thus, this method made it possible to reveal the highest level of the main indicators of the development payment system infrastructure of the G20 countries is in Japan. The five leaders are the Eurozone, USA, France, China. The lowest level of the country is in Argentina, Mexico and South Africa. Russia took 15th position in this rating.

At the same time, the infrastructure of the payment system is best developed in China, Russia, the Republic of Korea, Great Britain, and Germany, as evidenced by the calculated index of the level development payment system infrastructure of the G20 countries.

The most demanded payment services are consumers of the Republic of Korea, India, Australia, Canada, China. Russia ranks 9th in terms of demand for payment services.

Based on the calculated integrated index, we will compile a rating of the level of sustainability of the development of financial availability of payment services in the G20 countries (Table 2). At the same time, the highest value indicates the highest level of its development, and vice versa, a small value indicates a low level.

TABLE II. RATING OF COUNTRIES BY THE LEVEL OF SUSTAINABILITY OF DEVELOPMENT THE FINANCIAL INCLUSION OF PAYMENT SERVICES

№	A country	The value of the integrated development sustainability index	№	A country	The value of the integrated development sustainability index
1	China (excluding Congo and Macau)	0.566827	11	Russia	0.310678
2	Great Britain	0.471690	12	Saudi Arabia	0.275148
3	The Republic of Korea	0.465734	13	Turkey	0.219461
4	Japan	0.436032	14	Brazil	0.209725
5	Canada	0.432458	15	Argentina	0.138139
6	India	0.431396	16	South Africa	0.134484
7	Australia	0.431195	17	Mexico	0.104037
8	Germany	0.410775	18	Indonesia	0.070538
9	France	0.409134	19	USA	there is no data
10	Italy	0.325653	20	Eurozone	there is no data

Let's group the G20 countries to determine the sustainability of the development the financial inclusion of payment services - (Table 3).

TABLE II. GROUPING OF THE G20 COUNTRIES BY THE DEGREE OF SUSTAINABILITY OF DEVELOPMENT OF FINANCIAL INCLUSION OF PAYMENT SERVICES

Resilience level	Index Thresholds	Country	System development stability degree
1	0,81 < I sustainability < 1,0	-	High level of stability
2	0,61 < I sustainability < 0,8	-	Sustainable development
3	0,41 < I sustainability < 0,6	China, United Kingdom, Republic of Korea, Japan, Canada, India, Australia, Germany, France	Development with minor imbalances
4	0,26 < I sustainability < 0,4	Italy, Russia, Saudi Arabia, Turkey	Development with signs of instability
5	0 < I sustainability < 0,2	Brazil, Argentina, South Africa, Mexico, Indonesia	Unsustainable development

As a result of the grouping of countries by the value of the integrated development index, it is possible to draw conclusions about the stability of the development of financial availability of payment services, the orderliness and efficiency of the implementation of measures taken by the state and the banking sector [17]. Leaders in the stable development of payment services availability: China, Great Britain, Republic of Korea, Japan, Canada, India, Australia, Germany, France. At the same time, we note that there is an uneven development of payment services, as evidenced by individual indicators.

A number of countries, including Russia, are included in the fourth group. With regard to the current policy in Russia, we note that the strategy of the Bank of Russia defines the directions for increasing financial literacy and developing payment systems [18]. The set tasks are being actively implemented and should soon lead to sustainable development of the financial availability of payment services, including through the digitalization of their provision, remote provision, and expansion of the sector providing payment services.

IV. CONCLUSION

Increasing the level of financial inclusion, which is one of the most important factors in improving the quality of life of the population, seems to be a strategic task of the modern state. This is the reason for the close attention to the issues of financial services provision by national regulators, international organizations, the World Bank, etc., as well as the scientific community.

Effective monitoring of increasing financial inclusion is one of the most important components, because it helps to determine the optimal and promising directions for improving the relevant methods and tools for expanding financial services, taking into account modern trends in the transformation of financial markets in the format of the digital economy development. The modern payment landscape is being formed under the influence of the development of fintech, but at the same time, the formation of a new payment landscape is a factor in accelerating the digital transformation of the economy and an essential condition for increasing the availability of financial services. The methodology for determining the integrated sustainability index of the development of financial inclusion of payment services for different countries allows taking into account the importance of each indicator characterizing the level of development of payment systems, as well as the level of demand for payment services in the

country. Establishing the nature of the relationship and interdependence between the components of financial inclusion makes it possible to increase the objectivity of assessing its impact on the development of national economies.

The proposed method for assessing the development of payment services includes the use of a wide range of indicators available to the scientific community, which makes it possible to use it in various studies.

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Stock Market Analysis of China and Foreign Countries

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Abstract—The study of the Chinese securities market is of considerable scientific interest due to its rapid development and limited knowledge of the subject in Russia. In China, as well as in Russia, before the beginning of economic reforms, securities markets were practically absent, which is why with the launch of market reforms the country faced the task of forming such a market. The main specific feature of building the stock market in China was and continues to be the close supervision by the state. For these reasons, exploring the Chinese securities market, analyzing its structure, measuring its quantitative and qualitative parameters appear important from the theoretical and practical point of view, which testifies to the high relevance of the subject under our research. The article provides a comparative analysis of the indices of the leading stock exchanges, as well as the average daily turnover on the stock market, an analysis of investments in the Chinese stock market, and draws conclusions.

Keywords—stock market, securities market, bond market, securities market regulation, investments, China.

I. INTRODUCTION

China is one of the leading countries in the world according to the GDP growth rate, and the Shanghai Stock Exchange ranks fifth by the capitalization of companies whose securities are in circulation. Active economic growth is very closely controlled by the government. Most investments are made in public sector organizations, and access for foreign investors is very limited. To be listed in the Chinese market, one must meet high selection criteria. The barriers set by the government only fuel the interest of non-residents. Conflicting statements about China have been made repeatedly: some believe that its power is only gaining momentum in an effort to go beyond what is possible, while others predict the inevitable collapse of the sector. Despite negative predictions and accusations from other countries, China is moving upwards. Its economy is in the state of rapid growth, and the stock exchange is one of the largest in the world.

By the early 90s, there was a boom on the stock market due to keen interest in shares from the Chinese population. The market price of shares was rising day by day and the stock market became absolutely uncontrollable. Shares were being purchased, when possible, in parallel with

investment books. Not surprisingly, in the second half of 1990, the stock market collapsed. It was evident that the market needed regulation. To regulate it, a decision was made to open the Shanghai Stock Exchange.

In 1991 there was a new outbreak of growth which lasted until 1993. Then stock prices in Shanghai and Shenzhen peaked and then plunged again. It was not until 1996 that the pre-crisis level was recovered. A total of 18 cases were recorded during the 1990s when indices changed by 15% per day. High volatility is a characteristic that is common for all developing countries. China is no exception to this rule. The state of Shanghai Stock Exchange's main index is still very turbulent. By swaying between highs and lows, its values cause a frenzy among investors. If the index drops, they are forced to dump previously acquired Chinese shares, but as the index picks up, interest in Chinese equities reawakens.

II. METHODS OF RESEARCH

A vast experience in research of the securities market development in China has been accumulated internationally. It is reflected in the studies of Wang Baoshu, Jinxin Ba, Green Stephen, Yi David, Niels Christian Chier, Louis Hui, Mingli Zhang, Takeshi Jingu, Huang Hui, Sujiang Zhang and others.

In the Russian scientific literature, questions of the nature of securities and methods of organizing the securities market were addressed in the works of A.I. Basov, V.A. Galanov, I.V. Vakhrushin, Y.M. Mirkin, B.B. Rubtsov, N. Tsvetkova. V., Yusypchuk O.I., and others.

After China's accession to the WTO, the subject of the gradual opening of China's domestic stock market for non-residents was brought up on the agenda. Foreign investors were given access to A-shares (but only listed on the stock exchange), treasury bonds and bonds of enterprises and financial institutions. Investments in the above securities may be realized through special investment funds meeting the certain criteria. First, the investor must have the status of a qualified foreign institutional investor (QFII). Secondly, the approval must be obtained from such institutions as the central bank, the Securities Market Regulatory Commission and the State Administration for Currency Control. Third, China has set a number of conditions for a foreign investment management company (existence on the market for at least five years and an asset allocation of \$10 billion).

Compared to European markets, the Chinese stock market is relatively young but has already achieved impressive results. In comparison, the U.S. stock market turned 223, and the New York Stock Exchange (NYSE) emerged after the Wall Street Bankruptcy Agreement in 1792 and the NASDAQ in 1971.

It is apparent that stock markets play a much greater role in the U.S. economy than in China, both at the individual and corporate levels of investors. While this means that the Chinese economy remains relatively immune to the devastating rises and falls in the stock market, it also means that companies remain limited in their financing options which can hinder overall economic growth.

In September 2019, the China Securities Regulatory Commission, the principal securities market regulator in the country, set 12 major objectives for implementing capital market reforms. The work of the commission is largely based on the requirements of current legislation and effective standards [5].

Many continental stock exchanges will adopt proven mechanisms, including a registration IPO.

The 12 stated objectives also include improving the quality of listed companies and the capabilities of investment banks, encouraging medium and long-term investments in mainland Chinese companies, strengthening the legal system in the capital market and taking measures to increase market openness.

Therefore, the acceleration of the internationalization of the capital market and the process of opening up the financial industry has begun, which will play an important role in improving the

functions of the capital market in China, in promoting institutional reforms, as well as increasing the efficiency and maturity of the market. Today the Chinese stock market unites three exchanges: Shanghai, Hong Kong and Shenzhen. Let us consider each of them in detail.

The Hong Kong Stock Exchange has existed since April 1986. It has been trading electronically since its inception, which increased its market activity at that time. Unlike the Shenzhen and Shanghai Stock Exchanges, since 2008 it has been officially open to foreign investors. Trading on the stock exchange is overseen by the Hong Kong Securities and Exchange Commission, and the companies eligible for its participation are strictly governed by its rules. In its turn, the Commission shall keep in constant communication with the brokers, providing them with information on market developments and supporting them in making correct decisions [2].

Shanghai Stock Exchange was founded on November 26, 1990. It trades electronically, yet still has a large trading hall with multiple electronic terminals, which distinguishes it from most European exchanges. The investor sends his orders through the terminal, which is located in the trading hall as well as in designated sites in Shanghai. The Shanghai Stock Exchange is one of the most powerful exchanges in the world in terms of its operational capabilities, as its trading system allows to perform up to 16,000 transactions per second. The Exchange also has "limiters" to manage speculative price fluctuations in the market, which should not exceed 10% per day. The system halts trading if the price change approaches a threshold value.

Shenzhen Stock Exchange began its operations on December 1, 1991 as to create alternative opportunities to attract investments. It does not differ much from the Shanghai Stock Exchange, except for the instruments traded on it, due to the ban on cross-listing in China. Its trading system conducts up to 20 million transactions per day, slightly ahead of the Shanghai Stock Exchange.

Since 2009, the Shenzhen Stock Exchange has been hosting the ChiNext OTC electronic trading platform, which was launched to raise venture capital through the stock market to finance new innovative firms that require significant start-up capital.

The Chinese stock market has a rather complicated structure and before 2006 it was rigidly divided into market and non-market (state shares, shares of legal entities and shares of employees) segments.

Market shares are divided into three classes: A-class shares issued in yuan; B-class shares issued in dollars; and H-class shares that are publicly traded only on the Hong Kong Stock Exchange with par value expressed in Hong Kong dollars.

All three share categories give their owners the same rights, yet they differ by ownership rules. For example, for a long time only Chinese residents had the right to own A-class shares. Access for foreign investors has been opened only since 2003. On the other hand, B-stocks were available only to non-residents. Until 2001, the Chinese citizens were not eligible to acquire or place shares of this class.

III. RESULTS AND DISCUSSION

In the Chinese stock market, only common shares are traded, which have a non-documentary form of issue and par value of 1 yuan. The Chinese government does not provide for the issue of preferred shares.

There also exist shares of N, L, S types, which differ only by their placement. They are issued in the form of depositary receipts. N shares are intended for listing on the New York Stock Exchange, L shares are traded on the London Stock Exchange and S shares are, in turn, intended for the Singapore Stock Exchange. The inability to convert one class of shares into another and vice versa leads to market segmentation, which subsequently creates a large gap in the market price between A- and B-stocks, as well as, between market and non-market shares in general.

To solve this problem, in 2005 the Chinese government started to develop a reform, the core idea of which was to partially convert market shares into non-market ones with compensation of losses in case of a drop in the market value of shares. The purpose of this reform was to reduce the ratio of non-market shares to zero. Therefore, it was decided to eliminate the boundary

between the two segments of shares. The procedure was as follows: the government issues shares owned by a minority shareholder and grants them an equal compensation, which is determined through negotiations between the controlling shareholders and minority shareholders.

Regarding bonds, they are placed at the exchange, over-the-counter and interbank markets. The Central Bank and the Ministry of Finance of China are the issuers in the primary market. Bonds in China are divided into three groups: treasury, financial and corporate, each of which is differentiated by the maturity term into short-term (with maturity less than 1 year), medium-term (from 2 to 10 years) and long-term (more than 10 years) bonds.

In the interbank market, operations may be performed only by institutional investors based on previously quoted prices. The role of the regulator in this market is played by the People's Bank of China. It holds the promissory notes of the Central Bank, medium-term promissory notes and corporate securities.

In the stock market, bond trading is conducted among small, medium-sized enterprises and private investors at an auction under the supervision of the China Securities Market Regulatory Commission.

In the OTC market, trading is carried out at the account of commercial banks, which are closed to the exchange market. Investors send written applications to commercial banks to buy or sell bonds based on quotations issued by a bank. The instruments in this market are state bonds in the form of treasury bonds, local government bonds and savings bonds.

The bond market, compared to the stock market, is more orderly. Each segment has its own regulator. The People's Bank of China is responsible for financial bonds and securities of investment funds. The State Planning Commission regulates the issue of government investment bonds and securities of government institutional funds. Regional enterprises issue bonds under the oversight of regional authorities. The competence of the Securities Regulatory Commission includes regulation of issue and trade, and the People's Bank of China monitors the situation in the OTC market [17].

After China's accession to the WTO, the subject of the gradual opening of China's domestic stock market for non-residents was brought up on the agenda. Foreign investors were given access to A-shares (but only listed on the stock exchange), treasury bonds and bonds of enterprises and financial institutions. Investments in the above securities may be realized through special investment funds meeting the certain criteria. First, the investor must have the status of qualified foreign institutional investor (QFII). Secondly, approval must be obtained from such institutions as the central bank, the Securities Market Regulatory Commission and the State Administration for Currency Control. Third, China has set a number of conditions for a foreign investment management company (existence on the market for at least five years and an asset allocation of \$10 billion). A set of requirements is also imposed on insurance companies, securities companies and commercial banks. Only a bank that ranks among the top 100 largest global financial institutions can claim a license in the Chinese market.

Not only companies can be granted QFII status. To qualify candidates must submit financial statements, an investment declaration and a proof of intent to make medium- and long-term investments [16].

Thus, compared to European markets, the Chinese stock market is relatively young but has already achieved impressive results (see Table 1). In comparison, the U.S. stock market turned 223 years old, and the New York Stock Exchange (NYSE) emerged after the Wall Street Bankruptcy Agreement in 1792 and the NASDAQ in 1971.

It is apparent that stock markets play a much greater role in the U.S. economy than in China, both at the individual and corporate levels of investors. While this means that the Chinese economy remains relatively immune to the devastating rises and falls in the stock market, it also means that companies remain limited in their financing options which can hinder overall economic growth.

TABLE I. COMPARISON OF INDICES OF THE LEADING STOCK EXCHANGES (2019)

	Market capitalization	Number of companies registered on the list	Daily stock market turnover
NYSE - USA	\$ 23 trillion	2 292	\$ 1.5 trillion
NASDAQ - USA	\$ 11 trillion	3 004	\$1.3 trillion
Japan Exchange Group - Japan	\$ 6 trillion	3 628	\$0.5 trillion
Shanghai Stock Exchange (SSE) - China	\$ 4.5 trillion	1 071	\$ 470 billion
Euronext - European Union	\$4.3 trillion	1 239	\$200 billion
London Stock Exchange (LSE) - United Kingdom	\$ 4.3 trillion	2 491	\$231 billion
Hong Kong Stock Exchange (HKEX) - China	\$ 4.2 trillion	2 215	\$205 billion
Shenzhen Stock Exchange (SZSE) - China	\$ 3 trillion	2 115	\$ 397 billion
Bombay Stock Exchange (BSE) - India	\$2.1 trillion	2 663	\$ 45 billion
Deutsche Börse - Germany	\$ 1.8 trillion	509	\$161 billion
Moscow Stock Exchange	\$ 620 billion	224	\$12 billion
NYSE - USA	\$23 trillion	2 292	\$1.5 trillion
NASDAQ - USA	\$ 11 trillion	3 004	\$1.3 trillion
Japan Exchange Group - Japan	\$ 6 trillion	3 628	\$0.5 trillion
Shanghai Stock Exchange (SSE) - China	\$ 4.5 trillion	1 071	\$ 470 billion
Euronext - European Union	\$4.3 trillion	1 239	\$200 billion
London Stock Exchange (LSE) - United Kingdom	\$ 4.3 trillion	2 491	\$231 billion
Hong Kong Stock Exchange (HKEX) - China	\$ 4.2 trillion	2 215	\$205 billion
Shenzhen Stock Exchange (SZSE) - China	\$ 3 trillion	2 115	\$ 397 billion

Source: Official website of the World Federation of Exchanges (WFE)

<https://www.world-exchanges.org> [18]

At the same time, despite their young age, Chinese stock markets have a huge market capitalization by international standards and average daily turnover in the stock market (see Figure 1).

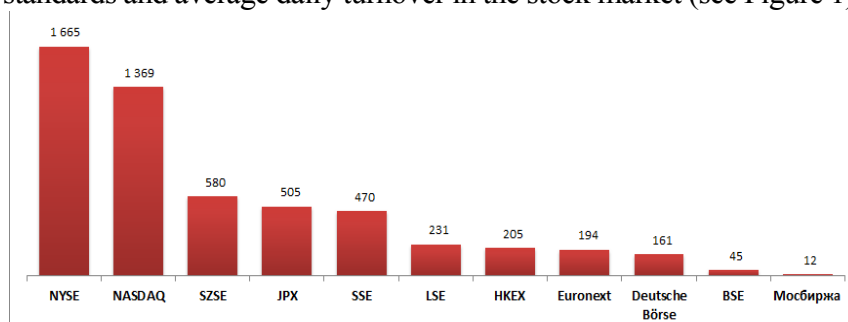


Fig. 1. Average daily turnover at the stock market, in billion USD (2019)

Since stock financing can be an instrumental factor in economic growth, China can benefit greatly from further developing its markets. Giving wider access to foreign investors is a step towards deepening its financial markets, but the main obstacle will be to overcome investor uncertainty.

Statistics show that as of December 31, 2019, the market value of shares in Shanghai Stock Connect and Shenzhen Stock Connect near Shanghai Hong Kong Stock Connect and Shenzhen Hong Kong Stock Connect (i.e. "northern funds")

reached 1.429 trillion yuans, an increase of 269 billion yuans over the third quarter, also due to attracting new foreign investors. According to forecasts, in 2020, the Chinese stock market will open up major opportunities for development [20].

In 2020, China will accelerate financial market reform, the most significant of which is market interest rate reform of the financial market and reform of the stock listing registration system. These two big institutional reforms are crucial and concern all aspects of China's financial market, and will have a major impact on China's future financial market development.

The new Securities Law was officially enforced in March 2020. The main and key content of the new Law on Securities is the full implementation of the registration system for placement of new shares and a number of measures to protect investors. These two aspects are the basis for the future growth of the Chinese stock market.

The old approval system that has been in place for 28 years will be substituted by a stock listing registration system, the most substantial institutional reform since the advent of the Chinese stock market. That will, in turn, enable the stock market financing function to operate at full capacity.

The most valuable feature of the registration system replacing the approval system is that the stock market mechanism will undergo fundamental changes. The allocation of stock market resources will change from a governmental to a market mechanism.

The registration system introduction is intended to reduce the government's interference in the stock market, weaken the government's implicit guarantees in the stock market and gradually allow the allocation of resources to be determined by the market price mechanism. According to the registration system, the share price of a quoted company is not dependent on its proximity to the government, but depends on the return it brings to investors and a number of legal and judicial mechanisms. This will provide unprecedented opportunities for the development and prosperity of the Chinese stock market.

Another important aspect of the Law on Securities, which will be implemented in 2020, is strengthening the protection of investors' rights. When it comes to the securities market, small and medium investors are always in a weak position in terms of knowledge, technical capabilities and distance from the market. If their rights and interests are not protected, they can be violated and robbed at any time. Therefore, the new "Law on Securities" emphasizes the protection of rights and interests of small and medium investors, hoping that more small and medium investors will confidently enter the stock market.

A positive upward trend in investment on the Chinese stock market can be seen even in 2019 (see Fig. 2) [19].

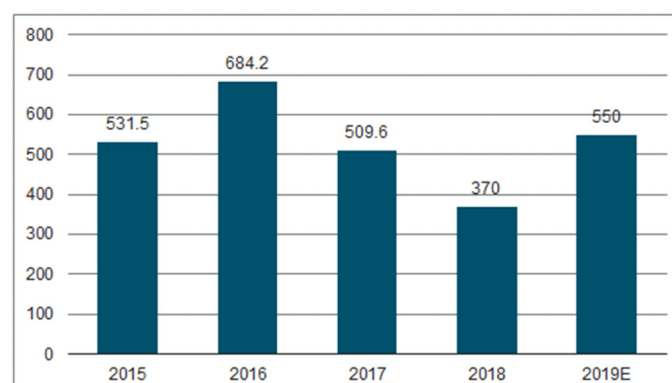


Fig. 2. Investments in China stock market (2015-2019)

Two major reforms of the Chinese stock market will present essential opportunities for development in the securities market in 2020. In addition, investment opportunities in the Chinese real estate market are being completely exhausted, which will also be a driving force for the advancement of the Chinese stock market [20].

Let us further explore the main trends of the Chinese securities market development.

1. Improvement of legal and regulatory system, as well as management of relations between the government and the market. In the development of emerging markets, the government is often responsible for both the market regulator and the participants. The appropriate treatment of the relationship between the government and the market, the rational delimitation of the governmental functions and facilitation of their transformation have become determinant factors of the market's health and sustainability.

2. The active cooperation in building a multilevel system of the securities market to meet the needs for diversified financing and investments. With the continuous development of the Chinese economy and the gradual establishment of an innovative economic system, corporate financing and other needs for financial services will be continuous and diversified. At the same time, with the maturity and growth of various investors, investment demand will also show a trend towards diversification, so the creation of a multi-level securities market is a long-term commitment.

3. Promotion of market reforms in the bond issue mechanism and development of the market credit system. As an integral part of the securities market, the bond market enriched the channels for financing enterprises and provided investors with investment products with lower risks and relatively stable profitability. Active expansion of the bond market contributes to increasing the share of direct financing and is critical to improving the structure of China's financial market.

4. The dynamic growth of futures and derivatives markets. Futures market is of great importance for the stable development of Chinese economy and the maturity of various commodity markets, so the advancement of futures market should be steadily encouraged to enrich the varieties, expand the scale and strengthen the system formation. Hence, to ensure that the futures market plays a more influential role in the development of the national economy.

5. Refining the market deterrence mechanism and promoting healthy development of quoted companies. The quality of quoted companies is a cornerstone of the securities market. The market deterrence mechanism shall be continuously upgraded in order to help the listed companies grow better and stronger and to improve the management and overall quality of listed companies.

July 2019 was marked by the launch of its own platform for technology companies STAR Market on the basis of the Shanghai Stock Exchange, which brought together 25 Chinese companies whose shares were not previously listed on the stock exchange.

STAR Market is China's unique response to the trade war with the United States. The country's authorities expect it to encourage local companies to place their shares in their own NASDAQs, not the U.S. owned. Therefore, the restrictions on STAR Market are milder than on other Chinese exchanges.

The STAR market is the third attempt to create an analogue of NASDAQ (American exchange specializing in shares of high-tech companies), before that ChiNext and NEEQ platforms were launched in China. However, they did not meet the expectations of the authorities, as in recent years their trading volumes and capitalization have been declining.

When launched in 2019, STAR Market aroused great interest among investors, and during the first two weeks of trading share prices rose by an average of 217% of the original price, whereas the capitalization of the first batch of technology companies registered at the STAR Market fell. The value of the companies stabilized only in August.

The adopted reforms and the introduction of the STAR Market platform yielded certain results, but experts say that more could have been done. The initial public offering based on STAR

Market registration was successful, and simple listing standards made it possible for innovative (technology) companies to place their shares on the national market.

Besides, the securities management bodies increased the maximum price during the trading session for such companies to 23 annual revenues, which allowed the market to regulate the price of shares during the IPO itself. During the secondary trading, the daily price fluctuations were also reduced and "short" sales limits were also loosened.

The adopted and implemented market reforms should attract more institutional investors not only from China but also from abroad, who are expected to join the secondary trading of shares on the STAR Market.

Most industry experts assume that in the coming year the market will grow and become less volatile, and the opening of the STAR market will be the beginning of a new era for the Chinese securities market.

STAR Market is the start of major reforms and a precursor to the release of other products: the integration of IPO system based on registration in the ChiNext market in Shenzhen, which will attract innovative and fast-growing companies to this site [20]

IV. CONCLUSIONS

Chinese stock market is entering a new era of its development, in which the enhanced reformative measures presented by the launch of STAR Market, will solve longstanding problems and strengthen the main function of the market - to serve the real economy and drive innovation. Of particular importance today is the reform of the securities market, as the Chinese economy is moving towards growth through technological innovation, which in turn is heavily dependent on stocks. In September 2019, the China Securities Regulatory Commission, which is the main regulator of the country's securities market, set 12 main tasks to develop capital market reforms. The work of the commission is largely focused on the requirements of current legislation and current standards. Many continental stock exchanges will implement proven mechanisms, including the registration IPO. Also among the stated 12 tasks are to improve the quality of companies listed on the stock exchange and the capabilities of investment banks, to encourage medium and long-term investments in the shares of companies in mainland China, to strengthen the legal system in the capital market and to take measures aimed at increasing market openness [21].

Thus, the acceleration of the internationalization of the capital market and the process of opening up the financial industry has begun, which will play an essential role in improving the functions of China's capital market, in promoting institutional reforms, as well as in enhancing the efficiency and maturity of the market. Opening up to the outside world promotes the principle of neutrality in competition and accessibility to foreign investment and investment banks in China.

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Trends of Expansion of the Customer Base in the Banking Sector

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Abstract—Post-crisis regulatory systems are gradually being developed and implemented, and financial institutions are adjusting their business models accordingly. It is now becoming clear that the accelerated pace of technological change is the most creative force in the modern financial services ecosystem. In this publication, we look at the real consequences of such rapid technological progress for the financial services sector and for its supervisors and users. The article reveals the essence of the client base, as well as strategies for improving the efficiency of the Bank's work with its clients. The analysis of ratings of banks on deposits and loans of individuals. Attention is paid to the introduction of the prevalence of FINTECH services in different countries. The author identifies trends in expanding the client base in the banking sector in the modern market economy and draws conclusions that the coronavirus crisis has become an additional driver of the popularity of fintech services in Russia in 2020. In these conditions one of the most important areas of development is biometric identification, which allows to remotely accept customers for service. The next step in the development of fintech in Russia is to work with customer data in order to offer the client individual conditions on time and simplify the application process.

Keywords—customer base, bank, customer, royalty, product, service, loan, deposit.

I. INTRODUCTION

In a modern market economy, the activity of any credit institution is aimed at making a profit. Banking operations with clients, individuals and legal entities, by providing them with credit resources and attracting their funds in the form of deposits, are the main source of profit. The presence of a high-quality client base tends to increase, which is a prerequisite for the stable operation of a commercial bank, ensuring the achievement of high reliability and liquidity indicators

The bank's customer base is a part of potential consumers of the banking services markets, which is within the range of possible contacts with the bank on a territorial basis, and which is satisfied by the range of services provided by the bank. The bank's base can be viewed from two sides. On the one hand, this is the qualitative state of the bank's clients, as a non-random set of consumers of the banking services used, and on the other hand, this is the bank's work with existing customers.

II. METHODS

As the main research method, we used the method of generalization and interpretation of statistical data based on analytical calculations. In the process of applying this research method, statistical materials on expanding the client base in the banking sector were summarized.

III. RESULTS AND DISCUSSION

Attracting new customers, as one of the conditions for building a bank's customer base, takes place in different ways. Different types of lotteries, gifts, special discounts on the bank's product line can serve as incentives. For individual incentives of personal managers to actively work on increasing the customer base, there are competitions among division employees, special bonuses,

as well as moral and material incentives when the sales plan is over fulfilled.

To maintain an already formed customer base and attract new customers, commercial banks set themselves the task of finding possible ways to improve their performance. Unfortunately, the legislative regulation of this banking sector does not fully meet the needs of the current stage of development [7]. Banks face the challenge of identifying efficient directions due to strong competitive pressure from other banks.

The most successful promotion of banking products in the target market and its success in the fight for a client will be determined, first of all, by the prices of the requested product, the profitability of the bank, the level of service, as well as the advantage in the quality of the offered service compared to competitors. In addition to the listed conditions, potential clients pay attention to the bank's reputation and its attractiveness (image), the appearance and design of its buildings, the convenient location of bank branches, currency exchange offices and others.

The banking sector is a very important element in the development of market relations, which is the basis for the normal, effective functioning of the market mechanism. A commercial bank in modern Russia is becoming the main element of the banking system. Because it is the development of this area that must be a priority, because the action of credit and the financial mechanism determines the level of development of the economy of the country as a whole. Important problems in the bank's activities are also: incorrect personnel policy, poor quality of service for the bank's clients, not informative official website of the bank, too high interest rate, an increase in the cost of loans, and, consequently, a decrease in the volume of loans issued, low availability of credit funds, insufficient innovative banking products, imperfect banking technologies, as well as the inability to issue investment loans [1].

During the analysis of the activities of the bank, of the customer-bank relationship system, a problem was identified in the regulation of the banking management of the bank, which speaks of poor quality management, which is the main component of the profitable and reliable functioning of the bank (the quality of bank management means the success or failure of the bank in difficult times).

In recent years, there has been an increased interest of banks in the development of client relations. If in the 90s of the XX century, credit organizations paid more attention and mainly solved the problems of developing and introducing new products, increasing their competitiveness, then already at the beginning of the XXI century they began to pay attention to improving the quality of customer service.

In recent years, in Russian banking practice, the opinion has gradually developed that in order to increase the stability and competitiveness of commercial banks, as well as to obtain constantly increasing profits, they need to form their customer base and effectively manage it.

The current stage of development of the world banking system is taking place in the context of increased competition and crisis phenomena in the financial markets. One of the key conditions for the successful development of banking activities is the policy of continuous innovation [8].

For a successful activity, a bank needs to form a wide client base. According to Kendra Lee, forming a potential customer base is the initial search for potential customers, conducting work with potential customers aimed at identifying potential customers among them, identifying customer needs, identification of solutions adapted to these potential customers, presentation of these solutions, the stage of providing evidence. In other words, all stages of the sale are considered, preceding the transformation of potential customers into valid customers and the subsequent conclusion of the transaction [4].

The attractiveness of a client for a bank largely depends not only on economic factors. Thus, some clients, despite the unprofitability of working with them, can be quite attractive in terms of the prestige and image of the bank. Such customers are called loyal. Therefore, a credit institution may agree to service them in order to conquer a certain market or improve its image.

TABLE I. TOP 5 BANKS FOR DEPOSITS FOR INDIVIDUALS IN JULY-SEPTEMBER 2020 [3]

Place	Bank	Deposits, RUB million			September to July	
		July	August	September	+,-	Height, %
1	Sberbank of Russia	10 056 288	10 174 582	10 158 552	102 264	101.02
2	VTB Bank	2 771 772	2 740 400	2 629 504	-142 268	94.87
3	Rosselkhozbank	1 083 170	1 095 428	1 092 408	9 238	100.85
4	Gazprombank	983 950	1 018 770	1 032 360	48 410	104.92
5	PJSC Bank «FK Otkritie»	650 950	611 608	607 959	-42 991	93.40

Currently, insufficient attention is paid to the issues of increasing the loyalty of existing and potential consumers of banking services, while customer retention is an important part of the bank's relationship with the customer.

A loyal customer is a customer who must be “loved” with all his might, served, and fulfilled his requirements, because winning new customers costs several times more than keeping old ones. The main task of the bank is “not to disappoint”. Loyalty is hard to win and easy to lose.

The researchers note that having a large number of loyal and paying customers can provide it with a number of significant advantages, both in the short and long term. Loyalty programs are one of the most important marketing tools that allow you to increase the frequency and amount of purchases, generate customer reviews, and receive important marketing information about consumer behavior and attracted shoppers. A properly selected and well-organized consumer incentive program allows to achieve significant results with minimal financial costs.

A necessary task of the bank is not only the implementation of customer loyalty programs, but also the expansion of the customer base. In addition to constantly working with existing customers, he must attract new ones by correctly advertising his products (services). You can expand your customer base as follows: improving the quality of service, studying customer needs, developing products for a specific segment, drawing up joint plans for developing cooperation with key customers, applying a differentiated approach to the payment system for banking services [2].

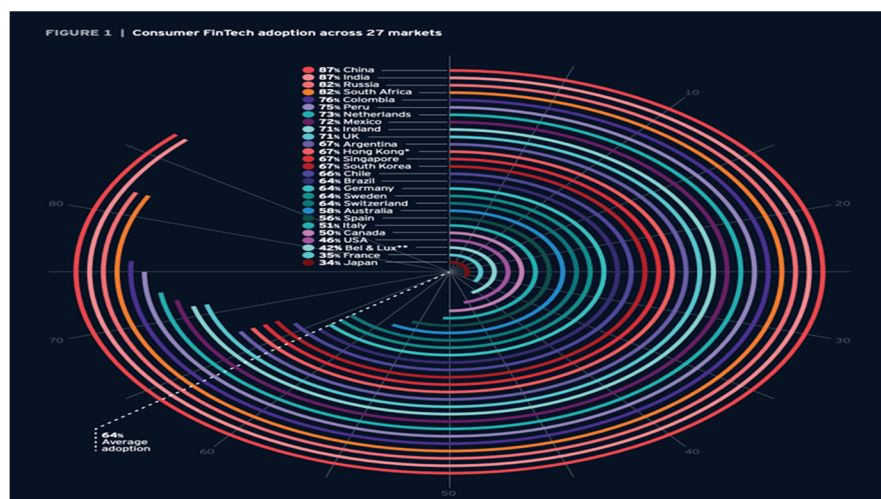
During the study period, individual deposits increased by 1.02% or by 102 264 million rubles for Sberbank of Russia, by 0.85% and 4.92% for Rosselkhozbank and Gazprombank respectively, and decreased by 142 268 million rubles, or 5, 13% for VTB Bank and 6.60% for PJSC Bank FC Otkritie in absolute terms.

TABLE II. 2020 TOP 5 BANKS FOR LOANS TO INDIVIDUALS IN JULY-SEPTEMBER 2020 [3]

Place	Bank	Deposits, RUB million			September to July	
		July	August	September	+,-	Height, %
1	Sberbank of Russia	6 603 147	6 736 647	6 898 655	295 508	104.48
2	VTB Bank	3 011 514	3 059 863	3 108 794	97 280	103.23
3	Gazprombank	627 787	632 503	640 982	13 195	102.10
4	Alfa-bank	528 145	541 712	560 871	32 726	106.20
5	Rosselkhozbank	453 502	464 200	478 442	24 940	105.50

During the study period, loans to individuals increased cumulatively for all the banks complied with, including: by 4.48% or by 295 508 million rubles for Sberbank of Russia, by 3.23% or 97 280 million rubles for VTB Bank, by 2.10% or by 13 195 million rubles for Gazprombank, by 6.20% for Alfa-Bank and by 5.50% or 24,940 million rubles for Rosselkhozbank.

In 2019, experts from the international consulting company Frost & Sullivan and the Russian consulting company NEO Center for the first time estimated the number of active customer base of Russian banks. The leaders in this indicator were the largest state-owned banks: Sberbank (97.5 million active users) and VTB (13.3 million active users), and the third and fourth places were taken by private organizations Tinkoff (7.2 million active users) and Alfa Bank (6.5 million citizens). In fifth place is Post Bank (6.3 million people) [5, 6].



Source: Ernst & Young

Fig. 1. The prevalence of fintech services in different countries

Information and communications technology have made a paradigm shift in the way banks work and in the way, services are provided in the banking industry [9]. The study also notes that in 2019, the country's fintech service penetration index was 82% - this is the third indicator among the 27 largest markets in the world, the study says. China and India topped the ranking, where 87% of residents use fintech services. The top five also included South Africa (82%, as in Russia) and Colombia (76%).

Peru is in sixth place (75% of the population use fintech services), in seventh - the Netherlands (73%). Mexico (72%), Ireland (71%) and Great Britain (71%) round out the top ten.

The United States, where the world's largest technology companies are based, was at the bottom of the list - at 24th with 46%.

Japan took 27th place - 34% of the country's people use fintech services. The study found that global fintech adoption in 2019 had reached 64%. Although two years ago, experts at Ernst & Young predicted that figure would be 52%.

Compared to 2017, the three states with the largest share of the population using fintech services have not undergone any changes. The study emphasizes that the spread of such services in Russia is higher than that of other leaders in the rating leaders: over two years, the indicator increased by 39 percentage points in our country, and in India and China - by 35 percentage points and 18 percentage points respectively.

The high popularity of fintech services in Russia is associated with the youth of the financial system and citizens' susceptibility to innovation [11].

The main drivers in the development of financial technologies in Russia are neobanks, which are initially focused on the use of new technologies and online customer service. The most important of them are Tinkoff (estimated value of 246 billion rubles), UMoney (Yandex Money - 8.3 billion rubles) and "Sphere" (part of the BCS banking group - 1 billion rubles).

Deloitte researchers say the banking industry has undergone significant changes in recent decades. If earlier the big players tried to fight for customers mainly due to price factors, today we are witnessing a change in the entire paradigm of consumer relations with banks. The survey showed that the majority of clients (61%) try to choose a bank with the most attractive conditions; however, they take into account such factors as reliability (56% of respondents), convenience of services (49%) and quality of service (45%).

The leader in the rating of the popularity of retail banks in the Russian Federation is predictably Sberbank, which serves most of the population of Russia. The share of customers using the bank's retail services at the time of the survey was 87.1%.

The conclusion about Sberbank's leadership is also confirmed by the volumes of the retail business of this market player, which are several times higher than those of its closest competitor, PJSC VTB. According to the survey, its share of clients is significantly lower than that of Sberbank, and amounts to 23.4%. Rounding out the top three is Tinkoff Bank, the only private financial structure that has managed to compete so significantly with state organizations.

The leading digital bank JSC Tinkoff Bank is historically focused on working with clients for whom transit settlement operations, as well as additional services and services, are of the greatest interest. The development of such a business model provided the bank with a high level of demand among the population - according to the results of the study; the bank entered the top three in terms of popularity among the surveyed citizens, just behind the largest state-owned market players [10].

In addition, according to a survey of the international research company "Ipsos", conducted in January-June 2020, Sberbank's clients are about 81% of Russians, VTB - 26% of Russians, Tinkoff - about 21% of Russians.

IV. CONCLUSION

Thus, the coronavirus crisis has become an additional driver of the popularity of fintech services in Russia in 2020, according to a study by the NEO Center. The largest banks and neobanks "Izvestia" confirmed this trend.

Due to the coronavirus pandemic, the possibility of distance selling has become a necessity for the bank, according to the ICD. According to Raiffeisenbank, during the period of self-isolation, almost a third of Russians tried paying for Housing and Utilities Services through a mobile bank for the first time, and every fourth made a money transfer for the first time using a phone number. At Promsvyazbank, during the pandemic, the share of loans issued in digital channels increased from 40% to 80%.

During the period of self-isolation, the share of sales of banking products through digital channels (on the website, in the mobile application) increased by 50%. Since the beginning of the year, the penetration of remote services in Otkritie Bank has grown by 20%.

However, the penetration of mobile banking, contactless payments, electronic services for insurance and investments, as well as biometrics in Tinkoff Bank was implemented and actively developed even before the pandemic. This is what helped the bank cope with the new operating mode during the pandemic. Tinkoff noted that over the past year they have been actively introducing artificial intelligence, which offers customers the best solutions based on their preferences.

The share of non-cash transactions in retail trade has been steadily growing over the past years, and according to the results of the first half of the year, it amounted to almost 69%. The regulator expects this figure to exceed 70% at the end of the year.

VTB pointed out that around a quarter (24%) of card transactions represent payments with smartphones using mobile apps (for example, Apple Pay and Google Pay).

One of the most important areas of development is biometric identification, which allows to remotely accept customers for service. The next step in the development of fintech in Russia is to work with customer data in order to offer the client individual conditions on time and simplify the application process

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Crowd Funding as a Promising Alternative Model of Bank Lending

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Abstract—The article examines the theoretical aspects of crowdfunding technology and generalizes methodological approaches to crowdfunding types. The emphasis is primarily that crowdfunding is an innovative tool for financing business projects and is a promising counterpart to bank lending. The main advantages and disadvantages of crowdfunding in comparison with bank credit have been identified. The leading foreign experience of using this financing instrument has been analyzed, and its dynamic development has been proved based on statistical data analysis. The state of the Russian crowdfunding market has been studied, and specific features of its functioning have been revealed. Based on the analysis of crowdfunding trends in economically developed countries and specific features of national crowdfinancing the main directions for increasing the effective functioning and further development thereof as a promising and alternative model of bank lending in Russia are proposed. Scientific and practical recommendations have been put forward, such as the Creating an appropriate legal framework in the field of crowdfinancing; encouraging different types of individual investors to enter the crowdfunding market through transparent fund-raising and the ease of the transfer itself; establishing risk minimization mechanisms for non-professional investors by diversifying the level of investment; developing crowdfunding infrastructure.

Keywords—crowdfunding, credit, bank, business, financial project, technology, efficiency, entrepreneurs, investors, funds.

I. INTRODUCTION

Modernization of the economy and scientific and technological progress are a stimulator for the progressive achievements of the world economy. In recent years, the popularity of crowdfunding projects has increased around the world. Today, crowd funding is the easiest way to raise the necessary funds. Unlike banks, which prefer to invest in projects with minimal risk, crowdfunding is a promising investment model, enabling most promising entrepreneurs to obtain financing for further development at the stage of their inception. Stimulating the innovative development of the economy is a priority for any country, and crowdfunding can be used to finance various social, cultural, creative projects, business, and inventions. Most innovative and social projects are financed under this scheme, but there are also many business ideas that are difficult to obtain credit by fulfilling all the bank's conditions.

Crowdfunding as a business tool is relatively poorly understood from a scientific point of view. In contrast to "traditional" sources of financing, such as bank lending, the coverage of the essence of crowdfunding in the scientific

literature remains low, despite increasing interest. Most of the information is provided in the form of Internet articles, surveys, opinions and statements about the phenomenon. Among the authors of works dedicated to crowdfunding are:

R.V. Beketov [2], K.A. Mekhanich [3], S.V. Rukavishnikov [7], V.A. Tegin [9], B.F. Usmanov, J. Howe [10], M. Robinson, O.M. Shevchenko [11], N.G. Kopasovskaya, et. al. In addition, at the moment there are no works that investigate crowdfunding as a promising and alternative model of bank lending. However, due to its dynamic development in modern conditions, crowdfunding has not received a comprehensive reflection in the works of researchers, since the practice of using this financing tool is ahead of the theory of this issue.

The purpose of the article is to analyze the possibilities of crowdfunding as an alternative model of bank lending to start-up entrepreneurs and to determine the prospects for the further development of this area.

II. METHODOLOGY

To achieve this goal, research methods were used, such as: observation and collection of facts, induction and deduction, comparison, and a graphical method that illustrate specific economic relationships.

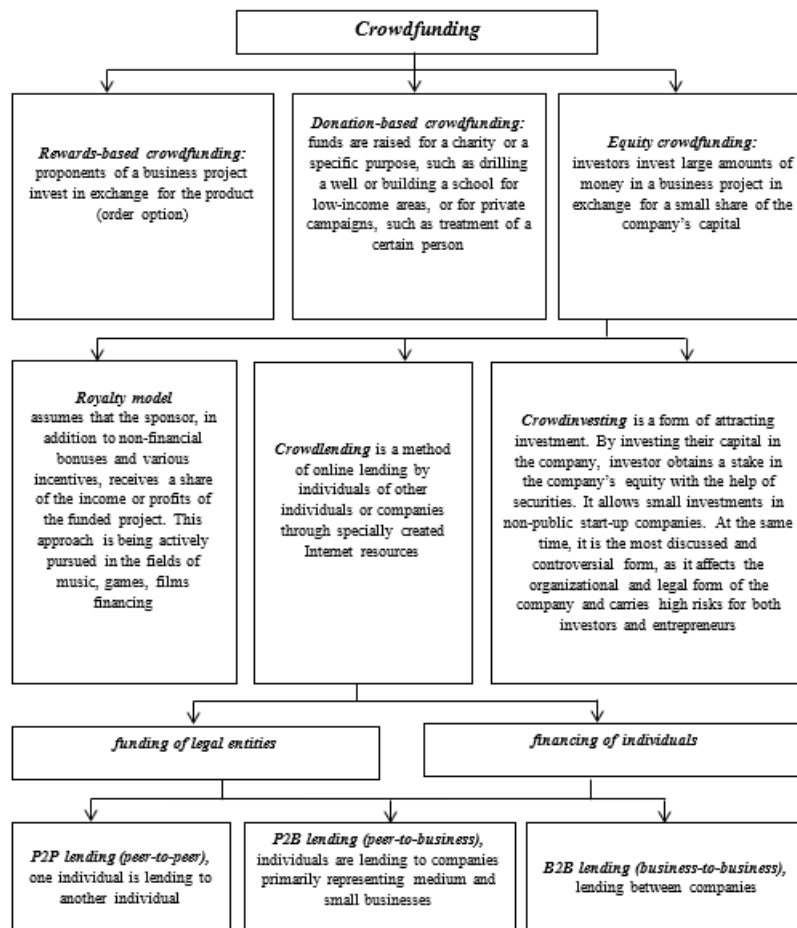
III. RESULTS AND DISCUSSION

The word "crowdfunding" means "wholesale financing" or "community financing". Under current conditions, it means co-financing by people from all over the world of interesting and beneficial projects in various fields of activity: charity, art, sports, education, science, technology, politics, business, start-ups, and so on.

Crowdfunding is a form of crowdsourcing, which in turn means mobilizing people and resources through information technology to meet the various challenges of business, the state and society as a whole.

Namely, the essence of crowdfunding is that in order to implement their idea, an individual or legal entity does not seek financial help from credit organizations, but instead places a business plan for the project on Internet resources (crowdfunding platforms), thereby drawing the attention of ordinary people who are willing and ready to finance this project. As a reward, investors can receive copies of manufactured products, or discounts on services / products, or participate in the implementation of the project, etc.

The following crowdfunding types are distinguished in international practice (Fig. 1).



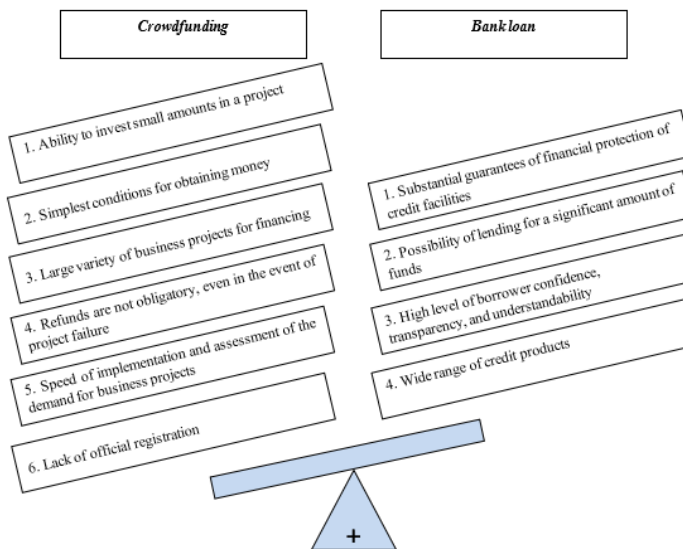
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Fig. 1. Types of crowdfunding

Crowdlending, as a method of financing, practically does not differ from bank lending. It is an instrument in which investors receive a guaranteed interest on the amount invested and fully return their investment after a specified period. Simply put, these are interest-bearing loans without the involvement of banks [14]. Borrowers usually expect less overpayment, and lenders expect higher interest than bank deposits.

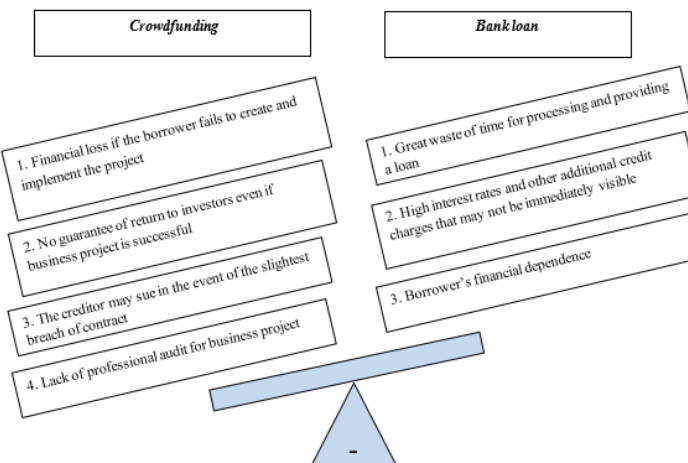
In its simplest form, crowdfunding is a very good substitute for a more traditional way of attracting capital, such as bank loans and borrowings. In other words, crowdfunding is available to everyone. Attracting borrowed funds through crowdfunding technologies does not require accompanying a team of lawyers, accountants, business experts, which makes this method of lending cheaper. One of the key conditions for the successful development of banking activities is the policy of continuous innovation [12].

Crowdfunding owes its rapid development to several differences from bank loans. The advantages and disadvantages of crowdfunding (Fig. 2, 3) should be considered in more detail.



Complied by authors

Fig. 2. Advantages of crowdfunding comparing with bank loan



Complied by authors

Fig. 3. Disadvantages of crowdfunding comparing with bank loan

Despite all the disadvantages, studies show that crowdfunding has been actively developing in recent years all over the world, and a significant part of the financial resources in the crowdfunding market is attracted by small and medium- sized enterprises. Global funding through crowdfunding increased from \$57.2 billion in 2017 to \$114.3 billion in 2019. As for the analysis of the topic of crowdfunding projects, world practice shows that the most popular sector of financing is business and entrepreneurship - 41.3%, social projects - 19%, and cinematography - 12.2%. In the business and entrepreneurship sector, projects are financed mainly under the public investment scheme, while social projects and films are financed under the scheme without financial reward. In the structure of the global crowdfunding market, 70% falls on the American and European markets, despite the spread of this financing instrument in other countries. Thus, by the volume of crowdfunding in 2019, the countries of the world were distributed as follows: North America - \$ 61.2 billion, Asia - \$ 36.8 billion, Europe - \$ 16.3 billion. Fig. 4 shows the amount of funding for various types of crowdfunding worldwide as of 01.01.2020.

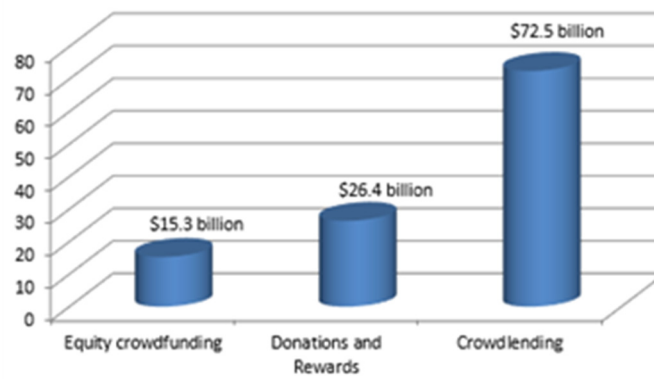
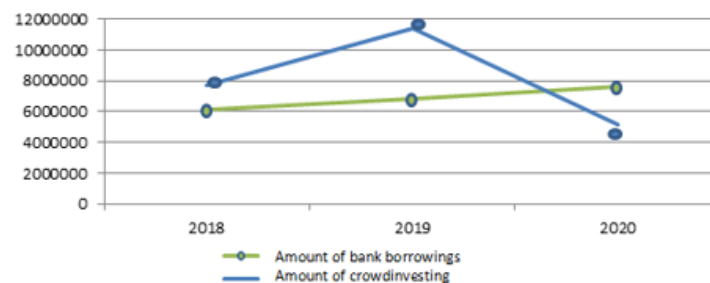


Fig. 4. Global funding volumes by type of crowdfunding in 2019

An analysis of Figure 4 shows that the most demanded segment in the crowdfunding market at the end of 2019 is crowdlending, which occupies two-thirds of the entire market - it raised \$ 72.5 billion.

As for the Russian crowdfunding market, it is in the early stages of formation, therefore, the peculiarities of its development have some differences from those of the world. For Russia, crowdfinancing is new, underdeveloped both in terms of the number of platforms and the scale of projects implemented. Its resources are sufficient only to meet the small-scale needs of small businesses and people. It is almost impossible to raise funds on Russian platforms for realization of ambitious high-tech project, start-up with a product that will be oriented to the world market. Such projects have to use the services of European and American crowdfunding companies.

However, the crowdinvesting market in Russia is growing. According to the Central Bank of the Russian Federation, in 2019 it amounted to 5.2 billion rubles, in 2018 - 11.4 billion rubles, and in 2017 - 7.7 billion rubles (Fig. 5) [5].



	Amount of bank borrowings	Amount of crowdinvesting
<i>Small and medium-sized enterprises, including individual entrepreneurs</i>		
01.01.2018	6 117 152	7 700 000
01.01.2019	6 816 081	11 400 000
01.01.2020	7 587 008	5 200 000

Fig. 5. Volume of bank loans and crowdinvesting in Russia, RUB million

In Russia, crowdlending is the most popular in the form of P2B-lending - targeted loans to businesses. Examples of crowdlending services in Russia: Alfa-Stream, Gorod deneg, StartTrack, Penenza, Sberbank platform. The small and medium-sized business financing segment accounts for the majority (96%) of the Russian crowdfunding market. According to the Central Bank of the Russian Federation, it reached 4.9 billion rubles in 2019. The share of overdue payments also increased: in 2018 it was 4.7%, and in 2019 - 9.6%.

On the contrary, the volume of financing of individuals (P2P) is declining. In the first six months of 2020, it decreased by a third - from 85 to 63 million rubles. A number of experts believe that this segment may soon disappear [13].

According to Central Bank forecasts, by 2022 the Russian crowdfunding market will increase to 20-23 billion rubles, where the bulk will be taken by B2B-lending.

Thus, the above-mentioned crowdfunding features compared to the advantages of bank loans allow us to propose the following scientific and practical recommendations for the effective functioning and further development of crowdfunding as a promising and alternative model of bank lending in Russia:

1. Creating an appropriate legal framework in the field of crowdfunding, which will expand the opportunities for small and medium-sized enterprises to attract resources.
2. Encouraging different types of individual investors to enter the crowdfunding market through transparent fund-raising and the ease of the transfer itself; developed communication between project developers and investors.
3. Establishing mechanisms to minimize risks for non-professional investors by diversifying the level of investment.
4. Developing crowdfunding infrastructure through various types of crowdplatforms; consulting agencies, whose task will be to support business projects, help in their design, advise founders, inform about collective financing on the Internet, fully manage projects.

IV. CONCLUSION

Crowdfunding is a good option for raising funds for business projects, however, like any technological innovation, it needs to improve various processes, mainly in Russia. This requires the efforts and willingness of the state and project developers to work on this issue.

Crowdfunding as a financing instrument is not a full-fledged replacement for bank lending, but it is a real tool for launching a new business project, it gives an opportunity to check the appropriateness of ideas, and consumer interest in the final results, since investors financing a business project are the first users of the proposed service / product.

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Matrix Representation of the Graph Describing Temporary Transitions of the States of Investment Attractiveness of the Russian Regions: on the Example of Regions of the Central Federal District of the Russian Federation

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Abstract—The study uses Google Scholar search engine to show an unjustified boom of Post-Soviet publications on the investment attractiveness of various territories and objects, which are several times higher than the number of publications from non-CIS countries. It is shown that the most popular approach to assessing the investment attractiveness of the territories is the technique used by Expert RA agency. It was applied as a basis for the development of matrix representation of the graph of time transitions of the investment attractiveness of Russian regions from one state to another in the coordinates of investment potential - investment risk of the Expert RA technique. A series of formulas and graphs of such transitions have been prepared for 18 regions of the Central Federal District of the Russian Federation. For the development of this analytical toolkit for studying the dynamics of the investment attractiveness of regions, it is advisable to put numbers of the sequence of transitions on the arrows of the graphs.

Keywords—matrix representation of graphs, time transitions, investment attractiveness, Russian regions, Expert RA, Google Scholar

V. INTRODUCTION

The problem of studying the investment attractiveness of various objects and territories became very popular among Post-Soviet scientists immediately after the collapse of the USSR. One can easily show that the number of Post-Soviet publications on this issue is not commensurate with foreign publications. To do this, it is enough to check the corresponding terms in the advanced search in Google Scholar (Table I).

As we can see, the number of publications in English and Russian is comparable, but a thorough analysis of English-language publications reveals that the largest part of them refers to Post-Soviet articles, with a predominance of those of Russian origin. A very large number of articles by Post-Soviet economists is published in English; besides, all articles of Post-Soviet scientists published in national languages with abstracts in English are included in the results of requests for English terms. We identified about a dozen more terms, which are different variations of the term "investment attractiveness of regions or territories", which are associated with unsuccessful translations of the expressions into English: region investment attractiveness, territory investment attractiveness, etc. But the number of results of the queries for these terms in Google Scholar did not exceed 300-400 publications. Eventually, we concluded that there was an

unjustified boom of publications on investment issues in Post-Soviet countries, and the number of such publications is by an order of magnitude greater than the number of foreign English-language publications, with an extremely low investment attractiveness of the territories of these Post-Soviet countries. This is the sign of the absurdity of the situation with Post-Soviet publications on investment issues.

TABLE I. THE NUMBER OF PUBLICATIONS CONTAINING TERMS OF INVESTMENT ATTRACTIVENESS IN ENGLISH AND RUSSIAN. GOOGLE SCHOLAR. 12.09.2020

TABLE II.

Term	Search anywhere in the article with the exact phrase	Search in the title of the article with the exact phrase
Investment attractiveness	29,500	1,820
Инвестиционная привлекательность (Investicionnaya privlekatel'nost', in Russian)	39,900	2,520
Investment attractiveness of regions	1,070	83
Инвестиционная привлекательность регионов (Investitsionnaya privlekatelnost regionov, in Russian)	1,240	129

A huge number of Post-Soviet publications are devoted to the study of the investment attractiveness of specific territories (regions, districts, cities, etc.) and economic objects and structures (enterprises, industrial complexes, economic sectors, etc.).

Such a study was carried out based on many different techniques and approaches, as there is still no consensus on the development of a single approach. The most popular approach is the two-dimensional technique for assessing the investment attractiveness of Russian regions, which was developed by Expert-RA agency, and where two dimensions are taken into account when assessing the investment attractiveness (or investment climate), i.e. investment potential and investment risk. If we type the term " investment attractiveness " in the advanced Google Scholar search line with the exact phrase, and "Expert RA" in quotes in the line below, then we will get 1940 results (September 12, 2020). Further on, we have selected the most significant theoretical and methodological articles among the resulting publications [1-18].

We shall note that this agency has been publishing annual ratings of investment activity of regions in the period from 2004 to 2017 inclusive. In 2015, the RAEX-Analytics agency was created, which was previously part of Expert-RA, and after 2017, it began to perform calculations on the investment attractiveness of Russian regions, adding their quantitative data to the qualitative scales of the two above dimensions.

VI. MAIN PART

In our further theoretical constructions, we will be based on qualitative scales. The distribution of Russian regions by the level of investment attractiveness will be carried out using the example of the regions of the Central Federal District of the Russian Federation for the period from 2004 to 2017 inclusive (Table II). We shall note that we have constructed the same table in the study [13] for the period from 2004 to 2013 inclusive.

TABLE III. DISTRIBUTION OF REGIONS OF THE CENTRAL FEDERAL DISTRICT OF THE RUSSIAN FEDERATION ACCORDING TO THE RATING OF INVESTMENT ATTRACTIVENESS

№	Region	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1	Belgorod region	3B1	3B1	2B	3A1	3B1	2B	2B	2A	2A	2A	2A	2A	2A	2A
2	Bryansk region	3C1	3C1	3C1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1
3	Vladimir region	3B1	3B1	3C1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3A1
4	Voronezh region	3B1	3B1	3B1	3C1	3B1	3B1	3A1	3B1	3A1	3A1	3A1	3A1	3A1	3A1
5	Ivanovo region	3C2	3B2	3C2	3C2	3C2	3C2	3B2	3B2	3B2	3B1	3B1	3B1	3B1	3B1
6	Kaluga region	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B2	3B1	3B1	3B1	3B1	3A1
7	Kostroma region	3B2	3B2	3B2	3B2	3C2	3B2	3B2	3B2	3B1	3B2	3B2	3B2	3B2	3B2
8	Kursk region	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3A1	3A1	3A1	3A1
9	Lipetsk region	3B1	3B1	3B1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1	3A1
10	Moscow region	1B	1B	1B	1B	1B	1B	1B	1A	1A	1A	1A	1A	1A	1A
11	Moscow	1B	1B	1B	1B	1B	1B	1B	1B	1A	1A	1A	1A	1B	1A
12	Oryol region	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B2
13	Ryazan region	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3A1
14	Smolensk region	3B1	3B2	3B2	3B2	3B2	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1
15	Tambov region	3B2	3B2	3B2	3B2	3B2	3B2	3B2	3B1	3A1	3A1	3A1	3A1	3A1	3A1
16	Tver region	3B1	3B1	3B1	3B1	3C1	3C1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1
17	Tula region	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3A1	3A1	3A1	3A1
18	Yaroslavl region	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1	3B1

Note. 1A - regions with high potential and minimal risk; 1B - regions with high potential and moderate risk; 1C - regions with high potential and high risk; 2A - regions with medium potential and minimal risk; 2B - regions with medium potential and moderate risk; 2C - regions with medium potential and high risk; 3A1 - regions with low potential and minimal risk; 3B1 - regions with decreasing potential and moderate risk; 3C1 - regions with decreasing potential and high risk; 3B2 - regions with insignificant potential and moderate risk; 3C2 - regions with insignificant potential and high risk; 3D - regions with low potential and extreme risk.

Source: Data from Expert RA

Different levels of investment potential and investment risk in two qualitative scales (dimensions) are presented in the form of a 3x4 matrix.

But if we take one region and consider the time transitions from one state of investment attractiveness to another in the coordinates of two scales, then we obtain a matrix representation of the graphs of the investment attractiveness of regions based on Table II (Fig. 1).

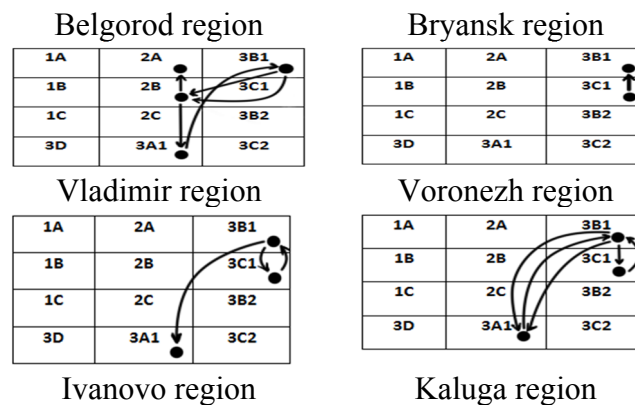
This matrix representation of the graph is ambiguous in showing the sequence of transitions from one state to another, and it does not show the period when the region is in one state.

To eliminate this drawback, we proposed a formula representation of these transitions (Table III). It shows in parentheses the period for which a given region has been in a particular state in years.

TABLE IV. DYNAMICS OF TEMPORARY TRANSITIONS OF THE INVESTMENT ATTRACTIVENESS OF THE REGIONS OF THE CENTRAL FEDERAL DISTRICT OF THE RUSSIAN FEDERATION

Central Federal District regions of the Russian Federation	Formulas for the dynamics of temporary transitions of the investment attractiveness of the regions
Belgorod region	$3B1(2) \rightarrow 2B(1) \rightarrow 3A1(1) \rightarrow 3B1(1) \rightarrow 2B(2) \rightarrow 2A(7)$
Bryansk region	$3C1(3) \rightarrow 3B1(11)$
Vladimir region	$3B1(2) \rightarrow 3C1(1) \rightarrow 3B1(10) \rightarrow 3A1(1)$
Voronezh region	$3B1(3) \rightarrow 3C1(1) \rightarrow 3B1(2) \rightarrow 3A1(1) \rightarrow 3B1(1) \rightarrow 3A1(6)$
Ivanovo region	$3C2(1) \rightarrow 3B2(1) \rightarrow 3C2(4) \rightarrow 3B2(3) \rightarrow 3B1(5)$
Kaluga region	$3B1(8) \rightarrow 3B2(1) \rightarrow 3B1(4) \rightarrow 3A1(1)$
Kostroma region	$3B2(4) \rightarrow 3C2(1) \rightarrow 3B2(3) \rightarrow 3B1(1) \rightarrow 3B2(5)$
Kursk region	$3B1(10) \rightarrow 3A1(4)$
Lipetsk region	$3B1(3) \rightarrow 3A1(11)$
Moscow region	$1B(7) \rightarrow 1A(7)$
Moscow	$1B(8) \rightarrow 1A(4) \rightarrow 1B(1) \rightarrow 1A(1)$
Oryol region	$3B2(14)$
Ryazan region	$3B1(13) \rightarrow 3A1(1)$
Smolensk region	$3B1(1) \rightarrow 3B2(4) \rightarrow 3B1(9)$
Tambov region	$3B2(7) \rightarrow 3B1(1) \rightarrow 3A1(6)$
Tver region	$3B1(4) \rightarrow 3C1(2) \rightarrow 3B1(8)$
Tula region	$3B1(10) \rightarrow 3A1(4)$
Yaroslavl region	$3B1(14)$

As you can see, the largest number of transitions was observed for Belgorod (5 transitions), Voronezh (5 transitions), Ivanovo (4 transitions) and Kostroma (4 transitions) regions. The study [13] has determined such transitions as time drifts and established their classification according to their intensity into strong, medium, and weak.



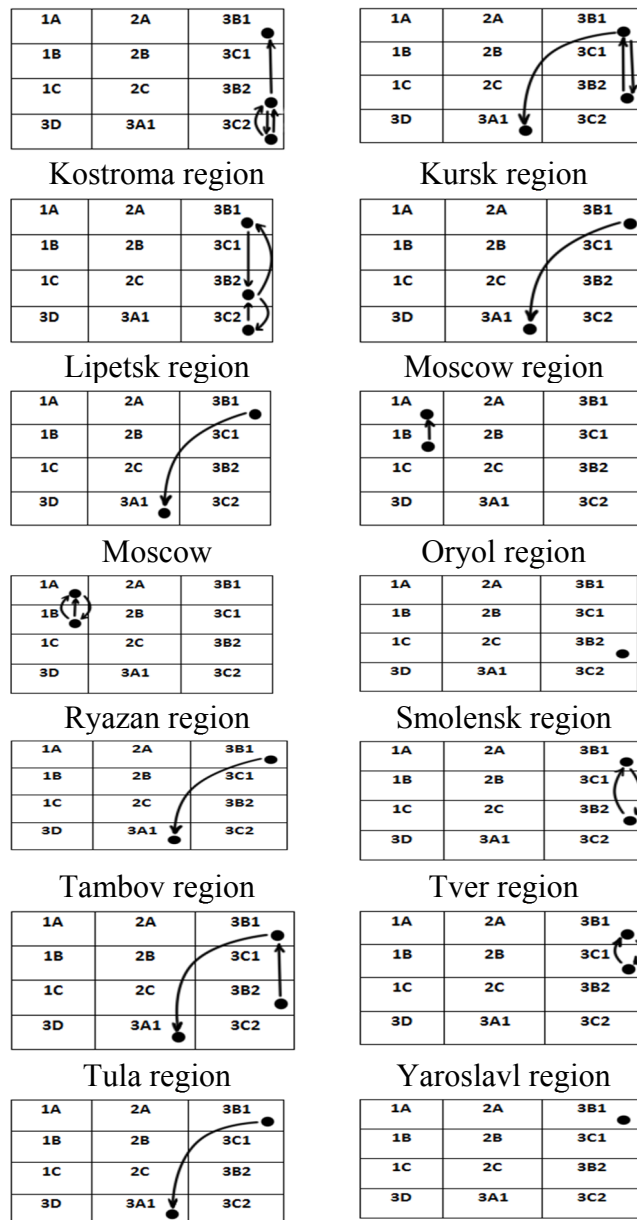


Fig. 1. Matrix representation of the graphs of the dynamics of time transitions of the investment attractiveness of the regions of the Central Federal District

VII. CONCLUSION

In conclusion, we shall note that for the further development of this analytical toolkit for studying the dynamics of the investment attractiveness of regions, it is advisable to put numbers of the sequence of transitions on the arrows of the graphs. In our further research, we plan to update the data on the investment attractiveness of the regions by adding data for 2018-2020 from the database of RAEX-Analytics agency by extending the graph adjacent matrix approach to all regions of the Russian Federation.

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Study of the Interrelation between the Dynamics of Wages in the Public and Private Economy Sectors

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Abstract—In this study, the authors analyzed the availability and degree of interrelation between salaries of the budget and private economy sectors in the regional context based on data from 2013 to 2020. Dynamic and graphical analysis of the relationship between wages in the public and private economy sectors indicates that there is a correlation between them, which differs in regions. Regions with low average wages and a low intersectoral wage gap have a high share of "ukazniki"¹ in the total number of employees in the region's economy. Over the long-term, the private sector is the leader in wage dynamics, while the budget sector is only the follower. This is consistent with the "May" executive order of the President of the Russian Federation on ensuring and maintaining equality of salaries of "ukazniki" to the average level in the region's economy, including in the long term. In the short term, the wage level in the private sector depends on wages in the public sector. Private sector decisions are more flexible than state decisions that are regulated by the Budgetary Code of the Russian Federation. In regions of the Russian Federation with a high share of employees in the public sector and a low intersectoral wage gap, the dynamics of wages has an impact on the private sector. With a growing wage gap and decrease in the share of "ukazniki" the impact of changes in the salaries of the budget sector on the private sector is decreasing.

Keywords—intersectoral wage gap, regional differences, the public sector.

I. INTRODUCTION

In Russia, the share of the public sector employment is sufficiently high and according to the employed population structure by kinds of economic activity in the main job on yearly average by

¹ Specialties that were the main group of execution of the Presidential decree No. 597 "On National Social Policy" dated 07.05.2012 ("May decrees") in terms of bringing the wages of social workers to indicative levels determined by the average salary of employees in the territories.

the data of the sample labor force surveys performed by Russian Statistic Committee, the share of employment in the public sector is 24.4%².

The share of the public sector in the structure of the regional economy varies depending on the level of economic development of the subject. Economically developed regions are characterized by a low contribution of the public sector to GRP and budget tax revenues [17]. Regions with struggling domestic economy are characterized by a high share of revenues from state-owned enterprises and institutions in the GRP and tax base [16].

From an economic perspective, if the state provides high salaries to employees, this can lead to an increase in the labor supply in this area. As a result, private sector jobs may be "displaced" if private sector wages do not increase. In addition, such policies may lead to an increase in the budget deficit and/or higher taxes. If instead the public sector pays lower wages than the private sector there may be a problem with hiring and retaining qualified employees.

The income difference can have a significant impact on the private sector's behavior in setting wages. In cases where public sector wages "outstrip" private sector wages, a narrowing of the wage gap can negatively affect competitive ability through wage inflation.

It is assumed that in a number of areas, employment in the public and private sectors can act as a kind of substitutes: if the government of the Russian Federation sets the public sector salary too high, this decision will shift the labor supply of economically active citizens to the public sector. In order to restore economic balance, the private sector will also have to increase wages. In the opposite case, with low public sector wages, positions in it will be unattractive and wages may not increase in the private sector.

In last years the public sector wages were increasing faster than in the private sector. This is largely due to the implementation of the "May" decrees of the President of the Russian Federation (dated May 7, 2012) regarding the remuneration of employees in the social sphere (education, science, healthcare, culture, physical culture and sports, social welfare, etc.), as well as the implementation of additional indexation of remuneration for state employees during pre-election periods.

Assured financing of the state and municipal institutions' activities, as well as guaranteed remuneration of their employees, can become stabilizing factors for the most economically weak regions of the Russian Federation.

Under crisis conditions, in order to lower the deficit, the government's decision to avoid annual wage indexation in the public sector may lead to the need for a "catching-up" increase in salaries to attract and retain qualified staff in the future.

At the same time, rapid growth of wages in the public sector may lead to a retaliatory wage indexation in the private sector, which in turn leads to a cumulative growth in the wage fund in the economy in general and increases pro-inflationary risks.

With a balanced state policy in the field of public spending, the Russian government's plans of increasing wages in the public sector can serve as a guide for the private sector on the level of wage growth in the economy in the current year. Therefore, it is necessary to take into account the specifics of the formation of remuneration in the public sector, as well as the possible impact of government decisions on the labor market in this area in general.

In this paper, we study the hypothesis of the mutual influence of wage dynamics in the public and private sectors of the economy in the regional context.

The significance of the results is due to the possibility of taking them into account in the development of macroeconomic and regional policies. In particular, understanding the mechanisms and parameters of the studied interrelation is relevant in the context of monetary

² To assess the budget sector, we used data on employment in education, healthcare, state administration, maintenance of security and social welfare based on the data of a sample survey of the labor force performed by Rosstat at the end of 2019.

policy pursued by the Central Bank of the Russian Federation, which has been striving to provide a comprehensive micro and meso justification of its policy (see publications on the official website cbr.ru).

At the same time, at the regional level, Executive authorities also need to justify the parameters of such regulation, when faced with imbalances in regional labor markets and seeking to regulate them by changing wages.

II. LITERATURE REVIEW

The study of the interrelation between the size of wages in the private and public sectors is reflected in both Russian and foreign scientific theoretical and empirical works. A detailed review of available research on the wage gap between budget and state sector employees in Russia and in the world is presented in [9; 14].

There are two areas of research. The first one is the analysis of the intersectoral wage gap size, taking into account the individual characteristics of employees, as well as the assessment of factors that play a significant role in the formation of regional differences in the intersectoral wage gap.

The second direction is related to the analysis of the causal relationship between wages in the private and public sectors and the identification of factors that determine the dynamics of wages.

TABLE I. RESEARCH BY RUSSIAN AND FOREIGN AUTHORS ON THE MUTUAL DYNAMICS OF WAGES IN THE PUBLIC AND PRIVATE ECONOMY SECTORS

Authors	Gimpelson V., Lukyanova A., Sharunina A. [4,5,14,15]	Ivanova M. [9]	Afonso, Gomes [1]
Hypothesis	The dependence of the intersectoral wage gap in Russia on the characteristics of employees and jobs, the economic opportunities of regions, and the heterogeneity of the labor market.	The interrelation between the dynamics of wages in the private and public sectors of the economy.	The interrelation between wages in the private and public sectors, as well as the impact of other determinants on their dynamics.
Conclusions/results	The analysis showed significant regional differences in the size of the intersectoral wage gap, which are mainly due to the regional structure of employment, as well as the economic and budgetary opportunities of specific regions.	Significant 3 VEC models were built for the private and public sectors and subsectors. In General, in the Russian Federation the private sector is the leader in the long term and the budget sector in the short term.	The impact of public sector salaries on the private sector, as well as such indicators as unemployment, labor productivity, inflation, and hours worked per employee is confirmed.

Compiled by: [1, 4, 5, 9, 14, 15]

III. RESULTS

The study uses data on the level of the average monthly nominal charged wages for a full range of organizations in Russia overall and by regions in absolute value in monthly terms from January 2013 to March 2020, as well as data on the salary and number of individual categories of social and scientific workers.

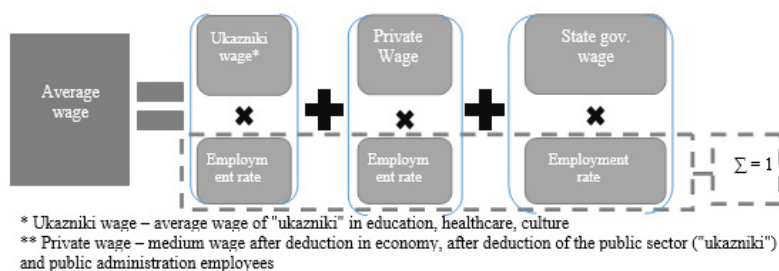
As the wages of the public sector, we use data on wages of «ukazniki» categories of public sector workers in the fields of education and science, healthcare, social policy, culture, physical

³ Nominal accrued wages by type of economic activity (from January 2013 to March 2020).
Data source: Unified Interdepartmental Statistical Information System.

culture and sports. The «ukazniki» categories are understood as specialties that were the main group of execution of the decree No. 597 "On national social policy" dated 07.05.2012 ("may decrees") by the President of the Russian Federation in terms of bringing the wages of social workers to indicative levels determined by the average salary of employees in the territories [11].

It is worth noting that the achieved levels of wages in the social sphere by the end of 2018 will have to be maintained in the future. In addition, the "The main directions of the budget, tax and customs tariff policy in 2019 and the planning period of 2020 and 2021 years», approved by the Ministry of Finance of Russian Federation, provides indexation of salaries of "ukazniki" in subsequent years in proportion to the growth of average wages in the territories [10].

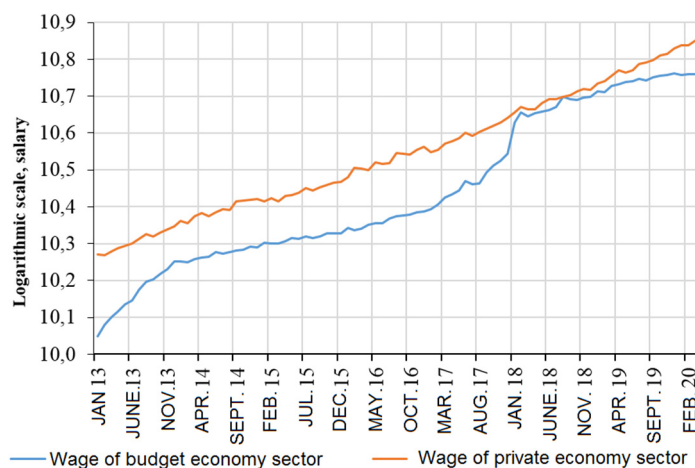
In this study, the average level of wages in the public and private sectors was estimated taking into account the share of employment in Russia. For this purpose, we used data on the employed population structure by types of economic activity in the main job from 2013 to December 2019. In order to calculate the average level of wages in the public sector, the data from the economy sector "State administration" was not used.



Source: compiled by the authors

Fig. 1. Scheme for calculating the medium wage in the public and private sectors of the economy

To assess the nature of the mutual dynamics of the wage level in the public and private sectors, data was deseasonalized using the Tramo/Seats method using the JDemetra+ software package. Figure 2 shows that by the beginning of 2016, the growth rate of wages in the public sector is slowing down and the intersectoral pay gap is growing. Then, since mid-2016, there has been an acceleration in the salary growth of "ukazniki". By the end of 2018, on average, the gap in Russia was almost leveled due to the need to implement the "May decrees" Of the President of the Russian Federation by 2018.



Sources: Rosstat, UISIS, authors' calculations

Fig. 2, Dynamics of deseasonalized wages in the public and private sectors of the economy in the Russian Federation from 2013 to 2020, rub

In the context of regions, the public-private wage gap of remuneration had increased by 2016. Then there is its reduction at the beginning of 2018. A significant reduction of the wage gap was

observed in the regions with a relatively low share in the public sector and became almost equal to the values in the regions with a relatively high employment share in the public sector.

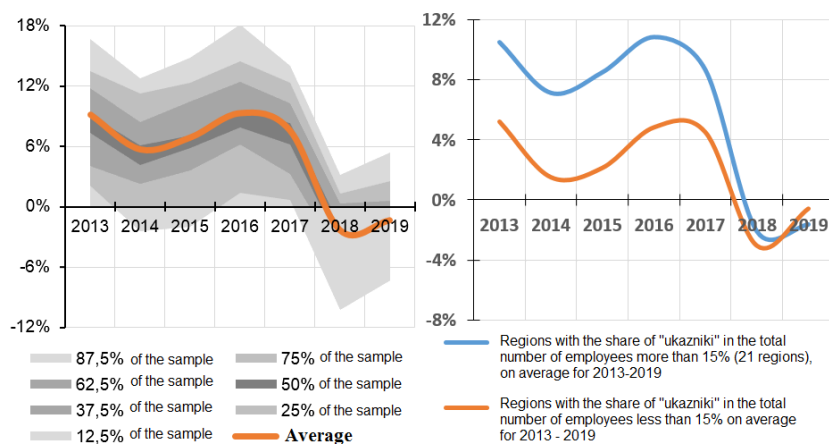


Fig. 3. Dynamics of the distribution of the ratio of the wage gap in the public and private economy sectors in the regions of the Russian Federation to the average wage in the region, %

To determine the options for evaluating the causal relationship, a check for the availability of a unit root in the data was performed using statistical tests with the help of Eviews software. So, the extended Dickey-fuller, Phillips-Perron Test revealed the presence of a unit root in the data. This indicates the non-stationary nature of the variables. The Johansen test also confirmed the existence of a cointegration interrelation in the data.

Taking into account the dynamic nature of the interrelation between the levels of wage in the private and public sectors, the availability of a cointegration relationship between variables, it is advisable to use the error correction model (VECM) as the main analysis tool. Using VECM models helps determine the direction of the interrelation in the long and short periods. This is the standard approach when performing analysis with this problem.

This model assumes that the short-term dynamics adjusts according to the deviation from the long-term relationship in the data under consideration. The General view of the Vector Error Correction Model is as follows:

$$\Delta x_t = C + \Pi x_{t-1} + \sum_{l=1}^{p-1} \Gamma_l \Delta x_{t-l} + \gamma D + \epsilon_t \quad (1)$$

where, Δx – is the first difference of variables in vector x , C - is the vector of free terms (intercepts), Γ , γ – is the coefficient matrix, D - is the vector of exogenous variables, $\Pi = \alpha\beta^T$, where α - is the matrix of correction coefficients, β – is the matrix of cointegrating vectors.

The VECM model is applied to non-stationary series that are known to be cointegrated. In the case of long-term dynamic behavior, endogenous variables converge to their cointegrating ratios, taking into account short-term dynamic correction, i.e. the deviation from long-term dynamic equilibrium is corrected gradually through a series of partial short-term dynamic adjustments.

The availability of long-term cointegration relations is also based on a theoretical approach: this is consistent with the "May" decrees of the President of the Russian Federation on ensuring and maintaining equality of wages of "ukazniki" to the average level in the regional economy, including in the long term.

According to the tests for the number of lags in the work, three lags were selected according to the SIC (Schwartz) criterion. The model also includes a dummy variable to account for the structural change in early 2018 and 2017. Logarithms of time series are considered during modeling. Because of the analysis, we found that in the AR-roots model, within the unit circle, there is no autocorrelation and heteroscedasticity of the residues, and the residues are distributed normally.

Thus, according to the VEC model, in the long term, the private sector is the leader and the budget sector is the follower with a rate of adjustment of 2%. The public sector does not have a significant impact on the private sector in the long term. This is consistent with the economy-wide observation and logic. According to the "May" decrees of the President of the Russian Federation of 2012, the salary of "ukazniki" should correspond to the average level in the region, and accordingly adapt to the wage growth in the private sector of the economy. Since there are fewer employees in the public sector and "ukazniki" than private owners, it is private owners who mainly determine the medium wage level in the region.

Consequently, it is their salaries that ultimately determine the salaries of "ukazniki" whose annual indexation depends on the growth and level of private and average wages in the subject.

In the short term, the public sector has a significant impact on the private sector i.e. the public sector is the leader which is confirmed by the Wald/Granger test. Comparable findings for Russia based on data from 2004 to 2014 were obtained in the work of M.A. Ivanova [9].

According to the results of the model, the coefficient of determination (R^2) for salaries in the budget sector is 0.66, and for the private sector – 0.27. It can be concluded that wages in the public sector affect the dynamics of wages in the private sector. However, there are other significant factors that determine the dynamics of wages in the private sector in the short term.

TABLE II. EVALUATION OF THE VEC MODEL FOR PUBLIC AND PRIVATE SECTOR WAGES

№	Name of the indicator	Wage in the public sector	Wage in the private sector
1.	Coefficient of determination (R^2)	0.66	0.43
2.	The coefficient of cointegration	-0.02*	0.018
3.	Granger/ Wald Test (prob.)	0.65 (causality from wages in the private sector)	0.047** (causality from wages in the public sector)
4.	The leader in the long term	-	+
5.	The leader in the short term	+	-

* significance level (10% - *, 5% - **, 1% - ***)

The decrees of the President of the Russian Federation were designed to raise wages in socially important professions. However, this has an impact on the level of wages for the private sector as well. The regional labor market in the regions is quite differentiated, so it is necessary to conduct a cluster analysis. Clustering of regions will give the chance to test the hypothesis: in regions with a high share of "ukazniki" employed in the economy, there is a low average salary and a low wage gap between the budget and private sectors of the economy.

To assess the impact of the wage level of the budget economy sector on private ones, depending on the share of "ukazniki" employed in the regional economy and the intersectoral gap in wages, it is advisable to group and cluster the subjects of the Russian Federation.

In order to rank the regions of the Russian Federation, there was a share calculation of the employment volume in the public sector belonging to the category of "ukazniki" in the average number of employees in organizations in the region for the study period from 2013 to 2019. The obtained results made it possible to identify a number of (TOP-10) regions with a high share (1) and a low (2) share of "ukazniki". The remaining regions are in the middle (average) (3) group (table 4).

The medium wage is based on monthly data for the period from 2013 to 2019. The wage gap between the private and public sector employees was obtained for the same period by comparing the wages of both sectors in the regions of the Russian Federation to the average salary in the territories

TABLE III. TOP 10 REGIONS WITH HIGH/ LOW SHARE OF "UKAZNIKI" ON AVERAGE FOR 2013-2019

Regions	Inguash republic	Republic of Dagestan	Republic of Chechnya	Republic of Tuva	Kabardino-Balkar Republic	Republic of North Ossetia-Alania	Republic of Kalmykia	Altai republic	Republic of Karachay-Cherkessia	Adygea	...	Sverdlovsk region	Nizhny Novgorod region	Samara region	Khabarovsk territory	Khanty-Mansiysk autn. district-Yugra	Kaliningrad region	Nenets Autonomous district	Leningrad region	Moscow	Nenets Autonomous district
Share of «ukazniki» %	34,38	32,51	31,92	30,16	26,23	25,28	23,86	23,78	22,13	19,71	...	10,72	10,63	10,57	10,31	10,06	9,95	9,86	9,78	9,75	8,22
Medium wage, thousand RUBLES	23,11	21,32	23,61	31,05	22,19	23,18	22,26	25,54	22,17	23,60	...	33,49	29,16	29,33	41,33	64,01	29,81	73,61	36,92	71,97	84,61
Wage gap, %	-11,07	-5,88	-11,29	5,19	-8,50	-8,21	1,48	-6,71	-2,44	3,62	...	-1,52	4,25	4,41	0,98	8,28	-4,59	2,80	3,17	-2,02	10,84

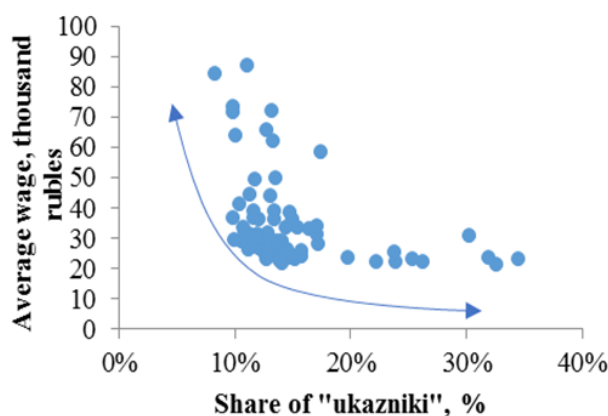
Source: Rosstat, authors' calculations

Based on the type assignment of regions, it can be assumed that there is an inverse interrelation between the level of average wages in the region, its intersectoral gap and the share of "ukazniki" in the territories.

A.V. Sharunina comes to a similar conclusion due to the analysis results of the Consumer Rights Protection Society reporting for 2005-2013 in her work [11]. In this work, it is noted that the welfare level of a region (GRP per capita, the level of wages) affects the gap size. There is a tendency that the level of the intersectoral wage gap is decreasing and the share of employees in the public sector ("ukazniki") is growing as they move from richer to less affluent regions. A high share of employment in the public economy sector and, consequently, a low share of employment in the private economy sector in a particular region may indicate a relatively less developed private sector.

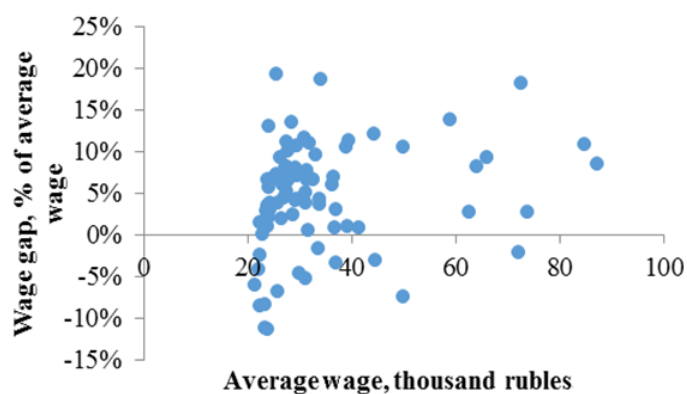
An assessment of the interrelation between the average wage level in the regions of the Russian Federation from the calculated share of "ukazniki" and the gap between private and public sector wages makes it possible to draw the following conclusions:

- With the increase in the share of "ukazniki", the average salary in the region is lower than in regions with a low share of employees in the budget sector (figure 4);
- The lower the gap between private and public sector wages, the lower the average wage in the region and Vice versa (figure 5).



Source: Rosstat, authors' calculations

Fig. 4. The interrelation between the average wage in the regions and the share of "ukazniki" on average for 2013-2019



Source: Rosstat, authors' calculations

Fig. 5. The interrelation between the wage gap in the budget and non-budget sectors and the average wage in the territories on average for 2013-2019.

Cluster analysis of regions to identify the interrelation between the share of "ukazniki", medium wages in the region and the intersectoral wage gap (private and public sectors) will further confirm or refute the previously proposed hypothesis.

The priority task of clustering is to select objects and features. The objects will be the regions of the Russian Federation.

Clustering features correspond to the hypothesis being tested: the share of employees in the public sector ("ukazniki"), the average monthly nominal wage and the intersectoral wage gap on average for the year.

In order to normalize the selected indicators, their transformation was carried out (the ratio of the share of "ukazniki" in the total number of employees in the region's economy and the intersectoral wage gap of the private and budget sectors to the average nominal wage in the territories).

Therefore, both features are normalized and brought into a single system of dimensions (percentages), which qualitatively increases the performance of cluster analysis.

TABLE IV. CHARACTERISTICS OF REGIONAL CLUSTERING FOR THE PERIOD FROM 2013 TO 2019 (THE CLUSTER CENTERS)

Cluster	2013	2014	2015	2016	2017	2018	2019	Average (2013-2019)
<i>Share of «ukazniki» in the number of people employed in the region's economy, %</i>								
1	27.9	27.3	27.7	29.0	28.3	27.3	27.2	27.8
2	12.5	12.3	12.4	12.1	11.6	11.1	11.0	11.9
3	14.0	13.7	13.5	13.6	13.2	12.7	12.6	13.3
<i>Average wage, rub</i>								
1	19 984	21 416	21 823	22 655	24 005	27 358	29 534	23 825
2	57 008	61 830	63 410	67 823	70 387	77 454	85 603	69 035
3	24 483	26 497	27 419	29 155	30 821	33 959	37 110	29 961
<i>Intersectoral gap between private and public sector wages in the average nominal salary of the region, % of the medium wage in the territories</i>								
1	-2.2	-6.5	-6.6	-5.4	-4.4	-7.8	-4.1	-5.3
2	12.5	10.1	12.6	14.4	9.4	-0.6	1.8	8.9
3	10.3	6.8	7.9	10.6	9.0	-1.9	-1.5	5.8

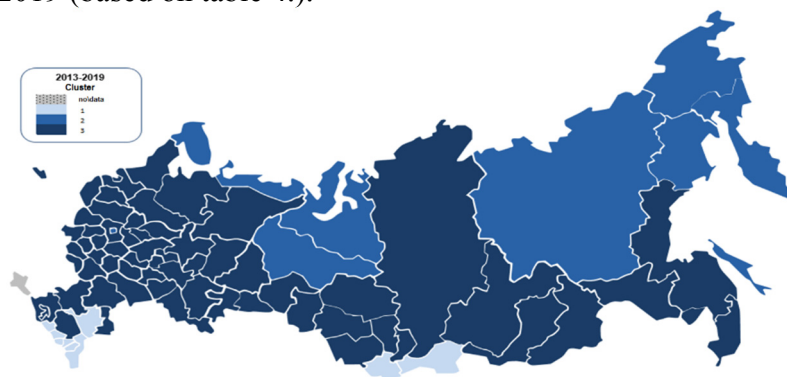
Source: compiled by the authors

Clustering was performed using R software using the "k-means" method for the period from 2013 to 2019. The optimal number of clusters is determined by the "elbow method" - 3 clusters. An increase in the number of clusters to four ones led to the cluster fragmentation with the largest number of regions, which resulted in mixed results and significant fluctuations in the number of

regions in new clusters. In the end, we have obtained robust results that confirm the hypothesis under study.

It is worth noting that in 2014-2015 there was no uniform indexation of wages around the country. Indexation of "ukazniki" was not carried out selectively for all categories and subject to availability.

Figure 6 shows a cartogram of the distribution of Russian regions by formed clusters on average for 2013-2019 (based on table 4.).



Source: authors' calculations

Fig. 6. Cartogram of clustering of Russian regions by mutual influence of wages in the budget and private sectors on average for 2013-2019

The first cluster was formed by regions with a high share of "ukazniki" (9 subjects of the Russian Federation). These regions have always had the lowest salaries and a negative wage gap between sectors. Throughout the period under review, this group included the southern republics and some regions of Siberia: Kalmykia, Dagestan, Ingushetia, Karachay-Cherkessia, Kabardino-Balkaria, North Ossetia, Chechnya, Altai, and Tyva.

The second cluster was formed by regions with a low share of "ukazniki" and high wages and an intersectoral wage gap (10 subjects of the Russian Federation). During the period under review, this group included resource-rich regions and remote territories.

In general, the clustering helped to group the regions of Russia by the mutual influence of wages in the private and public sectors and confirm the hypothesis that regions with a high share of "ukazniki" employed in the economy have lower medium wages and a low wage gap between the private and public economy sectors.

This information is useful when analyzing the change impact of public sector wages on private sector wages, specifically: in regions with a high share of the public economy sector and a small difference in the wage levels in the private and public sectors; changes in the latter will mainly affect the wage dynamics in other sectors of the economy and, accordingly, these changes are most likely to lead to greater pro-inflationary pressure and will require a certain response from the regulator. At the same time, all other things being equal, this may lead to a source shortage of funding for budget expenditures, including labor payment.

To assess the response of private sector wages in the context of regions to changes in public sector wages for each of the clusters, a panel Error Correction Model was constructed using Eviews software from January 2013 to March 2020 (87 observations). The use of this class of models caused by the availability of cointegration relations between the variables at the level of the Russian ideas about the "May" decrees of the President of the Russian Federation (2012), on the wage dynamics of "ukazniki" categories of public sector employees with reference to the average wage in the territories.

The logarithms of deseasonalized wages of the private and public economy sectors is used as variables. According to the obtained estimates of the extended Dickey-fuller test, these variables are non-stationary I (1), but their residuals are stationary at the significance level of 5% in each

cluster. In general, the Error Correction model (ECM) looks like this:

$$\Delta y_t = \mu + a\Delta x_t - \beta(y_{t-1} - c - \gamma x_{t-1}) + \varepsilon_t$$

where Δy_t , Δx_t – are variables in the first difference; a , β , μ , c , γ – coefficients; ε_t – error; c , μ – intercepts.

In each model, the Hausman test indicates the need to use a model with Random effects.

TABLE V. SPECIFICATIONS OF PANEL REGRESSIONS FOR CLUSTERS OF RUSSIAN REGIONS

№	Cluster	The dependent variable, the economy sector	Coefficient of determination, R ²	Short-term effect (a)	Long term effect (B, the correction factor)
1	Cluster 1	Private	0.31	0.40	-0.038
		Public	0.33	0.47	-0.101
2	Cluster 2	Private	0.16	0.10	-0.036
		Public	0.41	0.20	-0.115
3	Cluster 3	Private	0.26	0.13	-0.063
		Public	0.34	0.20	-0.041

Source: authors' calculations

Table 5 shows that the impact of wage changes in the public sector on the wage dynamics in the private sector is higher in cluster 1 with the highest share of "ukazniki" and the smallest wage gap between the private and public sectors of the economy. The impact of public sector wages is decreasing.

In addition, according to the ECM models, in the first differences in cluster 1, the public sector wages have a significant impact on the wage dynamics in the private sector according to the Granger Test. In the regions of cluster 2 with a high level of the average wages of the intersectoral wage gap and a low share of "ukazniki", wage changes of the budget sector do not have a significant impact on wages in the private sector.

Thus, we can make a conclusion that in a crisis, the wage indexation in the public economy sector, all other conditions being equal, can lead to a retaliatory wage increase in the private sector of the economy.

This, in turn, can lead to cost increase for enterprises and increased pressure on businesses during the crisis period. The effect of this is higher in less economically developed regions with a high share of employees in the public economy sector. However, the wage indexation freeze in the public economy sector under the crisis may lead to a greater increase in the cost of retaining and hiring qualified employees to restore balance in the labor market in the future.

IV. CONCLUSION

The regional analysis of the dynamics and nature of variations in the wage gap between employees in the budget and non-budget sectors in the Russian economy has shown that there is a correlation between wages in the budget and private sectors of the economy. A similar nature of the interrelation on the all-Russian data was found in the work of A.V. Sharunina [14]. There is significant regional variation in estimates of intersectoral gaps. Regions with low average wages and an intersectoral wage gap have a high share of "ukazniki" in the total number of employees in the region's economy. In addition, the study showed that on average, intersectoral gaps have decreased over time, including due to the implementation of Presidential Decree "On National Social Policy" dated 07.05.2012 ("may decrees") in terms of bringing the wages of social workers to indicative levels determined by the average salary of employees in the territories.

In the context of a balanced government policy, the annual indexation of wages in the public

sector can serve as a guide for wage changes in other sectors, for maintaining a balance in the labor market, as well as for assessing the expected level of inflation. During periods of sharp economic downturn and the private sector revenue contraction caused by quarantine measures, the stability of public sector incomes will support domestic consumer demand.

At the same time, the wage indexation in the public sector of the economy during the crisis can lead, all other things being equal, to an increase in wages in the private sector that is not caused by an increase in labor productivity. Therefore, this can cause negative consequences for organizations, such as increased costs and reduced competitive ability.

The wage Indexation of the public economy sector under the crisis can act as a stabilizing factor in maintaining demand in the economy in regions with the lowest share of "ukazniki" categories among the employed in the economy, since its impact on wages in the private sector is the smallest.

The unavailability of wage indexation in the budget sector under the crisis may lead to the need for a significant increase in labor costs in the long term, to retain and hire highly qualified staff and restore balance in the labor market.

Research shows that although a public sector wage freeze reduces public spending in the short term it is not an effective policy measure to reduce public spending in the medium and long term [18]. In addition, the study shows a long-term trend of leadership of the private sector in the remuneration dynamics and the budget sector acts as a follower. The result is consistent with the "May" decrees of the President of the Russian Federation on ensuring and maintaining equality of salaries of "ukazniki" to the average level in the regional economy. In the short term, the wage level in the private sector depends on wages in the public sector. Private sector decisions are more flexible than state decisions that are regulated by the Budgetary Code of the Russian Federation.

It is also worth noting that in general, the effect of wage growth in the private sector exceeds the effect of wage growth in the public sector.

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Relationship Between Bank Deposits and Profitability of Commercial Banks (Practical Example of Jordan Commercial Bank)

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Abstract—In this article research in the field of Bank's deposit policy is conducted and deposit operations are classified. Special attention is paid to the analysis of savings and deposit accounts in the Jordan Commercial Bank based on quantitative analysis of current deposits. Also, external and internal factors, which have the influence on the bank's profitability are identified, the prerequisites for the development of the Bank's effective activity and direct relationship between Bank deposits and profitability indicators are determined. Bank deposits are classified into three types: current deposits, savings deposits, and time deposits, which allows you to determine the identified relationship more precisely. To develop the improving strategy for the bank's performance, it is necessary to use the method of credit diversification. As the research shows, banks should direct their available funds to various deposits. This policy is quite successfully guided by the Jordan Commercial Bank, as demonstrated by the presented bank's deposits and profitability's graphs. The results have applied nature and can be used in the activities of commercial banks.

Keywords—the yield, deposit operations, commercial banks, savings deposits, time deposits.

I. INTRODUCTION

The problem of developing banking practices and improving banking's customer service has become particularly relevant and important due to the transition to the market economy.

Such authors and researchers as L.P. Krolivetskaya, O.I. Lavrushin, A.Yu. Kazak, A. Brew, P.S. Rose, J.F. Sinki, J.M. Keynes and others were engaged in the development of banking activities in the field of Deposit operations.

The purpose of this study is the dimension of the relationship between Bank deposits and the profitability generated in all types of commercial banks, and determination of deposits types which have a greater impact on the Bank's profitability. Jordan Commercial Bank and its activity for the period from 2012 to 2020 were selected as the subject of the study. This study demonstrates that there is a significant relationship between deposits and profitability indicators. The savings deposit is the most significant contribution to profitability, then the term deposits and, finally, the current deposits with the lowest contribution to profitability. The article explores the approach of the Jordan Commercial Bank to taking special strategic measures, diversification credit and attracting investment deposits as a basis for the increasing the Bank's profitability.

II. METHODS

The methodological and theoretical basis of this research is the provisions containing the works of foreign researchers. The study of world practice in the field of Bank profitability management has revealed various approaches to assessing the

relationship between Bank deposits and profitability. This relationship was revealed using scientific methods of knowledge, such as analytical, comparative and graphical analysis, in particular, by the example of the Jordan Commercial Bank. And by the correlation method deposits, profitability and margin of a commercial bank were analyzed.

III. RESULTS AND DISCUSSION

The world banking system is in a difficult situation against the background of economic instability and constant crisis situations [2]. The problem of ensuring the financial stability of credit institutions, including commercial banks, get key value at the present stage of development of the world economy and society. The instability of the financial position of credit institutions, on the one hand, and the tendency to expand investment in the economy, on the other hand, aggravate this problem, and so the question in the theory and practice of bank profitability relevance arises, and, consequently, the development of the national economy. The main factor affecting the profitability of banking activities is to maintain the liquidity and to manage the income (profit). Consequently, any country's economy cannot function without the banking system, which in turn cannot operate and develop without profit.

The profit is recognized as the main indicator of the Bank's stability and the main source of the equity. Therefore, it is necessary to get the maximum profit (by trading money supply and investing your resources in special areas) and keep up the optimal relationship between the value and the risk of losses.

Any business project is aimed at achieving the goal and getting maximum profit. Profitability is a simple index of the difference between revenue and costs; therefore, the higher is the profit, the higher is the revenue and the lower the cost. The profitability is an indicator of the bank's competitiveness with the quality of management on the banking market. For clarity, we present the reports of the Jordan Central Bank as at 01.04.2020 in table 1 and figure 1 [11].

TABLE I. BALANCE SHEET TABLE OF JORDAN COMMERCIAL BANK AS FOR 01.04.2020

Jordan Money	Latest	Previous	Highest	Lowest
Interest rate	2.50	2.50	9.00	2.50
Interbank interest rate	2.15	2.15	8.92	0.71
Money supply M1	11941.70	11932.90	11941.70	1539.20
Money supply M2	35965.00	35840.50	35965.00	4484.70
International reserves	13872.10	13874.40	13972.40	1536.19
Volume of lending to the private sector	27082.10	26986.70	27082.10	5055.60
Interest rate on deposits	3.81	3.89	8.51	2.41
Balance sheet of the Central Bank	14936.60	14918.40	15272.62	4246.50
Balance sheet of the Bank	53651.40	53832.40	54422.10	14248.80

Source: [11]

Commercial banks generate most of this activity, but they are mainly related to banking operations, which are the lending. This type of service is the main activity of banks. This activity requires the availability of funds related to the ability of banks to provide high guarantees to depositors who can invest their savings in the form of deposits. Therefore, the volume and continuity of deposits are the most important factors that can increase or limit the profitability of any bank

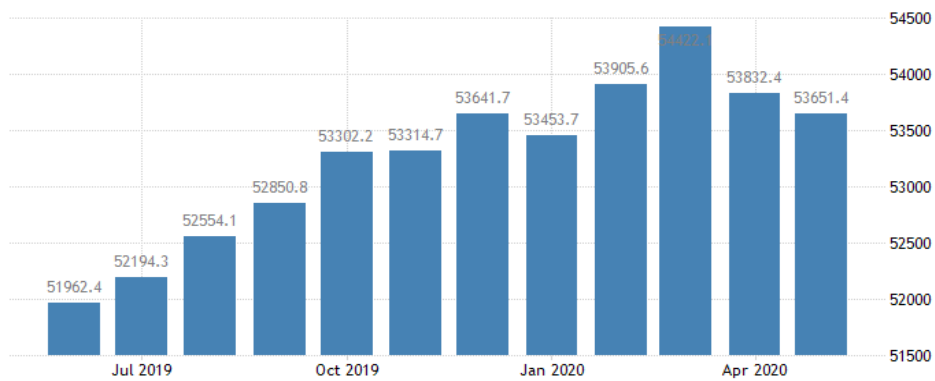


Fig. 1. Indicators of the balance sheet of the Central Bank of Jordan as of 01.04.2020

In order to generate the maximum possible profit and ensure an appropriate ratio of liquidity and cash withdrawals, the departments of these banks are required to optimally ensure the liquidity of their deposits. The statement of this study's problem is based on the different types of deposits and or sizes to the selected banks profitability's. So, deposit operations are important source for the bank's life and the main source of income and can amount for more than 90% [1]. We will reveal the classification of Bank deposits, which can be divided into several types and present in figure 2.

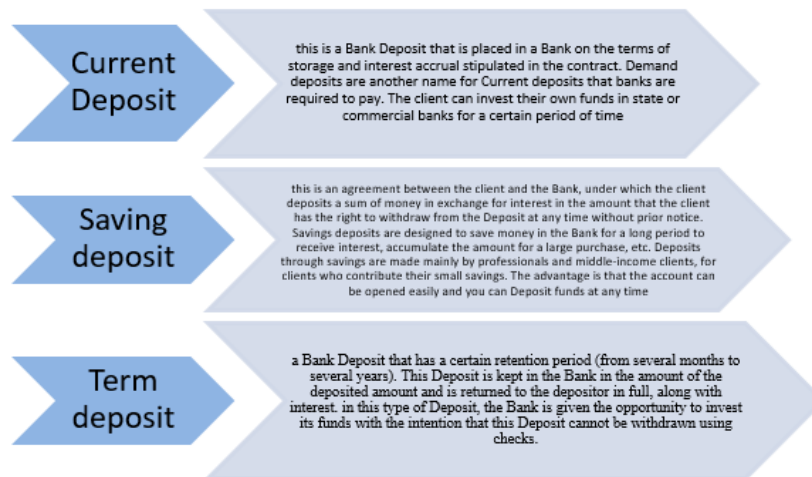


Fig. 2. Classification of Bank deposits

The main sources of financing for commercial banks are deposits, as they allow banks to create credits in a unique way and due to their ability to provide credit facilities [8]. In addition, it is the most important form of savings deposits that contributes significantly to investment in countries and supports the flow of investment and project finance, contributing to the foundation of fixed capital in banks and at the same time encouraging and supporting clients to increase savings through benefits. We can identify a number of factors that affect the bank's profitability, considering the relationship between bank deposits and profitability, as shown in figure 3.

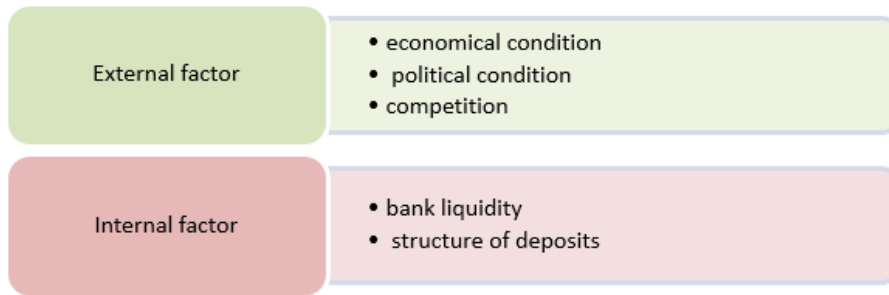


Fig. 3. Factors affecting Bank profitability

Factors having the influence on the profitability are considered as the relationship between the profit received by the bank and the investments that contributed to the achievement of this profit. The profitability is a measure that determines the efficiency of a bank and its financial management. Moreover, this is the impact of corporate governance on the level of internal and external mechanisms, which in turn represent the quality of the accounting and the external audit.

For the deeper research and search for strategies, that can increase the bank's profit, it is appropriate to analyze the real Commercial Bank. As the object of research, let us take Jordan Commercial Bank, which is one of the most important commercial banks in Jordan with various types of activities. The Bank's annual reports and the full financials were studied for the period from 2012 to 2016 and from 2016 to 2019. The dimension of the bank profitability indicators can be calculated using the formulation [10]:

$$ROA = \frac{\text{Net annual profit}}{\text{Total assets}} * 100\% \quad (1)$$

$$ROE = \frac{\text{Net profit after tax}}{\text{Authorized capital}} * 100\% \quad (2)$$

In this research quantitative analysis of current, savings and term deposits in the Jordan Commercial Bank was used as a selected totality, and the impact of each of these deposits on the bank's profitability was studied using the simple equation of linear regression (figure 4).

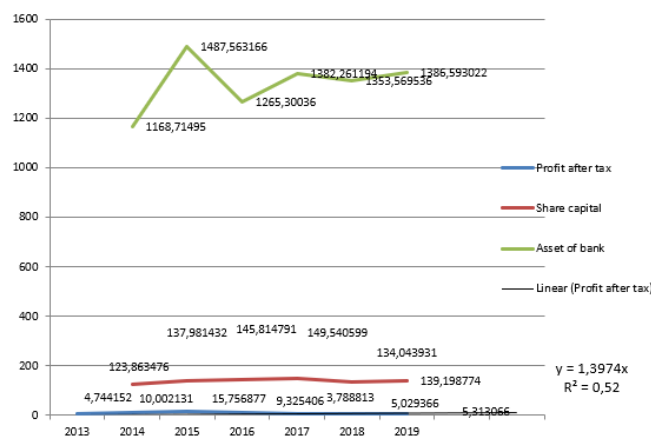


Fig. 4. Dynamics of the Bank's profitability indicators (million dinars)

After the calculating of bank data using the proposed formulations, we found that the higher is the ROE value, the better the bank's return on equity. When evaluating the Bank's ROE indicator, it is important to understand that the interest rate at which money works is important. The analysis revealed that there is a positive correlation between current deposits and Jordan Commercial

Bank's profitability indicators. On the figure 5 the volumes of three deposit's types and their profitability indicators in the Jordan Commercial Bank for the period from 2012 to 2016 are shown [4].

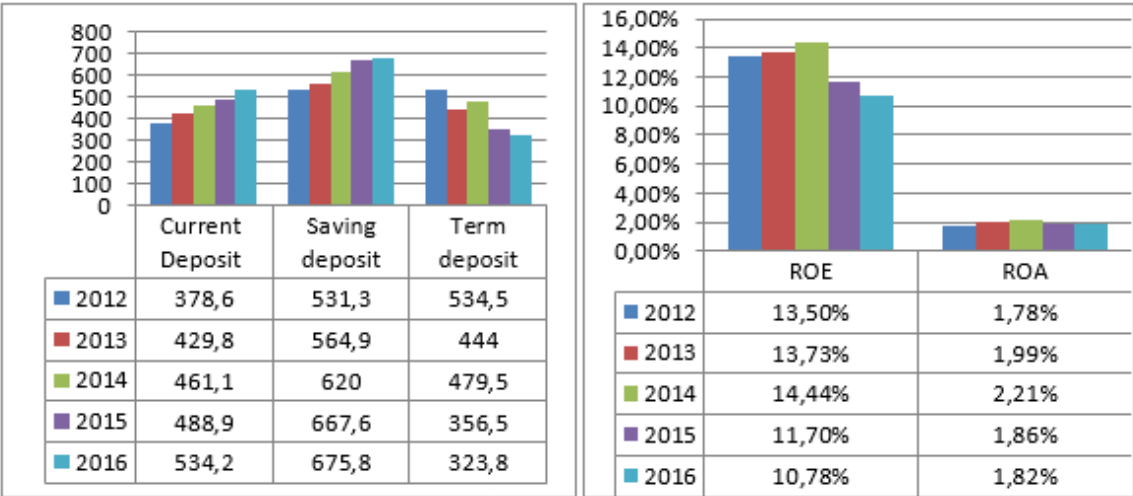


Fig. 5. Volume of deposits (million dinars) and profitability indicators

The ROE deposits are affected by the design value of the bank's clear annual profit, namely, a decrease or increase in savings deposits and a significant effect occurs, and The ROA indicator is affected by net profit after taxes. This indicator shows the financial return on the use of assets, i.e. shows the efficiency of the financial management. As for the structure of deposits, the leading position belongs here to savings deposits and deposits. Currently, large commercial banks provide their clients with a full range of services [9].

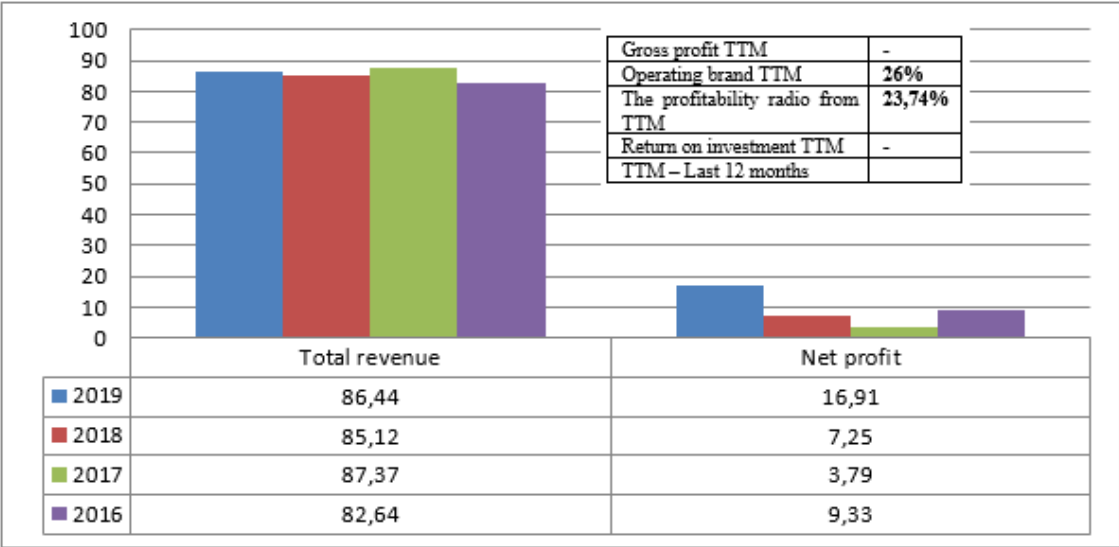


Fig. 6. Income declaration of Jordan Commercial Bank

The analysis revealed that there is a positive dynamic between current deposits and the Jordan Commercial Bank's profitability indicators. For the more identification of the relationship between deposits and the bank's profitability, we present the current state of the bank financial position, i.e., the liquidity values on the figure 7.

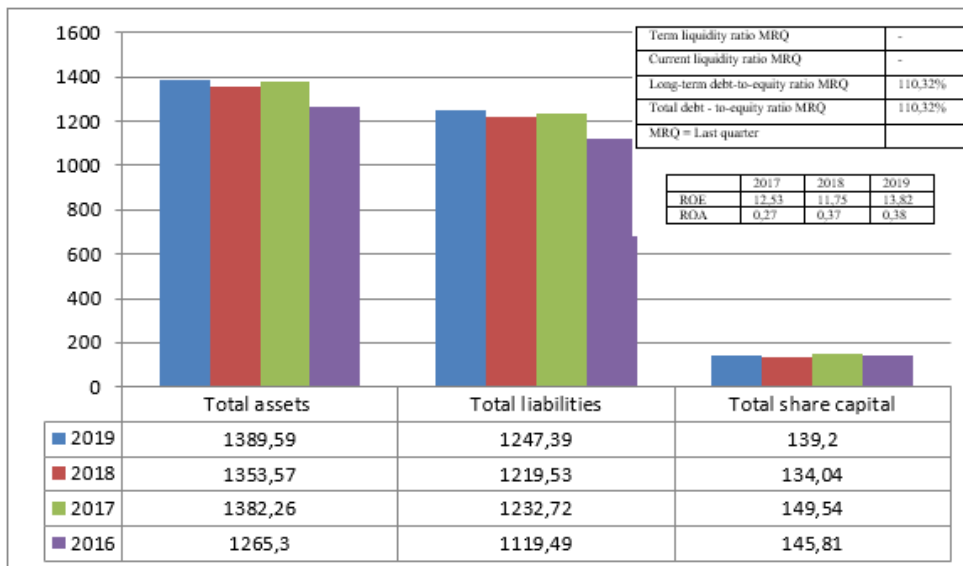


Fig. 7. Balance sheet analysis of Jordan Commercial Bank

So, the ability of the credit organization Jordan Commercial Bank fulfills its obligations and satisfies the requirements of its customers by the disposal of assets or by the borrowing at the prices not higher than competitors.

Thus, we conclude that profit is the main indicator of the bank's effectiveness. It is formed as the difference between the Bank's income and expenses for a certain period and is determined by the progressive total for the year. The value of profit has decisive importance now. In order to get a more significant profit, banks seek to increase profits and reduce their costs. I would also note that the volume of profit in the banking system as a whole ensures its reliability, which guarantees the security of deposits and the availability of credit sources, on which are directly dependent consumers of banking services.

IV. CONCLUSIONS

The Bank analysis has shown that the basis of the Bank's work is deposits [3]. The largest percentage of investments is represented by deposits and is used mainly in major credit operations. Banks also managed to maximize their contribution to the bank's profitability by using term deposits for investments and savings deposits. In this study, the accepted indicators of profitability are effective. This shows us that the bank's management is moving at the right pace, maximizing the bank's profitability and increasing its dependence on savings and term deposits.

The results showed a positive correlation between these different types of deposits and profitability indicators and showed a significant deposit's influence on the profitability, thus justifying all the hypotheses proposed. Savings deposits are the most influential factor affecting the bank's profitability. The level of current deposits has the least impact on the bank's profitability. To regulate the volume of investments by types of deposits, the bank's management should intensify its activities, using tools to provide customer's guarantees at competitive interest rates.

Thus, the determination of further guidelines for the development of financial technology financial market is of particular importance [6]. So, in the financial market is particularly important the definition of further reference points for the financial technology's development.

As a result of this study of the yield's indicators and the commercial bank's profitability should be noted that they are closely connected and it's liquidity that acts as the most significant catalyst, which has the potential to identify and neutralize banking risks, directing the bank to operate in a stable mode and for the future.

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Improvement of Customs and Tax Authorities Interaction in the Process of Carrying out Customs Control After the Release of Goods

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Abstract—The analysis of legal acts and literary sources has led to the conclusion about the need to develop customs control after the release of goods in Russia. Control is a widespread objective phenomenon in all areas of public life. Control can be described as an independent management function, which includes a system of practical measures to influence the ongoing business processes. In the modern aspect of the Russian economy development, the customs control after the release of goods becomes most relevant, since the optimization of the customs payments collection, as one of the sources of the federal budget replenishment, represents one of the main indicators of the state's economic security. The concept of “customs control after the release of goods” has been explored in the article using the complex of methods; directions for improving the interaction of customs and tax authorities in conducting coordinated inspections

are proposed. The main provisions and conclusions of the article may be used in scientific and practical activities when considering issues of the nature and development trends of the customs system in general and customs control in particular.

Keywords—foreign trade, import, customs control, customs control after the release of goods, customs authorities.

I. INTRODUCTION

In a market economy environment, control is an important factor of the effective management of production and commercial structures, which is carried out to maximize income and fulfill obligations towards the state in regard of taxes. Therefore, the regulatory authorities are vested with broad rights in accordance with legislative and regulatory materials and guidelines. This gives them the opportunity to achieve completeness and quality control. Regulatory authorities are empowered not only to examine documents and financial statements, but also to carry out control in relation to the work performed and stock-taking, analyze technical and economic indicators, draw conclusions and make recommendations regarding negative identifications and their prevention. Being the state executive authorities, the customs authorities are vested both with the right to exercise customs and other types of state control at the time of movement of goods across the customs border, and with the possibility of

customs control after the release of goods in accordance with the declared customs procedures.

The customs authorities of the Russian Federation are currently undergoing an evolutionary large-scale reform from “customs control” to “service customs”. At the same time, the current stage of development of customs control after the release of goods is singled out as a key area of the Strategy for the Development of the Customs Authorities of the Russian Federation until 2030 for the long run.

The Strategy for the Development of the Customs Authorities of the Russian Federation has formed a number of prerequisites for the development of customs control after the release of goods, the main of which is the creation of favorable conditions for participants of foreign economic activity by increasing the effectiveness of customs control in order to ensure the economic security of the state.

The study is based on the works of such scholars as A.A. Lebedeva and M.V. Dudova [3], where the essence and tasks of customs control after the release of goods were revealed, and on the works of such scholars as O.Yu. Bakayeva [6] and A.N. Kleimenova [8], where the legal aspects of customs control after the release of goods were examined.

The completeness, correctness and reliability of customs control are reviewed in research works of A.V. Agapova [4], Yu.V. Malysenko [15], and A.V. Cheremukhina [5].

The works of M.V. Selyukov and N.P. Shalygina [13, 14], N.P. Bondarenko, and A.V. Tikhonova [10] are dedicated to the role of customs authorities in ensuring economic security.

II. METHODOLOGY

As for the customs authorities of the Russian Federation, one of the priorities for improving customs administration and one of the most promising measures aimed at compliance with Russian customs legislation is customs control after the release of goods. As a result of this, favorable conditions are formed for participants of foreign economic activity when moving goods across the customs border, including accelerating the implementation of customs formalities, reducing the cost of storing goods under customs control, etc.

One of the main international legal acts in the field of customs affairs, in particular regulating the principles of customs control after the release of goods, is the Kyoto Convention. Thus, the accession of the Russian Federation to the Kyoto Convention in 2010 laid the vector for development of Russian customs authorities in facilitating customs procedures and minimizing

customs control aimed at compliance with customs legislation [9].

The above norms of the Kyoto Convention formed the basis both of the Customs Code of the Eurasian Economic Union (EAEU Customs Code) and the Federal Law “On Customs Regulation in the Russian Federation and on Amending Certain Legislative Acts of the Russian Federation” No. 289-FZ of 08/03/2018.

An analysis of the provisions of the Federal Law “On Customs Regulation in the Russian Federation and on Amending Certain Legislative Acts of the Russian Federation” and the EAEU Customs Code allows us to conclude that the main form of customs control after the release of goods is customs inspection.

In accordance with Article 331 of the EAEU Customs Code, “customs inspection is a form of customs control carried out by the customs authority after the release of goods using other forms of customs control established by the EAEU Customs Code and measures to ensure that customs control is provided for by the EAEU Customs Code in order to verify compliance by individuals with international agreements and acts in the field of customs regulation and (or) the legislation of the member states concerning customs regulation.

A customs inspection consists in comparing the information stated in the customs declaration and (or) contained in the documents submitted to the customs authorities and (or) other information submitted to the customs authority or received by it in accordance with the EAEU Customs Code or the laws of the member states, with the documents and (or) accounting and reporting data, with invoices and other information obtained in the manner established by the EAEU Customs Code or the legislation of the member states.

Customs control acquires particular importance, as a tool for regulating the development of the economy of the Russian Federation, after the release of goods in the process of additional charge and collection of customs payments and fines in accordance with the results of customs inspections. Since, it is during customs control after the release of goods and ensuring the adoption of measures aimed at additional collection of payments and payment of customs charges in cases of non-payment or incomplete payment of customs duties and taxes identified by customs inspections, as well as other measures provided for by the law of the Eurasian Economic Union and the legislation of the Russian Federation on customs regulation, that the federal budget is replenished.

III. RESULTS AND DISCUSSION

When examining the process of customs control after the release of goods, it should be noted that in some cases in the scientific and specialized literature there is the concept of “customs audit”, which is used as a synonym for the concept of “customs control after release of goods”. In this case, it is necessary to clearly distinguish between these two concepts since in Russian customs practice the concept of “customs audit” is quite new and different from the concept of “customs control after the release of goods”.

To clarify these concepts, it should be noted that in Russian practice, customs control after the release of goods is carried out directly by the customs authorities of the Russian Federation, i.e. state executive authorities, in order to comply with international treaties and acts in the field of customs regulation and the legislation of the EAEU member states concerning customs regulation (Article 331 of the EAEU Customs Code).

As for customs audit, it may be carried out by a non-governmental non-profit organization based on the voluntary membership of its legal entities and individuals, established upon the initiative of customs auditors and consultants in order to increase the effectiveness of customs control and categorize participants of foreign economic activity.

Customs control after the release of goods is carried out in the form of a customs inspection, which includes a table-top customs inspection and field customs inspection, which, in turn, is divided into scheduled, unscheduled and counterinspections.

A table-top customs inspection involves checking the documentation of the foreign trade

operation performed by the participant of foreign economic activity and is carried out by the customs official at the location of the customs authority.

Field customs inspection is carried out with the departure of customs officials to the place of customs inspection.

In our opinion, the field customs inspection deserves a more detailed consideration, since it is within the framework of this inspection that the customs authorities carry out coordinated checks in cooperation with other state bodies. Here, special attention should be paid to the interaction of customs and tax authorities in the process of conducting a coordinated inspection.

It should be noted that the interaction of customs and tax authorities has been given attention for quite a long time. During this time approaches to joint control, as well as mechanisms and tools for the implementation of tasks that are put under the competence of each of the services have been developed.

The Federal Customs Service and the Federal Tax Service have different objects and issues of control: the customs authority controls the goods in their physical characteristics, and the tax authority controls the financial results of the taxpayer who participated in the turnover of foreign goods or who used foreign goods in their business activities. At the same time, the revealed facts of violation of the law in terms of competence of the control of a certain department can often be signs of violations detected by the competence of another department [12].

Under the Agreement on Cooperation between the Federal Customs Service (FCS of Russia) and the Federal Tax Service (FTS of Russia) (Moscow, January 21st, 2010) (No. 01-69/1, No. MM-27-2/1) (as amended on 05/09/2016) the customs authorities which declared the goods, shall provide upon the request of tax authorities at all levels the following information necessary for tax control measures:

- the results of checks of correctness of the declared customs value of goods related to specific participants of foreign economic activity;
- the fact of the goods declaration, attaching copies of the declarations for goods and other documents presented during the declaration of goods, as a documentary evidence of violations of the legislation on taxes and fees revealed during tax audits and inspections of compliance with currency laws;
- the presence of excessively paid customs charges, unspent advance payments as for the date of receipt of the request, information on the amounts of refunds by participants of foreign economic activity of previously paid customs charges, including VAT and excise duties;
- data on refunds to payers of monetary funds (in an agreed form) are sent to the tax authority at the place of tax registration of the person to whom the refund is made (in the case of refunds on behalf of the payer to another person, the data are sent both to the tax authority at the place of tax registration of the payer, and to the tax authority at the place of tax registration of another person);
- information on the results of inspections carried out by the customs authorities on the basis of the data received from tax authorities (in respect of agreed items);
- information on legal entities that bear the signs of inactive legal entities, obtained in the result of the inspections conducted by customs authorities.

Information on the results of inspections conducted by customs authorities on the basis of the data received from tax authorities (in respect of agreed items) contains: information on legal entities that bear the signs of inactive legal entities obtained as a result of the inspections conducted by customs authorities (Fig. 1).

Returning to the peculiarities of interaction (interaction in this case means participation in common work, activities, cooperation, and joint operations) of the FCS of Russia and the FTS of Russia, it is necessary to point out the established mechanism for the automatic exchange of modules with certain information and relevant reporting, allowing to exchange information on the principle of reciprocity, which is expressed by the presentation of the necessary data from the

databases and the operational information. The services take the necessary measures to protect against unlawful dissemination of information provided by the other party that affects the interests of the third parties and is classified as a commercial and tax secret.

In addition, the tax and customs authorities provide the information necessary for the relevant state control measures, upon relevant requests at all levels.

These measures represent an integral part of the development strategies for the end-to-end control system in respect of the goods coming to the domestic market. Moreover, these may be the goods imported both from the countries outside the EAEU and from EAEU member states (especially relevant under the conditions of sanctions), as well as the goods exported from the Russian Federation. With regard to the export of goods, mutual control is supposed to shift towards a set of measures to verify accounting and reporting, mainly related to value added tax (VAT). In this case, special attention should be paid to the legal basis for controlling VAT during the export of goods, as well as ensuring full transparency of foreign trade transactions: Treaty on the EAEU (Appendix 18), Tax Code of the Russian Federation (paragraph 1 of article 7, paragraph 2 of article 151, paragraph 1 of article 164, paragraph 1 of article 165, paragraph 9 of article 167).

Exploring the interaction of the Federal Tax Service of Russia and the Federal Customs Service of Russia, it is necessary to consider a number of joint programs that can ensure the effectiveness of the end-to-end control mechanism, namely:

- mandatory labeling of goods for their circulation in the domestic market;
- the system of traceability of goods, i.e. a comprehensive mechanism for ensuring the achievement of goals and objectives of traceability of goods, consisting of interconnected elements of information technology, organizational and regulatory nature.

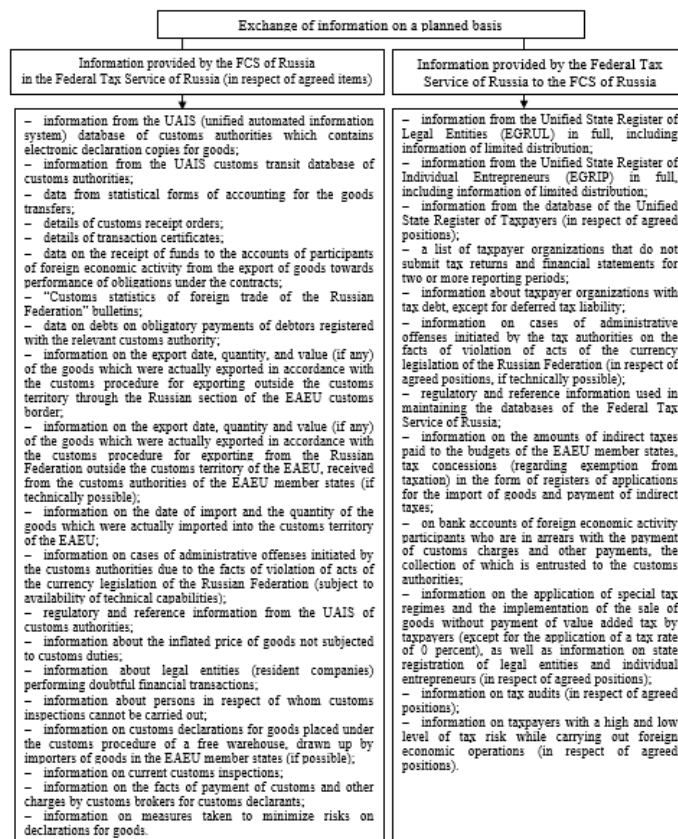


Fig. 1. Exchange of information between the Federal Tax Service of Russia and the Federal Customs Service of Russia on a planned basis

Summarizing the above, we note that the first stage of work related to the formation of a system of interaction between the Federal Tax Service of Russia and the Federal Customs Service of Russia, based on the use of innovative technologies for the exchange of data on foreign trade transactions of taxpayers, their tax and financial statements, information on minimizing the risks of violation of customs, tax and currency legislation, as well as the results of law enforcement activities was completed in 2019.

It is noteworthy that the current practice of using automated processing of individual sections of coordinated verification does not fully meet modern information requirements aimed at reflecting information on the real

situation of organizations being audited. Direct automation of the coordinated inspection itself will enable customs and tax authorities to carry out timely and systematic control over the financial and economic activities of the organization in the process of conducting a coordinated inspection [7].

When using information systems in a coordinated verification process, it is possible not only to combine the capabilities of computer technology with the methods and means of expert systems, but also to process the information obtained using economic and mathematical models [16]. That, in turn, will reduce the risk and improve the quality of field customs inspections, conduct diagnostics and assess the quality of the information provided for a coordinated inspection.

It should be noted that information for processing and analysis received by the customs and tax authorities during a coordinated inspection must meet the following requirements:

- timeliness, i.e. information should come when it makes sense to analyze it;
- reliability, i.e. customs and tax authorities should not spend additional time for checking information;
- significance, i.e. information should help make decisions;
- usefulness, when the effect of the use of information overlaps the cost of obtaining it;
- completeness and comprehensibility, i.e. information should have no omissions and not require additional efforts for “decoding”;
- regular submission.

As part of improving the interaction of customs and tax authorities during a coordinated inspection, we consider it appropriate to propose a scheme for registering the documents submitted by the inspected organization to the officials of customs and tax authorities conducting a coordinated inspection (Fig. 2).

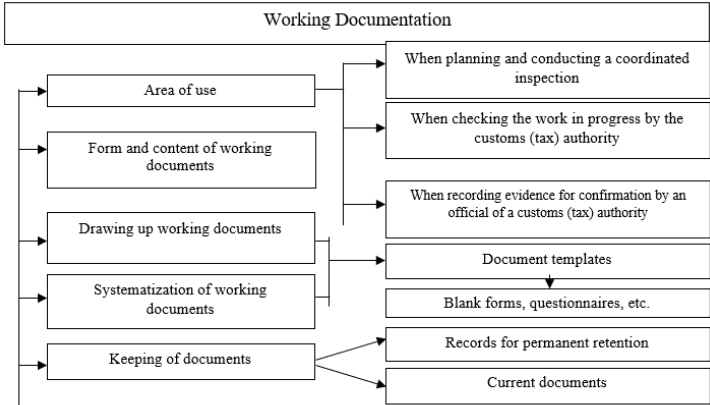


Fig. 2. Scheme of documentation for conducting a coordinated inspection

When considering the documentation of a coordinated inspection, it should be noted that it shall meet the following objectives:

- ensure the quality of the inspection;
- the reasonableness and evidentiality of the results obtained, as well as findings and conclusions made on their basis;
- compliance of the coordinated inspection with the laws and regulations of the customs and tax legislation of the Russian Federation.

During a coordinated inspection, working documents should reflect the following information:

- an idea of the activities of the inspected organization;
- assessment of imminent risk
- understanding of the internal control system, the effectiveness of its measures and procedures
- defining a strategy for coordinated inspection;
- results of the internal control system inspection;
- conclusions on exceptions and unusual points;
- evidence and facts supporting the conclusion about the correctness of the compilation and reflection of information in transport, commercial and financial documents.

IV. CONCLUSIONS

Thus, when implementing customs control after the release of goods and conducting a coordinated inspection by the customs and tax authorities of the Russian Federation, it is important to analyze and evaluate the resources involved from the point of view of appropriateness or rightness of choice, namely: quality, compliance of decisions made in the current situation, functional feasibility and competence.

At the same time, documentation is one of the main aspects in conducting a coordinated inspection, since the quality and results of the inspection depend on the thoroughness, timeliness and consistency of the records made by inspectors. Correctly prepared reports regarding the progress of the coordinated inspection will allow the heads of the customs and tax authorities not only to see the shortcomings identified as a result of the financial and economic activities of the inspected organization, but also to consider the possibility of the correct additional charge of customs payments and taxes.

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Financial Models of Public-Private Projects

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Abstract—The authors carried out the study of the factors that determine the attractiveness of infrastructure projects initiated by the state or municipalities for private investors. Research object is types of public-private partnership. Research subject is the economic relations of economic agents. Aim of the study is to analyze the financial mechanisms of interaction between the public and private sectors in the implementation of infrastructure projects. In the process of the research, the analysis of factors contributing to the implementation of infrastructure projects with the participation of the state and municipalities was carried out, foreign and domestic experience in attracting investments into state or municipal projects was considered, analysis methods and comparison of various financial models for the implementation of investment projects were used. As conclusions, the authors note that the existing legal regulation currently acts as a constraining factor in the development of private investment in significant infrastructure projects, which requires the development of new mechanisms for organizing interaction between the state and business.

Keywords—public-private partnership (PPPs), infrastructure project, concession, multiplier effect, synergistic effect, investment protection, digital financial asset, blockchain, digital ecosystem

I. INTRODUCTION

The implementation of new projects aimed at the efficient use of natural and labor resources, the development of domestic and international economic relations is due to the need to ensure a comfortable living environment for the population and the competitiveness of the economy in the international arena.

The peculiarity of infrastructure projects is manifested in their implementation for a long time with the attraction of significant capital investments and in a long payback period. Such investments are often unaffordable for the budget, in connection with which the question arises of the formation of institutions uniting the state and private investors, the purpose of which is aimed at creating a certain infrastructure object.

The current interest in public-private partnership (PPP), although their pedigree is much longer, began two or three decades ago when, in the face of public expenditure constraints, they were seen as a means for accelerating the provisions of infrastructure that, in the past, was generally seen as a purely public sector activity. This latter, traditional view stems very much from Adam Smith who argued that government has the «... the duty of erecting and maintaining certain public works and certain public institutions, which it can never be for the interest of any

individual, or small number of individuals, to erect and maintain; because the profit would never repay the expense to any individual or small number of individuals, though it may frequently do much more than repay it to a great society» [20].

Smith highlights the historical importance of this role in facilitating the Transport Revolution in that allowed the UK's industry and commerce to grow in the later part of the eighteenth century: the Industrial Revolution [17].

In the past few years, there has been an increased interest to PPPs in Russia due to the recognition of the fact of infrastructure development as the economy driver.

July 21, 2020 at the Forum "Infrastructure Business Initiatives" the problem of the slow recovery of consumer demand in the Russian Federation was noted, in connection with which it was noted that in these conditions the high multiplier effect of infrastructure projects could provide a quick exit of the Russian economy from the crisis, as well as a successful post-crisis economic breakthrough [6].

The formation of the investment financing architecture is the most important element of financial modeling, which depends on the different costs of attracting investment sources for projects.

The choice of sources for the formation of investment resources is carried out taking into account the following factors: the cost of servicing investment sources and their availability. the level of taxation, risk appetite, capital structure and the reliability of the financial discipline control system of participants

The issue of cooperation between the state, municipal and private sectors of the economy consists in administrative barriers and the absence of government regulations that stimulate private investment in infrastructure, in connection with which the implementation of projects is faced with the need to attract additional budgetary allocations, which in turn repels potential investors.

II. HISTORICAL DEVELOPMENT OF PUBLIC-PRIVATE PARTNERSHIP

Governments have used this combination of public and private efforts throughout history [5]. Muhammad Ali of Egypt used "concessions" in the early 1800s to obtain public works at minimal cost, while concession companies made most of the profits from projects such as railways and dams. Much of the early infrastructure of the United States was built on what might be considered a public-private partnership. This includes the Philadelphia and Lancaster Line in Pennsylvania, which began in 1792, the early steamboat line between New York and New Jersey in 1808; many of the railways, including the nation's first railroad, were chartered in New Jersey in 1815; and most modern electrical networks. In Newfoundland, Robert Gillespie Reid was contracted to operate the railways for fifty years from 1898, although they were originally to become his property at the end of the period. In the late 20th and early 21st centuries, there was a clear trend towards the increased use of various PPP mechanisms by governments around the world.

Changes in the existing model of state financing of infrastructure projects began to take place in 1970-1980. Japan approached the solution of the arisen problems most radically, highlighting the structure of the economy in the third sector, in which joint corporations operate, invested by both the public and private sectors.

The UK has had a systematic public-private partnership program since 1992, with the aim of the 1992 Program, which aimed to reduce the need for public sector borrowing, although, as noted, the impact on government accounts was largely illusory. In 1997, the program was expanded with a shift in emphasis towards achieving "value for money", mainly through appropriate risk sharing. The UK Government Audit Office found that the private funding initiative model was more expensive and less effective in supporting hospitals, schools, and other public infrastructure than public funding. Practice has shown that public-private partnership is ineffective when creating social facilities such as hospitals, schools, and other public infrastructure.

III. GOVERNMENT REGULATION OF PUBLIC AND PRIVATE SECTORS IN RUSSIA

In Russia, at present, direct interaction between the state and private investors in the process of creating new facilities or solving other resource-intensive tasks is regulated by Federal Law № 224-FZ dated July 13, 2015 «On public-private partnership, municipal-private partnership in the Russian Federation and amendments to certain legislative acts of the Russian Federation» (as amended on July 26, 2019) (hereinafter - the Law on PPP).

This law establishes one of the ways to develop public infrastructure, based on long-term interaction between the state and business, in which the private party (business) participates not only in the creation (design, financing, construction / reconstruction) of the infrastructure facility, but also in its subsequent operation and / or maintenance for the benefit of the public side [Public-Private Partnership Law: Application Guidance, 2015]. PPP allows a public partner to:

- a. fully or partially transfer the obligations to finance the creation of an infrastructure facility to the private partner;
- b. to share or completely transfer to the private partner the risks of higher construction costs, the quality of construction work carried out, non-compliance with the terms of commissioning of the facility, the quality of maintenance, the risks of revenue, etc.

The main PPP criteria correspond to the concession form of the implementation of infrastructure projects, which is a kind of monopolization of semi-open market positions. Since the public partner is bound by government laws and political commitments that do not apply to private entrepreneurship, there is little interest in PPPs from private investors. The existing problems of the main agents can change due to asymmetric information and fiscal freedom, a decrease in the level of importance of political or public interests, which become less priority in comparison with the commercial interests of participants in the oligopolistic market [19].

TABLE I. THE MAIN ADVANTAGES OF USING PPP

Public Sector	Investor
<i>1</i>	<i>2</i>
The ability to attract a private investor makes it possible to implement infrastructure projects even in the absence of budget funds, without increasing the debt burden	The ability to shift part of the risks of revenue to a public partner (application of: minimum guarantee of profitability, payment for availability and other mechanisms for guaranteeing repayment)
Allows you to improve the quality of the object being created and reduce the risks of overestimation by combining various stages within one project	The ability to invest in a long-term project with a fixed income under guarantees / obligations of the state
Promotes the development of competition in the market of socially significant services	The ability to increase your project revenue by providing additional paid services and / or using various solutions that reduce costs

Analysis of the table 1 shows that from a financial point of view, the advantage of PPP is the minimization of budgetary funds for the creation of infrastructure facilities, and for a private investor - the presence of a multiplier effect in the form of guaranteed income from investments and additional income.

IV. CONCESSION

Of the many types of concession agreements existing in practice Law on Concession Agreements provides only the type BOT («Construction - Management - Transfer»), but at the same time the type is used - BTO («Build - Transfer - Control»).

In Europe, Latin America, Asia, the WTO scheme is used to develop new toll road projects [2].

In the world, the most common concession schemes are two: BOOT BOOT «Build - Own - Operate – Transfer» and BOT BOOT «Build - Own - Operate – transfer», which assume that the facility being built with funds from a private investor will eventually be transferred to the ownership of the state. Since within the framework of the implementation of infrastructure transport projects, transport infrastructure facilities of regional or national importance are most often built, these two options for organizing PPP in practice are more in demand.

In Russia, there is an insufficient level of investment in infrastructure through PPP contracts. The volume of investment obligations assumed under the concluded concession agreements is about 1.6% of the GDP in 2019. At the same time, in the UK, for example, the volume of investments in PPP projects is at least 6.6% of GDP, in Canada - 8.1%.

Statistical data on the largest concession agreements at the federal level and participants in the financing of large investment projects in the Russian Federation indicate that transport concessions are the largest in terms of total investment - they account for 70% of the funds, mainly projects for the construction of road infrastructure, more of all agreements (94%) were concluded at the municipal level, mainly they relate to the field of utilities. However, the largest volume of investments (42%) is envisaged within the ertheless, PPP has a certain appeal for both the public sector and the private investor.

framework of concessions concluded at the federal level, of which 96% falls on the transport infrastructure.

We consider the problem of attracting private investors is rooted in the mechanism for forming sources of financing. A review of the participants in the financing of large investment projects revealed that there are investment projects, but in practice the state acts as an investor in one form or another.

The financial model of the concession agreement within the framework of PPP is the concessionaire's lending to the grantor for the duration of the project and the term of the concession agreement, during which the grantor will reimburse the funds invested in the project. It follows that the payment for the use of the provided funds should be higher than the key rate of the central bank, taking into account discounted cash flows. The concession agreement does not imply a direct payment for the use of monetary resources, and the concessionaire's benefit is to receive income in the process of managing the object during the period of the concession agreement. Obviously, the object under construction must have characteristics that are attractive to the investor.

Regional authorities are taking various incentive measures to attract private investors in order to increase the attractiveness of the public-private partnership mechanism in the region, such as lowering the property tax rate, preferential rentals, increasing the volume of attracted investments, the quality and volume of services provided to the population [10]. But these measures are valid only for regional projects and do not apply to federal projects.

V. SYNERGISTIC EFFECT

The implementation of infrastructure transport projects creates a long-term systemic effect, which is formed as a result of the interaction of several factors. For example, new types of economic activity are developing (construction, trade, medicine, etc.) and, accordingly, new jobs are being created, territories adjacent to the transport infrastructure are developing, and working conditions are improving. which has a positive impact on the socio-economic development of the regions, the growth of the regional gross product, and sometimes the country's GDP.

The combination of these factors form a synergistic effect as a component of the cumulative income from investments in an infrastructure project.

The economic substantiation of the most attractive method of investing in an infrastructure project for investors is carried out by comparing a comprehensive assessment of economic efficiency, taking into account the synergistic effect of different investment methods.

Organizational and economic mechanism for project implementation is a form of interaction between project participants in order to ensure the implementation of the project, taking into account the interests of each participant in the investment project [1]. In general terms, the model of funding sources is as follows:

$$S = S_g + S_k, \text{ where } S - \text{project cost}$$

S_g - state investment (grantor)

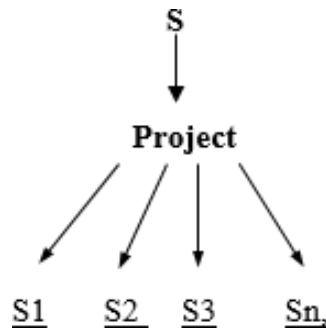
S_k - investment of the concessionaire

Due to the specificity of infrastructure projects, due to the required amount of financing and the duration of implementation, the question arises of the possibility of attracting several co-investors. The optimal structure of funding sources at the expense of concessionaires is determined by the expected size of the investment effect, equal to the sum of the profit from participation and the synergistic effect. This determines the criterion of the aggregate of possible beneficiaries, which makes it possible to form a financial model for the project.

Project effect $SP_{pr} = P_{pr} + P_s$, where SP_{pr} - total effect.

P_{pr} - the effect of exploitation of the created object P_s - synergistic effect.

Possible factors of attractiveness for private investors:



Where

S - investment,

S_i - synergistic effect

Examples of synergistic factors:

1. Social factor, labor resources. Effect:

- a) creating new jobs (falling unemployment);
- b) the quality of human capital (due to the development of social facilities).

2. Environmental factor, reduction of emissions. Effect: Calculate vehicle emissions when transporting similar goods by road over the same distance.

3. The budgetary factor, an increase in budget revenues from taxes. Effect:

- a) increasing the revenue base of the regional budget at the expense of personal income tax and part of the income tax;
- b) an increase in the revenues of the federal budget due to VAT receipts and part of the income tax.

In addition to the listed synergistic factors, the investor may be interested in the project due

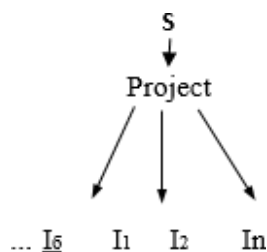
to the possibility of optimizing his business. An example is the investment project for the development of an airport in Krasnodar [3].

Sources of investment (S) for the implementation of an infrastructure transport project are budget funds and funds of private investors.

$$S = I_b + (I_1 + I_2 + \dots + I_n), \text{ where}$$

I_b - budget investments,

I_i - private investor investments



Synergy factors are attractive for companies implementing a sustainable development strategy of the company that includes environmental and social initiatives, as well as the level of corporate governance, as well as regional socio-economic goals, as well as regional socio-economic goals.

In September 2015, there were 193 countries at the UN General Assembly. including Russia, 17 Sustainable Development Goals (SDGs) were adopted, which are included in the UN agenda until 2030. Among them are general economic well-being, the elimination of poverty, improving the quality of education and health care, the development of renewable energy, rational production and consumption, the fight against climate change, the preservation of ecosystems, justice, the quality of institutions and respect for human rights[4].

Infrastructure transport projects are part of a nationwide sustainable development strategy.

Companies that have developed and successfully implemented sustainable development strategies can obtain loans on preferential terms [7].

For example, the Russian company Polymetal has a positive experience of financing linked to the achievement of sustainable development indicators. The venture entered into a bilateral agreement with Societe Generale to provide a \$ 75 million loan, with interest rates closely tied to the company's five environmental and social policy goals. The assessment of the company's achievement of these goals will be carried out by the Societe Generale group on an annual basis, depending on the degree of their fulfillment, the interest rate on the loan may decrease, remain unchanged or increase every year.

Of particular interest to potential investors are projects that combine the use of environmentally friendly technologies with the social and economic goals of the regions. For example, the Eurasian Development Bank (EDB) took part in financing the construction of three wind farms in the Rostov region, including the Kamenskaya, Sulinskaya and Gukovskaya wind farms (WPP).

The advantage of the concession form lies in the possibility of making interval investments as the project progresses.

VI. INNOVATION AND DIGITALIZATION OF FINANCIAL MODELS OF PUBLIC-PRIVATE PARTNERSHIPS

Existing PPP financial models do not provide the desired focus on innovation that can improve the efficiency of infrastructure projects and thereby reduce the time and money spent on construction and maintenance. As the complexity of infrastructure projects grows with their scale, it becomes necessary to accumulate international and national experience with unconventional implementation strategies.

The authors of the article propose attracting resources from individuals, including non-residents of the Russian Federation, to finance infrastructure projects based on corporatization. Currently, in Russia, as a result of the reduction in the key rate of the Central Bank of the Russian Federation, deposits are no longer attractive to households and foreign investors. Individual investment accounts (IIA) have become an alternative way of saving savings. IIS is a financial instrument for attracting minority investors to infrastructure projects. The turnover in IIA in the first half of 2020 amounted to 717 billion rubles, which is more than the indicator for the entire 2019, and the number of individual investment accounts (IIA) in the first half of 2020 increased by 46.3%, to 2.4 million rubles [9].

According to US statistics, for 2016, every fifth household with an annual income of less than \$ 35,000. has assets in the stock markets, 88% of households with an annual income of more than \$ 100,000 own shares; the median investment amount is \$ 40,000 [18]. In 2019, the number of US households was 128.58 million [21].

The attractiveness of IIS is also provided by a tax incentive: a tax deduction of 13% of the amount of funds deposited or exemption from taxes on income received from investment. To be eligible for tax benefits, you must not perform any withdrawal operations from an investment account for three years. The maximum contribution to the IIA is 1 million rubles. per year, the funds of the IIA can be used to purchase shares, bonds, shares [12].

In the proposed financial model of project investment, stock brokers play an active role, selling PPP shares to individuals directly or through IIS, thereby simplifying the search for minority investors for infrastructure projects. At the same time, the mechanism for attracting private investment proposed by the authors allows maintaining the transparency of the distribution of shares, while maintaining control of strategic projects for the state.

Popularization and mass character of projects is important for attracting private investment in large-scale projects. For the development of a new blockchain platform Telegram Open Network (TON), which could compete with international payment systems Visa and Mastercard, the amount of applications for the preliminary stage of ICO amounted to \$ 3.8 billion, which was four times higher than the planned investments [8].

Since digital financial assets, in particular, are digital rights for equity securities, the authors propose the use of a PPP corporation mechanism using a blockchain or a distributed ledger [11].

Blockchain is a distributed ledger with verified blocks organized in a sequentially added chain using cryptographic links, does not allow changes to records, provides the ability to add, but not change records, contains verified and confirmed transactions [11].

According to the authors, blockchain is a new international technology for accounting for the transfer of assets between economic entities with the highest degree of transparency, which is critically important for the development of interaction between private and government agents.

The financial model of corporatization based on blockchain technology involves the use of a smart contract mechanism: after identifying users in the information system, their further behavior is subject to the algorithm of a computer program. The person acquiring a digital right will receive this object automatically when certain circumstances occur. The transaction will be executed without additional orders from the parties: the seller will have digital rights written off, and the buyer will have money. Thus, the will of a person aimed at concluding a contract includes the will aimed at fulfilling an obligation [16].

The model for attracting private investment and the formation of public-state capital is implemented through a blockchain platform of a public-private project, which conducts an initial public offering in the form of a CFA, using a smart contract as a transaction tool and registration of rights to shares.

For the implementation of infrastructure projects, the authors propose the following distribution of shares in the PPP capital:

- a. Government: 25% + 1 share. Blocking shareholding. It is implemented at the stage of PPP formation;

- b. Major shareholders: 50%. Formed by direct sales by private subscription;
- c. Minority shareholders: 25%. It is formed by direct sales through an open subscription, as well as using the IIS tool.

An example of the implementation of the above financial model is CoinOffering Ltd, the first in the world to register shares in the charter that exist exclusively in the form of tokens (shares or CFAs) in a smart contract on the Ethereum blockchain platform, the transfer of which is considered valid only using transactions in the specified smart contract [22]. Thus, the owners of tokens are shareholders, voting is also carried out in a smart contract, the register of shareholders' accounts and transactions with shares (tokens) of the company are in the public domain.

The mechanism is significantly cheaper than a classic IPO, as well as less expensive in terms of implementation time, has the maximum transparency, accessibility and level of confidence of the participating economic agents.

Over the past 10 years, blockchain technology has made fundamental changes in the global financial system and created alternative tools to reduce the intermediary costs of transactions carried out by traditional financial institutions. Blockchain combined with smart contract technology presents an opportunity to change the classic financial models through which PPPs attract private investment, to introduce new strategies for the implementation of complex large-scale infrastructure projects: a digital ecosystem of public-private projects formed by transparent chains of business processes and cash flows.

VII. CONCLUSIONS

The considered factors of attractiveness of infrastructure projects for private investors indicate the need to use more flexible forms of interaction between the state and business in comparison with the existing financial models for attracting investments.

Concession: hinders the attractiveness of participation in infrastructure projects of private business due to the non-transparent mechanism for the formation of sources of financing, in connection with which the state acts as an

investor in one form or another in almost all projects in Russia. Based on the legal regulations of the concession, an individual cannot be a concessionaire, he can participate indirectly as a participant in any society.

Analysts of the Moody's agency estimate the share of the public sector in the Russian economy at 40-50%, which corresponds to the estimates of the Center for Strategic Research, according to which the state occupies 46% of the Russian GDP. The stateization of the Russian economy and the lack of a transparent legal framework for PPP hinders the interaction of state and private economic agents.

Synergistic effect: the investment attractiveness of an infrastructure project can be measured by the cumulative factor of interaction of economic agents in the process of its implementation and use: social, budgetary, environmental.

The existing financial PPP models require the introduction of innovations due to the development of Internet technologies and the digitalization of the economy. The use of modern blockchain technology, smart contracts and CFA allows creating a transparent model of interaction between economic agents with different levels of investment, which will allow you to quickly attract funds from individuals, corporations and the state with the subsequent timely implementation of PPP projects.

The authors of the article consider the concession mechanism to be a priority direction in the development of the financial model of project investment, which allows attracting private investors, including minority ones, contributing to the development and implementation of strategic state infrastructure projects, creating a concessionary society.

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Opportunities and Potential for the Development of Crowd Investing in Russia

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Abstract—The article considers the development of a promising “crowd investing” economic model for investors in projects in the Russian and global financial market. The advantages and disadvantages of crowd investing, as well as the principles of work of crowd investing platforms, are identified. The authors have identified and disclosed the main advantages and disadvantages of crowd investing, as well as the principles of crowd investing platforms. Research is based on the data of a detailed analysis of the Russian crowd investing market. The Russian crowd investing market is analyzed, the main crowd investing companies in Russia and the directions of their activities are determined. As platforms where client can invest in projects and return funds after a certain period of time with interest, it is possible to highlight StartTrack, Alfa-Stream from Alfa-Bank, Aktivo, Gorod deneg (P2P lending), Planeta.ru. The growth potential of crowd investing in the regions of the world is identified; the prospects for its development at the global and national levels are outlined. It should be emphasized that in the medium term, crowd investing will be part of horizontal economic systems with financial and other methods of exchange or support. Blockchain and cryptocurrencies are becoming a particular incentive for the development of crowd funding. As for the Russian practice of crowd investing development, it provides simple tools for development at the Western qualitative level, although not at the same pace as in the West.

Keywords—investment, crowd funding, crowd investing, digital economy, crowd investing platform.

I. INTRODUCTION

In recent years, the practice of investing has been gaining momentum as business entities seek to increase their profits and to invest available spare resources in a profitable project. However, startup investors and young companies may have difficulties with investing, since they do not have the spare funds and sufficient capital to invest.

In this regard, the popularity of investment platforms as a source of funds for young companies is growing worldwide. The main types of investment on this kind of platforms are crowd lending, crowd investing and crowd rewarding, which are types of crowd funding. Such form of investment as crowd investing can help startup investors to expect good returns in the future. Crowd investing is a relatively new concept for the Russian market; hence it is necessary to understand what it is and how it works.

II. METHODS

The research methodology is based on the materials of Russian and foreign scientists and economists. It should be noted that all calculations in the scientific study were performed on the factual materials of the reporting of federal statistical data, which include a set of general methods of scientific research such as: analysis, synthesis, statistical method, mathematical method, monographic method, and factor economic analysis.

III. DISCUSSION

The concept of crowd investing, like many other economic models and investment directions, emerged in Russia as a result of its development abroad. In most cases, crowd investing is compared to crowd funding, the practice of attracting large numbers of people to transfer a small amount of money to finance a business project, often using the Internet. But these concepts are different, and crowd investing is a form of crowd funding. Crowd lending and crowd investing differ from classical crowd funding in that they focus on increasing investors' capital.

The point of crowd investing is that people contribute not so much for the end result as or only for financial profit. In other words, the well-known crowd funding is primarily a manifestation of modern social marketing and neuro-economics, and crowd investing is a transformation of the investment market where investors receive a stake in the project.

Thus, crowd investing is a way of attracting money to a small company from a large number of investors in exchange for a stake in this company [12]. In most cases, such process of attracting alternative financing is carried out through a specialized online platform (Figure 1).

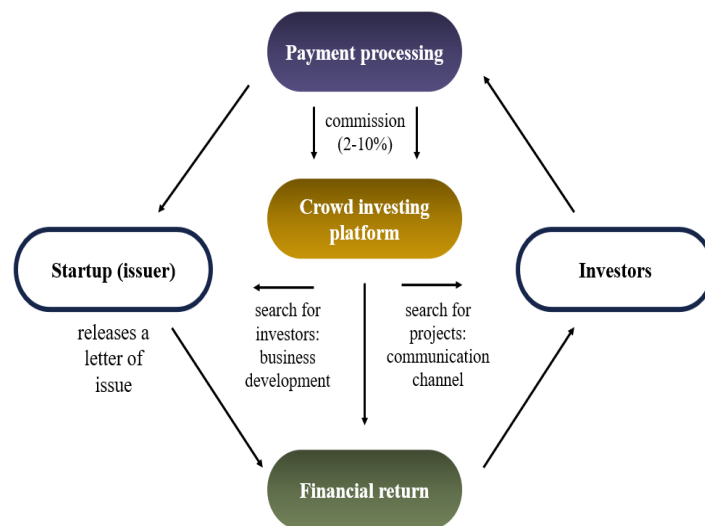


Fig. 1. The operating principle of crowd investing [13]

As you can see from the data in Figure 1, the process begins with a person creating their own project or organization and seeking further funding. Eventually, they decide to achieve the goal by using a crowd funding platform. This platform allows the future recipient of funds to analyze

the declared data and records them in the catalog. After that, crowd funding platform begins to find those who are willing and ready to invest in financing the project. The next step is to visit the site of this platform by the investors, where they make the decision and submit an application to conclude an agreement. The investor is then contacted to clarify the details and offer assistance in the transaction. The payment is processed by the platform and is received into the account of the company, which uses it for its development. After a certain amount of time, company must return part of the funds to the platform, which redistributes payments among the depositors.

Like any economic model, crowd investing has its advantages and disadvantages (Table 1).

TABLE I. ADVANTAGES AND DISADVANTAGES OF CROWD INVESTING

Advantages	Disadvantages
Suitable for aspiring businessmen, does not require deep knowledge	Lack of legislative regulation, in case of controversial issues it is difficult to prove your case
Possible to start with small investments	Risk that the project will not succeed
Opportunity to receive a large income in case of the development of the project	Paying dividends can take a long time
Ability to invest online through dedicated platforms or directly	Risk of bankruptcy of the platform where the client makes a transaction (if it is not carried out directly)
Wide range of projects	Difficult to determine which startup will be successful, preferably to seek help from experts

It should be noted that a substantial amount of money is required to get started. If the starting capital is small, then large platforms will be inaccessible and closed for the investors.

The activities of such platforms in different countries have their own characteristics, taking into account local legislation, the restrictions of which are the main obstacle to the expansion of the crowd funding market, allowing only accredited investors to enter the platforms.

The advantages of crowd investing over other types of financing are, first of all, that it is financing in the capital of companies, and therefore, both investors and founders of the enterprise take a responsible approach to this process. In crowd lending, for example, the investor is concerned not so much with the success of the project or the quality of the products, as with the timeliness of payments under the contract and the amount of interest. Crowd investing allows a significant number of people to become owners of new businesses, companies, and technologies, participate in financial development and invest intellectual resources in the future success of the company. The opportunity to take part in its development is becoming an important motivating factor for a private investor.

It is believed that the first crowd investing platform appeared in 2004 in Australia [14]. It was called ASOBB (Australian Small Scale Offerings Board Ltd.), and was later renamed to Enable Funding. The platform had managed to attract about \$100 million in projects as of 2017. Legislation regulating crowdfunding in Australia was passed only in 2017, under which companies with assets and annual turnover of no more than \$25 million can raise funds via crowd investing platforms.

Crowd investing is not very popular in Russia due to the lack of a special legislative framework protecting the interests of investors and low awareness (in other words, few people know that there is such a way of investing).

Today, there are more than 670 platforms worldwide, 344 of which operate in the United States. The total amount of money raised this way in 2015 amounted to about \$2.1 billion. Figure 2 presents the country ranking by number of crowd investing platforms.

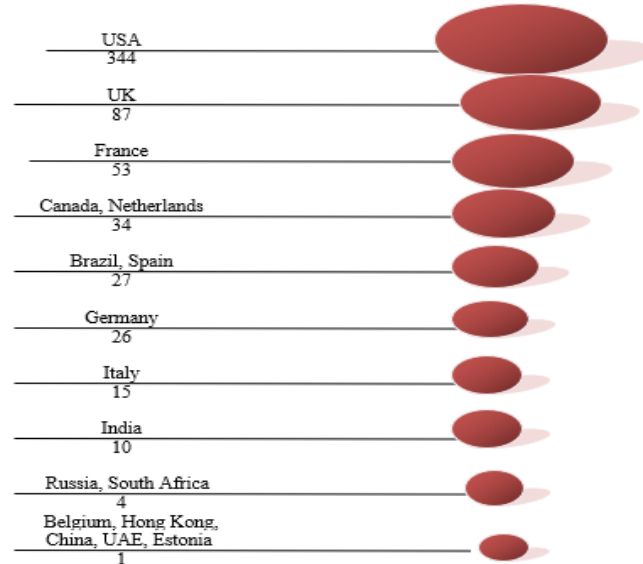


Fig. 2. Ranking of countries by the number of crowd investing platforms

Figure 2 shows that Russia is on the same level as South Africa, ranking 9th out of a top ten leaders. Belgium, China, Estonia, Hong Kong, and the United Arab Emirates ranked last.

Table 2 provides basic information about the main crowd investing platforms.

TABLE II. INDICATORS OF THE MAIN ACTIVITY OF CROWD INVESTING COMPANIES IN RUSSIA

Name of the platform	Total turnover, rub.	Investment per company, rub.	Average check per investor company, rub.	Average number of investors in a company	Minimum amount of investment, rub.	Platform commission, per cent	
						For the company	For the investor
StartTrack	1,498 billion	22 million	426 thousand	52	3 million	5,0	0
Gorod deneg	465,8 million	1 million	420 thousand	2-3	50 thousand.	2,5-5,5	2,0
Venture Club	897 million	13 million	3,3 thousand	4	3 million	1,0-5,0	Club system with paid membership
Planeta.ru	760,2 million	282 thousand	1,5 thousand	189	10 thousand	10,0-15,0	0

Nevertheless, there are resources in Russia where an investor can find potentially interesting projects.

Among the largest platforms for investment in projects, the following options can be identified:

- StartTrack is one of the first crowd investing platforms in Russia (was founded in 2014). The minimum investment amount is 100,000 rubles. At StartTrack, growing companies receive private financing from a wide range of investors, loans and investments in capital, online or offline, from 3 million rubles. In 2,5 years, 39 companies received more than 998 million rubles via StartTrack. In 2015, 47 investment transactions were made on StartTrack, and in the first six months of 2016 it was 265. Many companies are investing in this project. For example, Passteam, the creator of the virtual loyalty card cloud platform, has attracted

capital investment from a number of private investors at StartTrack. The deal took place in February 2020.

- Alfa-Stream from Alfa-Bank, where it is possible not to choose the company where the funds are directed, but simply to pay a minimum amount (10,000 rubles), after which it will be distributed by assets. In 2018, the average return of investors was 17.3%, and in April 2019 it was raised to 22.3%.
- Aktivio is a platform where the minimum investment amount is 500,000 rubles. Aktivio's history began in 2015. Its founder is Oscar Hartmann, who is also the founder of the KupiVip shopping club. There is a possibility to invest in commercial real estate, and annual income is about 11%. Unlike previous platforms, Aktivio offers to invest not in business, but in real estate. The average annual profitability of objects starts at 12.7% per annum, while the market average is 10%. The global market for crowd funding in the field of commercial real estate, according to Massolution, amounted to \$1.01 billion at the end of 2019. Aktivio is a platform capable of providing collective investments in commercial properties of institutional quality for investors with relatively small amounts.
- Gorod deneg (P2P-lending) is a Russian crowd investing platform where investors and borrowers can contact each other directly without intermediaries. This platform is part of the working group at the Skolkovo Foundation's Center of Competence for Digital Economy Regulation and the working group of the Russian Central Bank (Bank of Russia) on crowd funding regulation.
- Planeta.ru is the largest crowd funding platform in Russia, winner of the 2014 Runet Prize and the 2017 all-Russian "Prometheus" Prize. Planeta.ru can raise funds for projects of various categories. The platform hosts projects and helps in their promotion. During the existence of the service, about 3000 projects were financed for the amount of more than 300 million rubles.

The list can be continued, as Russian citizens also have the opportunity to work at foreign platforms.

The volume of the global crowd investing market for 2014-2023 is presented in the following Figure 4.

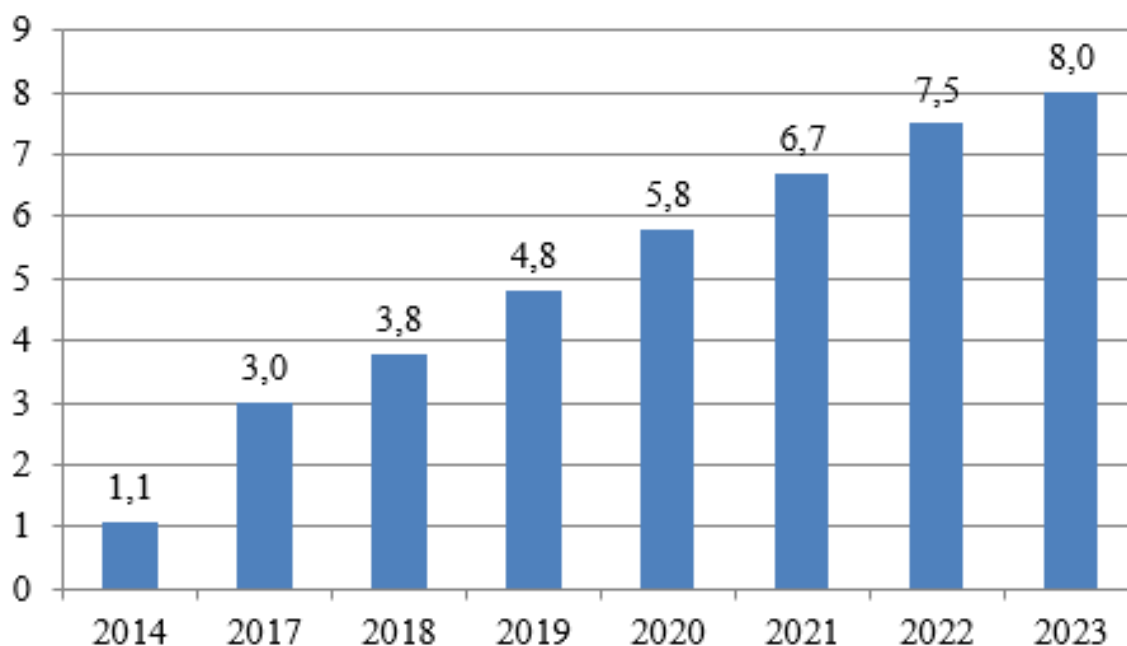


Fig. 3. Dynamics of the global crowd investing market in 2014-2023 [15]

According to figure 3, the total volume of transactions in the global market of crowd investing reached \$3.82 billion in 2018. Statista estimates the average annual growth of the segment in 2019-2023 will be 13.7%. This means that the global crowd investing market will more than double by 2023. The volume of the Russian crowd financing market in 2018, according to the Central Bank of the Russian Federation, amounted to 15.2 billion rubles, or approximately \$244 million. This is 30% more than in 2017. At the same time, crowd lending became the main instrument and occupies 36% of the market, or 14.6 billion rubles.

Crowd investing is the topical theme of this year for Bank of Russia experts. At their last meeting, experts highlighted the principles of the crowd investing, its advantages for entrepreneurs, and the basic rules of its organization. In particular, the experts of the Bank of Russia for the Central Federal District addressed the main provisions under Law 259-FZ, which came into force at the beginning of 2020. The Law regulates the attraction of investments using investment platforms and defines the basic concepts of these activities. According to the requirements of the Law, the amount of capital of an investment platform operator must be at least 5 million rubles. The Bank of Russia will keep a register of such operators. Similar platforms already exist and operate in Russia.

Figure 4 illustrates the structure of the crowd investing market in Russia in 2017-2020.

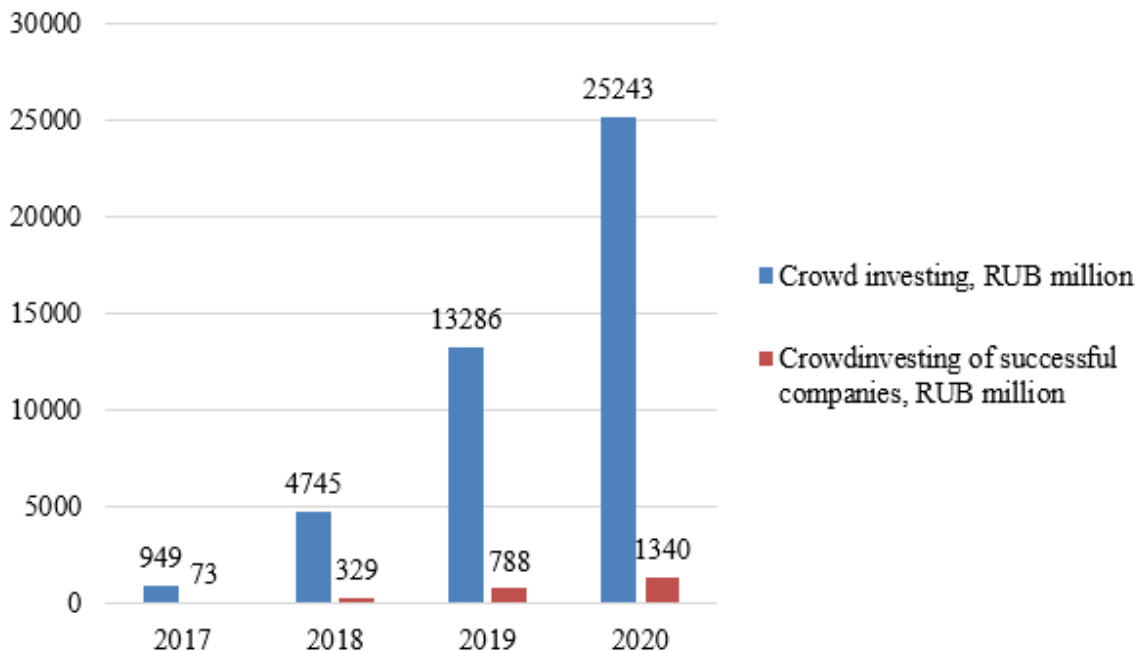


Fig. 4. Dynamics and structure of the Russian crowd investing market in 2017-2020

Thus, Figure 4 shows that during 2017-2019 the growth of the crowd investing market has been taking place. According to the forecast, 9,500 companies will be launched by 2020, out of 2,500 will be venture capital companies. Crowd investing will have a positive impact on the economy, including the main macroeconomic indicator of GDP, which will increase by 0.3% compared to 2016 and will amount to 256 billion rubles. At the same time, it should be noted that

82 billion rubles will be raised through crowd investing platforms.

In addition, companies that have received funding through crowd funding will continue to recruit employees during the lifecycle and beyond the forecast period.

The following Figure 5 illustrates the growth potential of crowd investing by regions of the world in billions of US dollars until 2025.

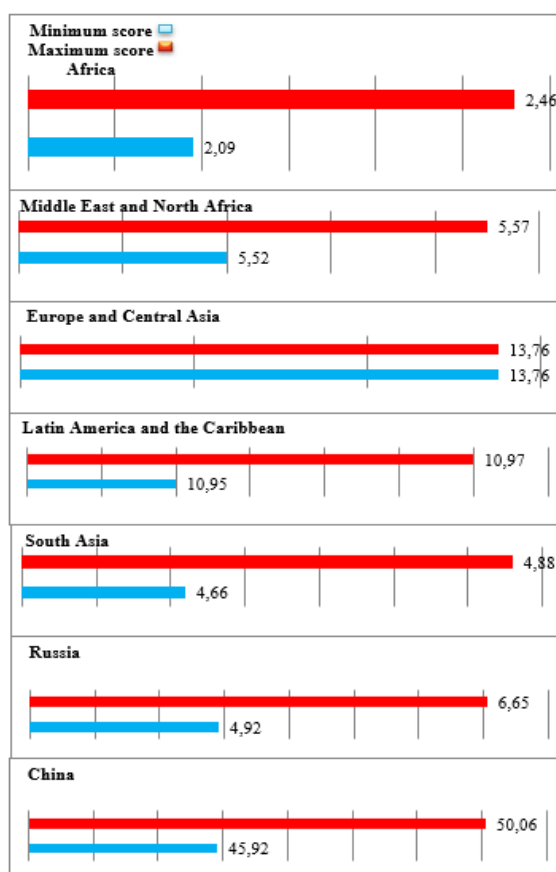


Fig. 5. Dynamics of the growth potential of crowd investing by regions of the world in billions of US dollars until 2025

In the medium term, crowd investing will be an important part of horizontal economies with financial and other methods of exchange or support. Blockchain and cryptocurrencies are becoming a particularly important stimulus for crowd funding. The exchanges and smart funds (Openledger, ICOO) have already started to operate there.

In the report of the Center for Strategic Research (CSR) “New instruments for attracting financing for the development of technological companies: the practice of use and development prospects in Russia” the forecast of experts of the Higher School of Economics is that Russia’s GDP may grow on 255.8 billion rubles in case of creation of comfortable jurisdiction by the end of 2020, of which 173.3 billion rubles will be obtained from crowd lending projects and 82.5 billion rubles from crowd investing.

According to the Central Bank of Russia, in 2023 small and medium-sized businesses will attract about a trillion rubles through collective investment sites. Statista estimates that the segment will grow at an average annual rate of 13.7% in 2019-2023. This means that the global crowd investing market will more than double by 2023. The transaction value is expected to show an annual growth (CAGR 2020-2024) of 12.5%, leading to a projected total of \$8,292.4 million by 2024. The average funding for one campaign in the crowd investing segment is \$100,578 in 2020. From a global comparison, the highest transaction value is found in China (\$1,140 million in 2020). In China, it is estimated that the largest transaction amount is in China (\$1,140 million in 2020).

Today, the Russian crowd financing market is at the stage of formation, and, and experts estimate that it is four to five years behind the leading countries - the United States and the United Kingdom. Experts suggest that the current realities of the Russian market are the development of an adequate regulatory framework with a focus on “soft regulation”, the creation of incentives for non-professional investors, as well as mechanisms to protect depositors.

IV. CONCLUSION

Thus, the development of crowd investing in Russia can become a successful tool for increasing capital. All Russian citizens and legal entities will be able to invest through such platforms. At the same time, citizens who do not have the status of a qualified investor will be able to invest in projects no more than 600 thousand rubles per year. Legal entities and individual entrepreneurs will be able to attract investments, but not more than 1 billion rubles per year. New 259-FZ “On Investment Attraction with Use of Investment Platforms and on Modification of Separate Legal Acts of the Russian Federation”, which came into force on January 1, 2020. that Russia can expect an explosive growth of interest in such investment in the coming years. One way or another, crowd investing, which gives ordinary people the opportunity to invest and earn, continues to develop in Russia, although not at the same pace as it is abroad. Thus, experts have already noted the growth of the crowd investing market due to the entry of new players and expect that it to reach 30 billion rubles by early 2021.

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Development Trends and Factors Affecting the Financial Performance of Food Industry

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Abstract—The article examines the activities of the food industry, which produces and sells products necessary for the livelihood of its citizens. Trends in the development of the food industry are considered and factors influencing the main indicators of organizations in the food industry are identified. These factors are improving the quality and quantity of food products, paying attention to the growth of population demand for food products, attracting investment funds, implementing customs and tariff regulation measures, developing the raw material base, applying innovative technologies and developing technical regulations to improve the quality of products. Indicators of the development of the food industry and the processing industry of the Russian Federation for the period 2013-2020 are analyzed in detail. Dynamics of growth in the volume of production and processing of the food industry by 2020, as well as fluctuations in the total level of GDP of the Russian Federation in billion rubles are evaluated.

Keywords—financial result, factor analysis, food industry, sales profit, bakery products.

I. INTRODUCTION

At the present stage of the development of the Russian economy, the food industry is one of the fastest growing sectors of the national economy. Food-producing organizations are high-risk facilities where the impact of economic activities can be influenced by external and internal

factors. The aim of the study is to analyze and identify the factors affecting the development of the food industry and the opportunities to improve efficiency in all areas of activity.

Solutions to the problems of increasing the effectiveness of the development of the food industry are particularly relevant in this regard, since food production is recognized as an important sustenance sector and has a major impact on the level of economic security of the region and the country, and the well-being of citizens.

Consequently, the uninterrupted provision of quality and affordable food products is of great importance for improving the lives of citizens, which is currently a priority of state policy.

II. METHODS

The methodology of the research is formed on the concepts of Russian and foreign researchers on the topic.

The method of aggregation and interpretation of statistical data based on analytical calculations is used as the main research method. In the process of applying this method, statistical materials on the state of the food industry in Russia and trends in development have been compiled.

III. DISCUSSION AND RESULTS

At present, trends in the food industry depend mainly on the consolidation of assets, the functioning of organizations, as well as the ongoing process of vertically integrated linkages and competition in world agri-food markets. Therefore, the operation of Russian companies in the food industry is primarily oriented towards the domestic market, and the priorities of their strategic development are mainly recognized by the reaction to changing external factors [5].

The stable functioning and development of food industry organizations require a significant strengthening of competitive potential, which in turn involves innovative technical re-equipment and improvement of the quality of the products. Thus, nowadays food industry of the Russian Federation unites 25 thousand organizations. For example, the bakery industry has over 10 thousand enterprises producing about 70-80,000 tons of bread per day. The daily demand is 0.5 kg per person. In 2019, baking of finished bakery products amounted to 5.7 million tons [10].

A big push for the development of the food industry in the Russian Federation was the food embargo against importing countries in 2014. Production of agricultural and food products in Russia has been growing steadily for 6 years [4]. Sanctions against the Russian Federation have also had a great impact in 2019. Let us present the production of the main types of food products in table 1 [6]

In general, 2019 was a positive year for the food industry of the Russian Federation. A number of domestic enterprises have obtained permits to supply products to the markets of other countries, particularly the Chinese market. There is, of course, a slight downturn in some areas, but this is due to changes in consumer demand for final products on the domestic market.

The positive trend has also been influenced by state regulatory measures to develop the food industry. But despite this, there are problems that raise serious concerns about the sustainability of the food industry, as shown in figure 1.

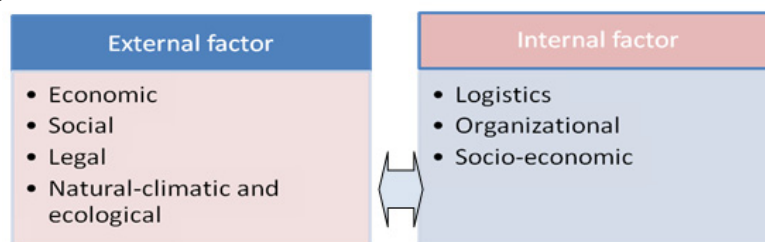


Fig. 1. Factors affecting the sustainable development of the food industry

TABLE V. PRODUCTION OF THE MAIN TYPES OF IMPORT-SUBSTITUTING FOOD PRODUCTS IN THE RUSSIAN FEDERATION

	2017	2018	2019	2019 to 2018, %	January-August 2020	January-August 2020 to January-August 2019, %
Chilled poultry meat, including for baby nutrition	3014	3070	3246	105.8	2189	102.7
Frozen poultry meat, including for baby nutrition	1303	1273	1026	80.6	641	92.2
Sausages, including baby sausages	2259	2282	2282	100.0	1552	103.4
Fish fillet, other fish meat (including minced fish), fresh or chilled	17.3	17.4	17.5	100.8	10.5	102.1
Frozen fish	3057	3056	2989	97.8	2070	99.7
Frozen fish fillet	146	155	163	105.0	116	101.1
Vegetables (other than potatoes) and mushrooms, frozen	62.6	55.9	83.7	149.8	57.4	115.9
Fruit, berries, and nuts, fresh or pre-cooked, frozen	15.6	16.8	22.2	132.3	12.2	111.1
Heat-treated milk, including milk for infant feeding	5390	5457	5425	99.4	3643	100.7
Cream	133	150	163	108.4	118	111.8
Cottage cheese	486	501	469	93.5	329	105.3
Butter	270	267	270	101.2	195	107.5
Cheese	464	467	540	115.7	376	106.5
Milk products condensed, millions of standart cans	837	806	717	88.9	475	104.8
Sour milk products (except cottage cheese and curd products)	2896	2819	2793	99.1	1887	99.1
Chilled poultry meat, including for baby nutrition	3014	3070	3246	105.8	2189	102.7

Source: [7]

All internal factors affecting the financial results of a business entity can be divided into several groups related to systems that perform various functions at the enterprise [3]. These are factors related to the production system, supply chain, marketing and sales, financial system, management, investment and innovation and social systems. It is also possible to formulate the following factors as negatively affecting: ineffective financial management, erroneous financial planning, and, as a consequence, a decrease in profitability, declining liquidity, and therefore, the efficiency of the company's economic growth, failure to meet deadlines and obligations to creditors [4].

In August 2020, the production of bakery products of short storage was reduced by -5.4% compared to August 2019, amounting to 461,988.2 tons. The Central Federal District became the leader in the production of bakery products of short storage in tons of total produced in 2019, with a share of about 27.2% [2].

In the context of the spread of COVID-19, the Government of the Russian Federation decided to ban the export of a number of goods, and in the field of grain exports a non-tariff quota for grain crops was introduced on March 31, 2020. This restriction did not apply to Eurasian Economic Union (EAEU) countries [9].

According to the operational information of the agro-industrial complex of the constituent entities of the Russian Federation, as of January 1, 2020, spring sowing in the country as a whole was carried out on an area of 50.37 million hectares, which is 97.3% of the forecasted area and corresponds to an area indicator of 29.1 million hectares, or 99.9% of the forecasted area [1]. The farmers have surpassed the forecasted sowing volumes for such important grain crops as spring wheat, barley, and corn. In a favorable market environment, the situation in food production in Russia has become stable [12]. Let us the main indicators of the food and processing industry and present them in Figure 2.

The food industry has recently been one of the fastest growing industries in the Russian Federation. The effective development of the food industry is of strategic importance to the state

and is an indicator of its economic security.

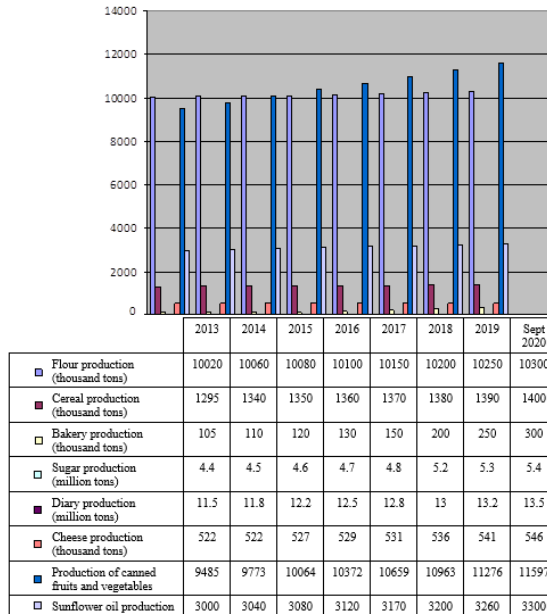


Fig. 2. Dynamics of indicators of the development of the food and the processing industries of the Russian Federation for 2013-2020

The analysis showed that the production of vegetable oils in the country, where sunflower is the main raw material, increased by 40,000 tons, compared with the same period a year earlier. It should be noted that record levels of sugar production led to the collapse of sugar prices in Russia, and as a result several sugar factories even had to be shut down in early 2020 (figure 3).

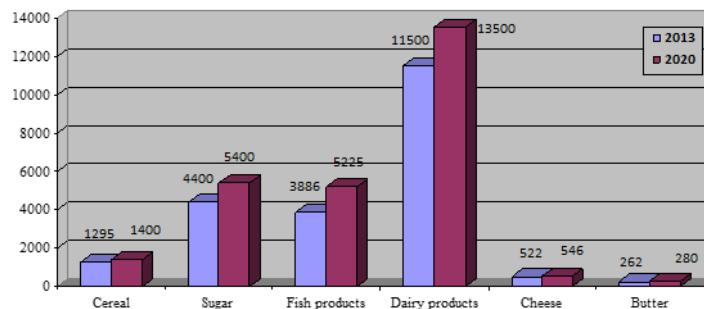


Fig. 3. Analysis of the growth of food production and processing in 2013 to 2020

In the Russian Federation, as of June 19, 2020, statistical data showed that the sown area for sugar beet is 932.2 thousand hectares, which is 98.7% consistent with the value of the predicted sown area and 18.6% less than the same date a year earlier. In this case, the widespread decrease in sowing areas is not due to coronavirus infection, but in order to stabilize prices in the sugar market.

One of the most important indicators describing the growth of the state at the macroeconomic level is the gross domestic product (hereinafter referred to as GDP), which shows the values of goods and services produced within the state for a one-year period in all economic sectors of the country. It consolidates the whole range of products produced, regardless of the national production factors involved in the production process, both for domestic consumption and for export, savings. The annual rate of GDP growth as of the 2nd quarter of 2020 was -8.5%, as for August 11, 2020. The growth rate for the first quarter is 0.3%. GDP per capita PPP stands at \$27,044. According to the data from the 1st quarter of 2020, GDP from agriculture is 424 billion rubles / 6.033 billion \$US, let us analyze the GDP of the Russian Federation and present it in Figure 4 [8].

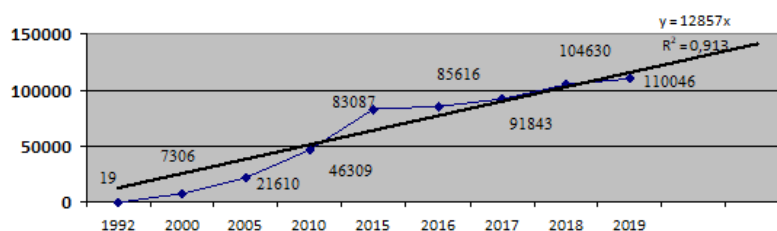


Fig. 4. Fluctuations in the total level of GDP of the Russian Federation, billion rubles

The analysis of GDP shows that the trend line is growing smoothly compared to the GDP dynamics, this shows the positive development of the economy of the Russian Federation (GDP continues to grow in the long term).

If we analyze the short-term period, for example, in April 2020, the production of bread and bakery products in Russia decreased by 6.4 thousand tons. Compared to the average for this month in 2016-2018, the decline is estimated at 3.1%, which for the conservative bread and bakery market indicates a significant decline in production activity. Therefore, based on our research, we propose to draw attention to the following factors which will contribute to the development of the food industry.

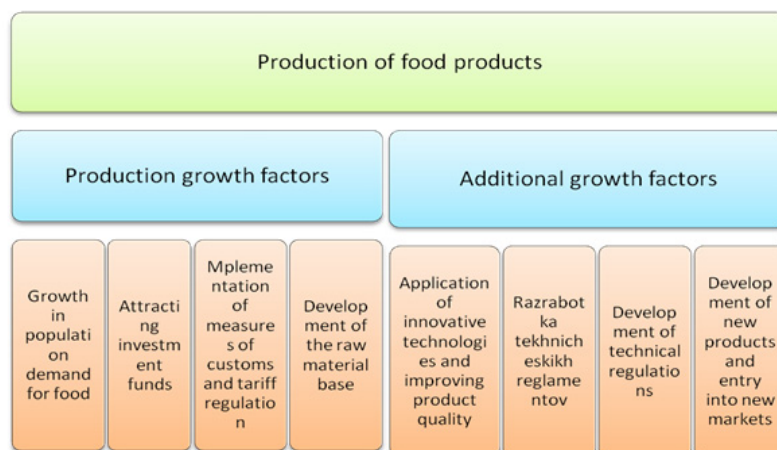


Fig. 5. Food industry development factors

In a competitive environment for the development of the food industry, organizations need to take into account all the above identified factors. It is therefore clear that the development of the food industry requires the modernization of production and the technical re-equipment of production through increased investment and innovation. Consumers are seeking simplicity in addition to better quality foods [5].

IV. CONCLUSIONS

The food industry is designed to meet the most basic human need. The result of its activity is the production of ready-to-eat food products together with semi-finished food products.

The main factors that have a negative impact on this process include: a significant increase in the cost of products sold; ineffective management of financial resources; inaccurate financial planning; socio-economic factors, natural and climatic and others.

Thus, for the food industry to function effectively, it is necessary to take into account the factors contributing to development, such as improving the quality and quantity of food products, paying attention to the growth of population demand for food products, attracting investment funds, implementing measures of customs and tariff regulation, developing the resource base, applying innovative technologies and developing of technical regulations to improve the quality of products.

Summing up, we can conclude that, despite the factors considered as influencing the development of the food industry, production have tendencies for development not only in the

Russian market, but also abroad.

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Formation of priority directions of development of the Russian economy

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Abstract—The innovative economy is a part of the public economy, on which the accelerated and effective development of the socio-economic system of the state depends. In order to activate the innovation of the economy, it is necessary to determine the priorities in the scientific and technical sphere, the implementation of which will bring the country to a fundamentally new level of competitiveness in the global economic space. The article considers the types of intellectual services and high-tech products that can make a significant contribution to innovative development and strengthen Russia's competitive position in the world market

Keywords: innovative economy, information technology, economy, world markets, scientific and technical potential, new technologies.

I. INTRODUCTION

An efficient economy of any country is projected on an innovative vector of development. New technologies that create new technological patterns contribute to the emergence of new economic sectors, new methods of management of scientific and production processes and, in general, lead to economic restructuring.

To better understand the nature of the innovation economy, a definition of this concept is needed. The innovative economy is a part of the social economy, which is based on fundamental knowledge and their transformation into the real sector of the economy, on the positive perception of new ideas, technologies, machines, on the readiness of society to the practical application of innovations in various spheres of human activity. Consequently, the innovative economy is based on promising production technologies, which create new labor markets and industries, contribute to the growth of labor productivity, increase the competitiveness of individual sectors of the economy and national economies as a whole.

II. RESULTS AND DISCUSSION

From a technical point of view, promising production technologies are associated with 3D printing, "Internet of things", new materials and robotics [1]. These technologies are changing the contours of modern industrial production due to their focus on mass customization, reduction of dependence on cheap labor resources, greater coherence of production processes. In the article by I. Dezhina and A. Ponomareva [2] prospective production technologies (PPT) is a complex of processes of design and manufacture at the modern technological level of customized material objects (goods) of various complexity, the cost of which is comparable with the cost of mass production goods, including in countries with cheap labor.

An indicative list of priority areas for PPT in developed countries is presented in table 1.

TABLE 1
APPROXIMATE PRIORITIES IN THE FIELD OF ADVANCED PRODUCTION TECHNOLOGIES

European Union	United States	China
New Production Processes Adaptive and smart production systems Digital, Virtual and Resource Efficient Manufacturing Mobile and Collaborative Enterprises (Network Manufacturing and Dynamic Production Chains) "Human-centric" production Consumer-oriented production	Sensors, process measurement and control, quality control Modern materials design, synthesis and processing technology Virtualization, Information Technology and Digital Manufacturing Sustainable production Industrial nanotechnology Production of flexible electronics Industrial biotechnology and bioinformatics 3D printing Industrial robotics Modern technology of forming and connection	Next generation ICT industry Bioengineering High Performance Technology and Hardware Modern materials Sensors Smart Technologies

Source: [3]

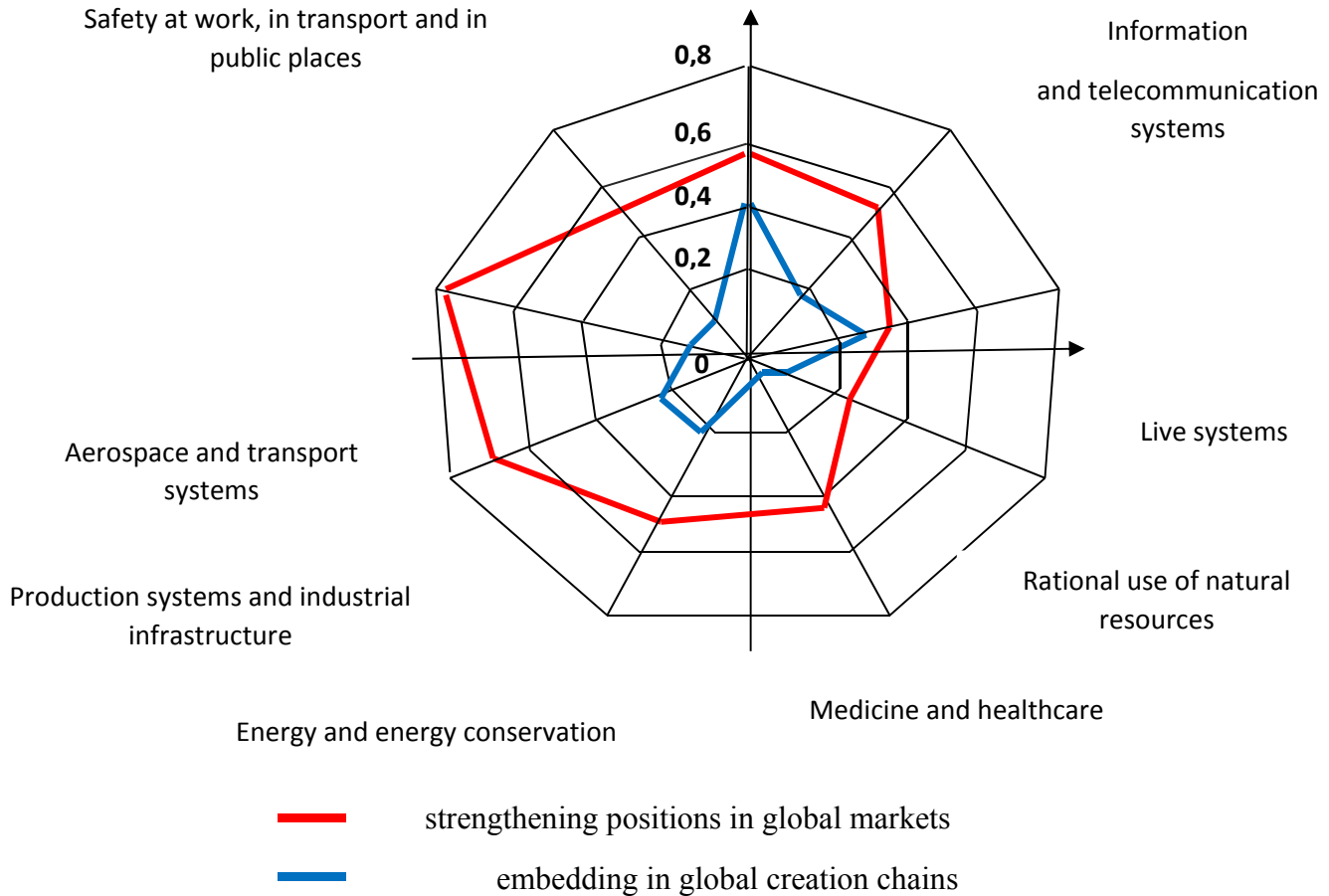
According to experts, the innovative economy of Russia is currently concentrated on separate, rather narrow, technological directions. Perhaps that is why in some countries Russia is perceived only as a growing market for new products. Indeed, prior to the imposition of economic sanctions, Russia steadily expanded its purchases of manufacturing equipment and information technology. According to a review by Thomson Reuters, Russia did not belong to any of the groups of countries that are leaders in the most promising scientific and technological areas [4].

Geopolitical situation does not allow to integrate the country into the chain of the global economy, to strengthen its position in high-tech markets. But it is not only this factor that affects the effective development of the economy. The development of promising scientific and technological directions requires the implementation of existing scientific achievements and the transformation of the existing infrastructure, favorable conditions necessary for the implementation of new technologies.

As part of the long-term forecast for the development of science and technology, experts have identified market niches where Russia can strengthen its position using the available competitive advantages. Figures 1 and 2 present the experts' opinion on some criteria of scientific and technological development - "strengthening positions in the markets of the world economy" and "integration into global chains" [5].

Based on the available analytical base, it can be assumed that in the future Russia can reach 10-15% share in the markets of intellectual services and high-tech products in a dozen positions, including: aircraft building; space services and production of

rocket and space technology; shipbuilding; weapons and military equipment; software; educational services; nuclear technologies.

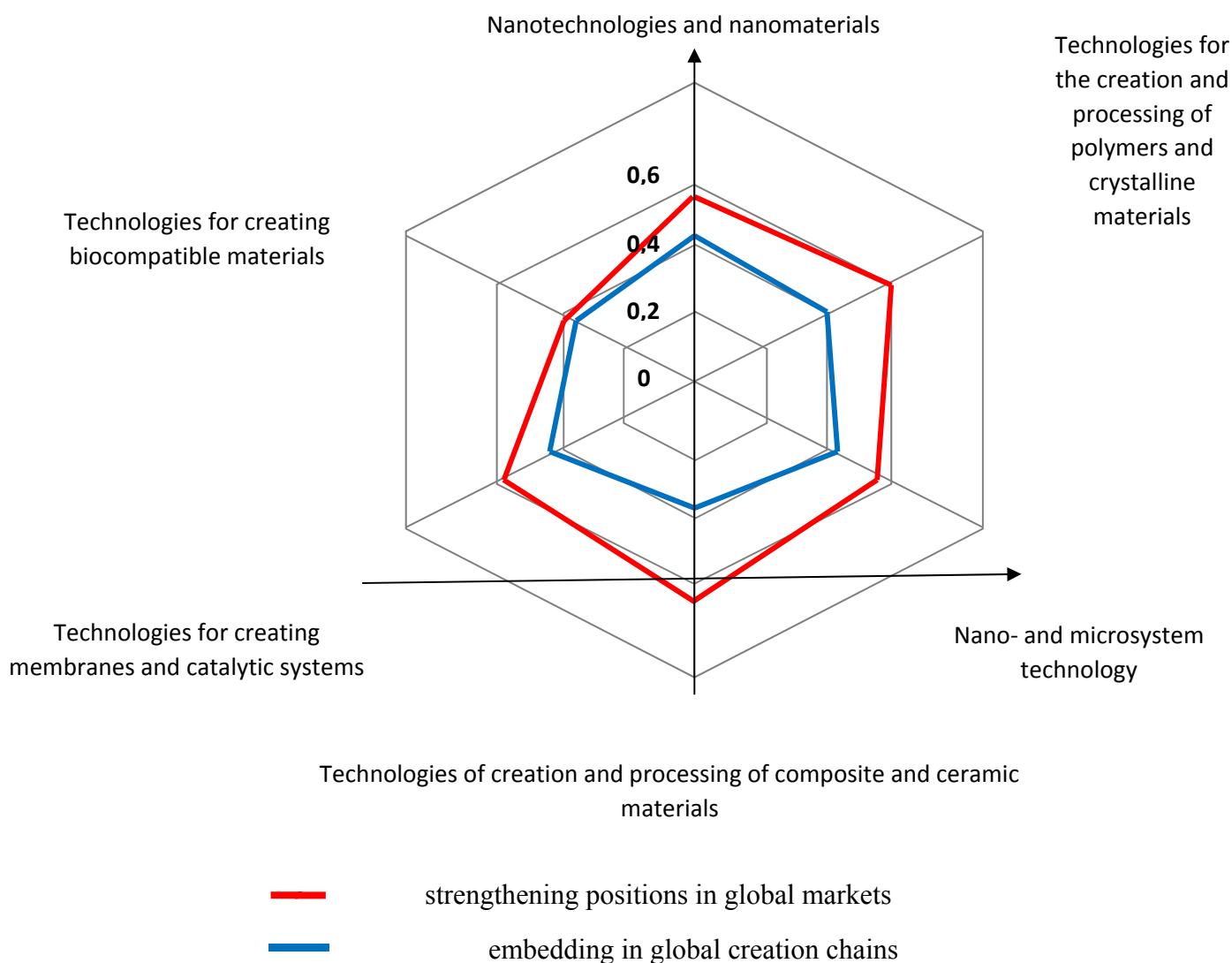


Source: [5]

Fig. 1. Distribution of expert assessments according to the criteria "strengthening of position in world markets" and "integration into global chains"

Considering the direction of "Industry of nanosystems and materials", we note that here it is observed strengthening of a position in the global economic space and increase of competitiveness of Russia. In particular, there are competitive advantages in technologies of catalysis of precious metals applied by nano particles, creation and processing of polymers and elastomers, creation and processing of composite and ceramic materials.

Another important aspect of strengthening the position of Russian manufacturers in the world market is the aerospace sector. The strategic development plan should take into account the competitive advantages of the State, which should be the flagship of the system of national priorities.



Source: [5]

Fig.2. "Distribution of expert assessments according to the criteria of "strengthening the position in world markets" and "integration into global value chains" in the direction of "Nanosystems and materials industry"

The President of the Russian Federation approved the "List of critical technologies of the Russian Federation", which allows to implement large-scale innovative projects. The projects are aimed not only at realization of priority directions of development of economy, but also at scientific and technical cooperation with the countries of far abroad, at development of separate territories and industries.

By systematically setting priorities in the consolidation of the expert community, it is possible to achieve a stronger position in fundamental and applied scientific developments. To this end, Russia has all the necessary competencies and has the following signs of development:

- innovative infrastructure is evolving, although the pace of development of this structure should be faster;
- Modern computer systems and information technologies are being actively introduced into the production and management systems;
- Innovation activity in various spheres of activity is being intensified and expanded;
- radical changes are taking place in social structures;
- The system of training and retraining of personnel is being actively formed to implement the priority directions of economic development

CONCLUSION

The results of the study show that Russia has a significant potential in the scientific and production sphere, which will make a significant contribution to innovative development and strengthen Russia's competitive position in the world market. However, the timing and degree of achievement of the set goals in the development of scientific and technological potential of the country will depend on the integration interaction of the key participants - the state, science and business.

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The main practices of fundamental analysis of the securities market on the example of P&G Corp.

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Abstract— The market economy, as we used to see it, could not give the results that allow to create large industrial associations and unions. All these successes were realized thanks to the development of the credit institution. Historically, the first preconditions for the development of the credit industry were formed in ancient times, after the emergence of cities and provinces.

Keywords: investment, fundamental analysis, exchange, market, crisis.

I. INTRODUCTION

The first creditors were moneylenders, who found their capital by providing funds at interest. Then came the first credit institutions, providing not only private loans, but also special credit products designed for artisans doing their own business. Further development of credit was achieved through the development of manufactures in European countries, which combined private producers. In this case, there is a production union, which requires a lot of financial costs. For this purpose, a stock exchange in Bruges was established in the 16th century.

The main function of stock exchanges is to carry out capital accumulation and its systematic redistribution to create a balance in the economy. Naturally, like any other financial institution, the stock exchange requires careful analysis on the part of market participants. Hence, the relevance of research of such a form of stock market analysis as fundamental analysis.

The American School of Fundamental Analysis is based on Benjamin Graham and David Dodd's classic paper Securities Analysis. Security Analysis, published by them in 1934. Graham himself had a fundamental analysis in practice and was a successful investor. One of Graham's most prominent successors, using fundamental analysis, is Warren Buffett.

II. RESULTS AND DISCUSSION

In itself, fundamental analysis serves as the most valid basis for making significant investment decisions in the market, because it takes into account such indicators as the multiplier effect, exter

nal and internal insites about the activities of the organization, market forecasts from the position of potential for crisis situations or market fall of a particular segment. All this can be built on the basis of technical analysis, however, technical analysis itself can work only on the principle of retrospectivity of data and trends of previous periods. Hence the critical need for research. Thus, fundamental analysis interprets the prospects of acquisition of securities of the company.

Consider a case study of basic analysis based on the US company Procter & Gamble Company. The American manufacturing company was selected for the study on the grounds of:

- the relative stability of the US economy and stock markets;
- minimum level of lobbying in the stock market.

The company under investigation, P&G, is engaged in the production of consumer goods.

The company is present in almost all countries except a number of countries in Africa, South-East Asia and Eastern Europe due to differences with the political regimes of these countries and the inability to enter the country's market due to economic instability.

As mentioned above, the main indicators that form the market value of the company's shares were selected for analysis. This includes the company's revenue, gross and net income, and cash flow. Table 1 summarizes the company's earnings from October 2021 to October 2022.

Table 1 - Procter & Gamble Company earnings report October 2021 - October 2022 (millions) USD)

Period to:	2022	2022	2022	2021
	30.сеп	30.июн	31.мар	31.дек
Total income	20612	-	19381	20953
Revenue	20612	-	19381	20953
Other income	-	-	-	-
Cost of income	10846	-	10326	10664
Gross margin	9766	-	9055	10289
Total Operating Expenses	15678	-	15278	15713
Sales/General/Administrative Costs, Total	4832	-	4952	5049
Research and development	-	-	-	-
depreciation	583	-	611	610
Interest expense (income)	-123	-	-109	-106
Unusual expenses (income)	-	-	-	-
Other operating expenses, total	-460	-	-502	-504
Operating income	4934	-	4103	5240
Interest revenue (expense), non-operating, net	-	-	-104	-96
Gain (loss) on sale of assets	9	-	-4	-2
Other income, net	-72	-	36	3
Net profit before taxes	4997	-	4071	5239
Tax payments	1034	-	704	997
Net income after tax	3963	-	3367	4242
Minority share	259	265	268	275
Shares in branches	-	-	-	-
Recalculation according to generally accepted accounting principles of the USA	-	-	-	-
Net profit before deduction of extraordinary items	3939	-	3355	4223

Extraordinary articles	-	-	-	-
Net profit	3939	-	3355	4223
Net profit adjustment	-71	-	-68	-70
Profit on ordinary shares, except for extraordinary items	3868	-	3287	4153
Adjustment for dilution of equity	-	-	-	-
Diluted earnings	3939	-	3355	4223
Diluted weighted average number of shares outstanding	2503,6	-	2530,2	2544,2
Earnings per share after additional issue excluding extraordinary items	1,57	-	1,33	1,66
Amount of dividends per ordinary share	0,913	-	0,87	0,87
Normalized earnings per share after additional issue	1,24	-	1	1,28

On the basis of the presented information, it can be found that in 2022 there is a decrease in gross and net profit of the company in comparison with the indicator of almost the same period of 2021. Such indicators may be related to a full-scale crisis in the EU and Eastern Europe - the energy crisis with the fighting in the former Soviet Union prompted the company to close large production sites and exit their business relations with the Russian Federation.

In order for the analysis to cover the factors affecting market value, it is worth to refer comprehensively to other documents about the company's activities. Table 2 presents the cash flow statement of Procter & Gamble Company.

Table 2 - Procter & Gamble Company cash flow statement
(millions) USD)

Period to:	2022	2022	2022	2021
	30. sentyab	30. june	31. march	31. december
Period:	0 months	0 months	0 months	0 months
Amount of capital/net profit	3939	-	3355	4223
Cash from Operating Activities	4070	-	3246	5121
depreciation	583	-	611	610
Depreciation (Intangible assets)	80	-	79	74
Deferred income tax	-130	-	-158	-158
Non-monetary items	60	-	16	13
Cash receipts	-	-	-	-
Cash payments	-	-	-	-
Income tax paid	-	-	-	-
Interest paid	-	-	-	-
Changes in working capital	-592	-	-815	201
Cash used for investing activities	-832	-	-1776	-960
Acquisition of property, plant and equipment	-890	-692	-747	-626
Other cash flows from investment transactions, total	58	10	-1029	-334
Cash used in financing activities	-3507	-	-4432	-2858
Cash Flow Budget	-	-	-	-

Total dividends paid	-2255	-	-2155	-2171
Share issue	-3812	-	-664	-4187
Issuance of Debt Securities	2560	-	-1613	3500
Effect of exchange rate changes	-	-	-312	-256
Net change in cash	-504	-	-3018	1174
Opening balance	7214	-	11544	10370
Balance at end of reporting period	6710	7214	8526	11544
Free cash	2182,88	-	1483,25	3479,75
Growth in free cash	-25,81	-	-57,37	56,73
Free cash income	1,06	-	0,681	1,14

The condition of the funds engaged in investment activities is noteworthy. Negative value indicates large payments related to repair and purchase of non-current assets and carrying out of innovation activity, which is typical of this company acquisition of shares and payments on debt obligations. This company is an active participant of trading on the stock exchange and is engaged in improvement of equipment for production of consumer goods. Such events allow for a gradual decline in the value of stocks in the short term, but then there will be a period of growth in value associated with the introduction of new equipment into production. However, it is now possible to be affected by the loss of the whole market in Eastern Europe, which entails the need to close all debt obligations in the territory and temporary escorts of staff who will be relieved of duty at the closure.

The company is now struggling with the need to compensate for the costs incurred, but the need to provide the Russian economy with consumer goods, the production of which it cannot deal independently, will entail the purchase of the company's goods through the countries of South-East Asia under parallel import programs.

Thus, in the medium term, the company will be able to compensate for the losses incurred.

According to the theory of fundamental analysis, the study of the state of circulating and non-circulating assets allows to estimate the further movement of the market value of the company's shares [3, p. 119]. Table 3 summarizes the status of Procter & Gamble Company assets.

Table 3- Company assets Procter & Gamble Company (в млн. USD)

Period to:	2022	2022	2022	2021
	30. sentyab	30. june	31. march	31. december
Total current assets	22521	21653	23416	25545
Cash and Short-Term Financial Investments	6710	7214	8526	11544
Cash	-	-	-	-
Cash and cash equivalents	6710	7214	8526	11544
Short-term financial investments	-	-	-	-
Total receivables, net	5720	5143	5513	5241
Accounts receivable - trade, net	5720	5143	5513	5241
Total Inventory	7590	6924	7101	6673
Prepaid expenses	2501	2372	2276	2087
Other current assets, total	-	-	-	-

Total assets	116282	117208	120217	121416
Property, plant and equipment, total - net	20593	21955	21323	21357
Fixed assets, total gross	-	47457	-	-
Accumulated depreciation, total	-	-25502	-	-
Goodwill, net	38761	39700	40710	40315
Intangible assets, net	23465	23679	23913	23538
Long-term financial investments	93	140	153	154
Notes receivable - long term	-	-	-	-
Other non-current assets, total	10849	10081	10702	10507
Other assets, total	1870	1781	1588	1432

Based on the above data, a number of conclusions can be drawn regarding the formation of the share value in the future. First, the lion's share of non-current assets is goodwill (the market value of the company minus the company's equity). This is usually the case in the context of a high status of the company in the market, supported by the timeliness of contracts. Hence the positive rate of further growth of the company's financial instruments value in couple with short-term adverse market events.

So, on the basis of the above assumptions, it is possible to sum up some results. Since the analysis describes the current situation on the market in late 2021 - early 2022, we can turn to the official source, the portal Investing.com, which publishes information on the value of various investment products, including shares of Procter & Gamble Company. Figure 1 shows the market value of the company's stock over the last 5 years.



Fig. 1: Procter & Gamble Company stock market value for 10.2021 - 10.2022

Thus, on the presented chart, we observe a gradual decline in the value of the stock at the end of 2021 with the subsequent pronounced decline in the value of the shares, which may prompt thoughts about a further fall in their value. However, the October growth indicates a good potential of these shares, since the deal with the exit from the Russian market is completed, the company was able to avoid reputational risks from cooperation with Russia.

It is also worth mentioning the third-party factors that also make their adjustments to the quotes and mentioned above, but due to the lack of a full information spectrum, it is difficult to provide the most accurate forecast. However, the factors involved showed that the market situation could indeed be predicted based on financial

l documentation. Among the factors that have the greatest impact on the pace of development of the financial technology market in Russia, it is also advisable to include access to finance, technology development, public infrastructure and regulation, demand from the population and business, activity of the supply of financial services by financial companies and the availability of human capital [7. p. 87].

III. CONCLUSION

So, on the basis of the presented example it is possible to get a full picture of how the methods of fundamental analysis allow making decisions on the stock market, to gain an understanding of the possible trend of market value of shares of any company and to plan their investments for a long term.

This study confirms that fundamental analysis is not just one way of assessing the market value of stocks, but also serves as the most important tool in decision-making, leaving the method of technical analysis as validation.

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Analysis of Implementation of Import Substitution Policy on the Russian Agricultural Machinery Market

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Abstract—The article analyzes the structure of the agricultural machinery market in Russia. The level of development and potential of Russian manufacturers and their involvement in world markets are considered. The problems preventing Russian companies from completely replacing foreign competitors are described, as is the role of the State in solving these problems. An analysis of the implementation of the import substitution policy on the market of agricultural machinery in Russia showed that foreign models of agricultural machinery (mainly from Belarus and China) currently occupy most of the domestic market. Some of them are produced on the territory of the Russian Federation. At the same time, the number of Russian machine-building companies is constantly decreasing and the number of workers in the industry is declining. To solve these problems the directions of support for the Russian agricultural engineering are proposed, which include encouraging investment in leading Russian companies, creating an enabling environment for export development, financing the training of qualified personnel, and reducing the tax burden in mechanical engineering and Agro-Industrial Complex.

Keywords—agricultural machinery, import substitution policy, agro-industrial complex, import, export

I. INTRODUCTION

The most important driving force of the Russian economy over the past 10 years has been the idea of an accelerated technological breakthrough. This has been facilitated by the prevailing external economic and political environment, which has revived the activities of domestic manufacturers of high-tech goods. This, in its turn, has led to the development of the import

substitution process. The production of agricultural machinery is one of the main directions of the import substitution process, which affects the economic security of the State due to the significant contribution of the agro-industrial complex to Russia's GDP.

II. MAIN PART

Increasing the competitiveness of the Russian agro-industrial complex (AIC) is a pressing problem in the development of domestic agriculture. Technical modernization, based on priority development technologies, is of great importance for Russian manufacturers of agricultural machinery and for the State as a whole, since it is the basis for the country's food and economic security.

Currently, the market for agricultural machinery in Russia is influenced by various factors, among which the following should be mentioned: the availability of credit resources to the consumer of agricultural machinery, the customs policy related to foreign manufacturers of machinery, the share of secondary machinery market, the level and mechanisms of state support for both agricultural manufacturers, and agricultural engineering [1].

Implementation of import substitution policy is a necessary measure of the State, since the technical dependence of domestic producers on the external market is gradually becoming an economic dependency and leads to a lag in the pace of development from individual industries and the entire State [2].

In order to determine the level of technical dependence of Russian agricultural manufacturers, it is necessary to analyze the current technical equipment in the agro-industrial complex. Table 1 presents data on the following groups of agricultural machinery: harvesting equipment (combine harvesters), agricultural tractors. These tables are based on the aggregate indicators of the agricultural machinery market in Russia over the past 5 years [8].

TABLE I. STRUCTURE OF THE RUSSIAN AGRICULTURAL MACHINERY MARKET
(BY AGGREGATED PRODUCT GROUPS)

Indicator	2015		2016		2017		2018		2019	
	Number of units	Market share, %	Number of units	Market share, %	Number of units	Market share, %	Number of units	Market share, %	Number of units	Market share, %
Tractors for farming and forestry										
Russian brands	2 586	9.6	2 854	13.7	2 410	9.1	2 593	9.9	2,427	10.3
Foreign brands assembled in Russia	1 443	5.4	950	4.5	1 979	7.5	1 742	6.7	3,382	14.5
Imports from the Republic of Belarus and Kazakhstan	12 024	44.5	8 170	39.3	9 832	37.2	10 307	39.4	11 234	48.0
Imports from other countries	8 605	31.8	5 844	28.1	9 896	37.5	8 668	33.1	6 347	27.1
Total	27 048	100	20 815	100	26,423	100	26 160	100	23 390	100
Combine harvesters										
Russian brands	3 245	63.7	4,529	71.4	4 263	66.3	3 634	69.1	3 787	68.1
Belarusian brands assembled in Russia	983	19.4	1 214	19.1	904	14.1	310	5.9	421	7.5
Foreign brands assembled in Russia	362	7.2	381	6.0	555	8.6	594	11.3	771	13.8
Imports from Belarus	411	8.1	97	1.5	268	4.2	198	3.8	228	4.1
Imports from other countries	87	1.7	119	1.9	438	6.8	525	9.9	352	6.3
Total	5 088	100	6 340	100	6 428	100	5 261	100	5 559	100

As can be seen from the table, the market of agricultural tractors in Russia is still dominated by imported goods, Russian production accounts for about 15% of production annually. Moreover, only about 10% of this number is domestic.

The situation on the market of combine harvesters is the opposite: more than 85% of the machinery is produced in Russia, 70% of which are domestically produced combines. The predominant foreign supplier is Belarus, almost half of the imported tractors and combine harvesters are produced there.

Combines and tractors occupy the largest market share in value terms (Fig. 1, 2). Based on an analysis of the sales in recent years, it is possible to draw conclusions about the need to introduce a policy of import substitution of agricultural machinery in Russia. Although, it is certainly very difficult to compete with the largest transnational corporations like Claas, John Deere, New Holland, Agco, which supply equipment to the Russian market [13].

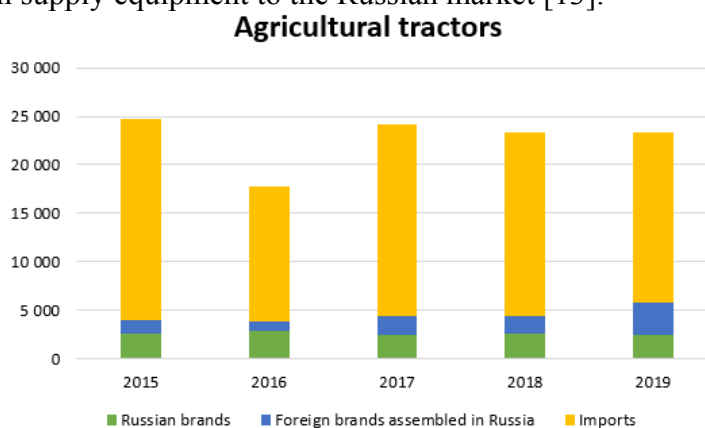


Fig. 1. Dynamics of import substitution in the agricultural tractor market in Russia (2015-2019)

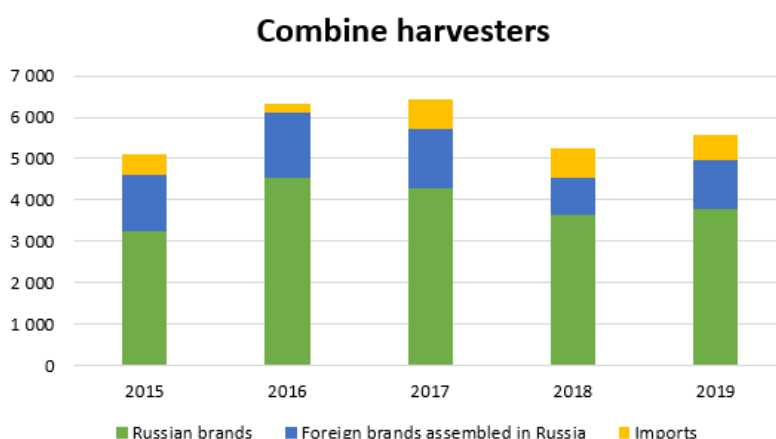


Fig. 2. Dynamics of import substitution in the market of combine harvesters in Russia (2015-2019)

The figures above show the increase in the share of Russian manufacturers in the agricultural machinery market is slow, with a large share of import substitution falls on the production of foreign models in the Russian Federation, which is not import substitution from a technological point of view. At the same time, the problematic sector of the market is precisely the production of tractors for agricultural needs.

The largest localized manufacturers of agricultural machinery in Russia are the Bryanskselemash plant, the Shimanovsky machine-building plant Kranspetsburmash, which assemble combines from the machine kits of the Belarusian manufacturer Gomselmash. It is also possible to highlight the plant Omsklidagromash, which assembles the equipment of the Belarusian manufacturer Lidagroprommash [11].

Among the cross-border supplies to the Russian market, special mention should be made of imports of tractors for agricultural work and forestry from near foreign countries.

The import of tractors from other countries (China, South Korea, Japan, USA, Italy) is distinguished by “polarization”, and this is expressed in the fact that tractors entering the Russian market are either low-power equipment or, on the contrary, high-power equipment.

Thus, the Russian market for agricultural machinery remains dependent on the world's largest importers, particularly China. Russian production of agricultural machinery has not kept pace with that of the world. Consider the reasons for the lag.

1. The reason for the competitive advantage of foreign suppliers is their technological development. As for Russian companies, they occupy only the market of medium- and low-class equipment.

2. Russian manufacturers are highly dependent on State support, since agriculture is traditionally a subsidized sector because of its strategic importance for the country's economic security, which creates dependency on government policies and deprives companies of decision-making flexibility.

3. Narrow export distribution channel, limited for the most part by the countries of Commonwealth of Independent States (CIS), as evidenced by the data in Figure 3, which shows the structure of Russian exports of agricultural machinery to the top 5 countries in terms of supply value.

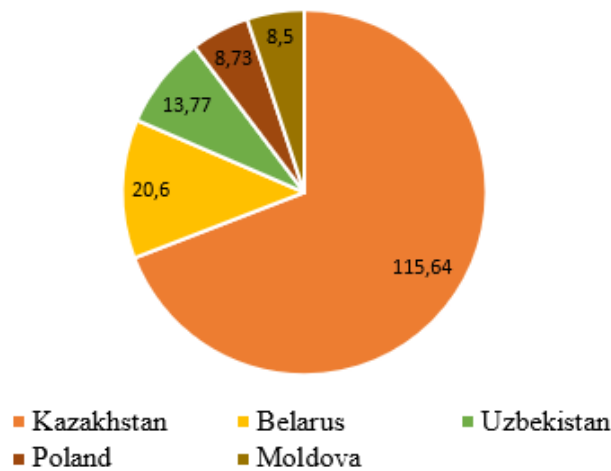


Fig. 3. Structure of Russian exports of agricultural machinery by major partners (\$1 million)

Based on the data provided above, it can be concluded that Russia has not been incorporated into the world's leading markets for agricultural machinery, owing to both geographical distance from agrarian regions and external political and economic problems.

III. FINDINGS AND SUGGESTIONS

Without full access to foreign markets, it is difficult for Russian manufacturers to count on sales stability, which the domestic market cannot fully ensure. The State has therefore taken steps in recent years to support domestic exports. The main ones are subsidizing a part of transportation costs related to registration in external markets and certification of products, assistance in attending exhibitions, and export credit subsidies and insurance.

However, Russian production has several advantages and opportunities for development. Let us distinguish the main ones:

- Relatively low cost of labour in the country.
- Experience gained since the USSR times, technical and personnel equipment.
- Extensive domestic market, under-equipped domestic AIC.
- Development of a leasing sales system.

Using these factors, Russian manufacturers can gradually remove imported machinery from the market by implementing the idea of import substitution in AIC. The effective development and realization of the inherent potential are not possible without the involvement of the State. State support should be provided in the following areas:

1. Encouraging investment in leading Russian companies.

According to Rosstat, the volume of investments in agricultural engineering in recent years has fluctuated around 5 billion rubles per year (Fig. 4).

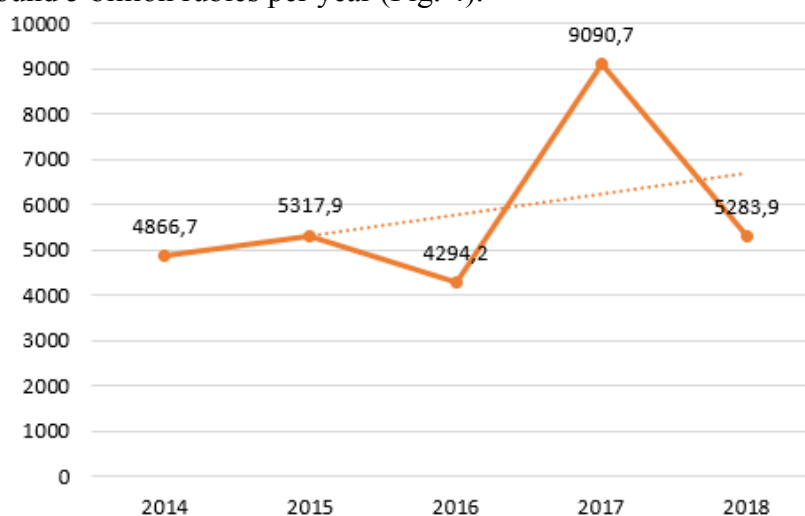


Fig. 4. Dynamics of investment in agricultural machinery production in 2014 - 2018 (RUB million)

Attention is drawn to the high investment rate in 2017 due to the construction of new production points by some leading machine-building companies. Trend line over the specified interval also has positive dynamics. Nevertheless, it is obvious that in order to strengthen the role of Russian manufacturers in the market, it is necessary to increase the volume of their investment.

In 2019, the Government of the Russian Federation took the following measures to invest in the development of agricultural machinery:

- Direct subsidies to manufacturers (8 billion rubles annually in 2020-2022).
- Preferential leasing of special equipment.
- Concessional loans (around 5% per annum).
- R&D funding.

2. Creating an enabling environment for export development.

Until 2025, the Russian Government's strategy for the development of exports of Russian agricultural machinery is in force. The approved export development strategy envisages that supply to foreign markets will become the main driver of the development of the Russian agricultural machinery industry as a whole. By 2025, the ratio of agricultural machinery exports and shipments of agricultural engineering products to the domestic market should be 50%. That is, one third of Russia's production must be exported. This compares to 12% in 2017.

As we have described above, the main challenge in the area of exports is the transition from trade with near-abroad countries to leading world markets. In this regard, the Government of the Russian Federation has adopted Decrees in the following areas:

- Support for the export of high-tech products (Decree No. 488, 957, 1368, 1388).
- Export insurance (Decree No. 964) [10].

In our view, besides economic support, the development of Russian exports depends on the foreign policy results of the State's activities and its prestige abroad.

3. Financing the training of qualified personnel.

Increasing the volume of industrial production is impossible without recruiting new workers, including those engaged in intellectual labor: engineers, designers, IT specialists. Figure 5 shows the development of the total number of employees in agricultural machinery production in Russia in 2014-2018 based on Rosstat data [8].

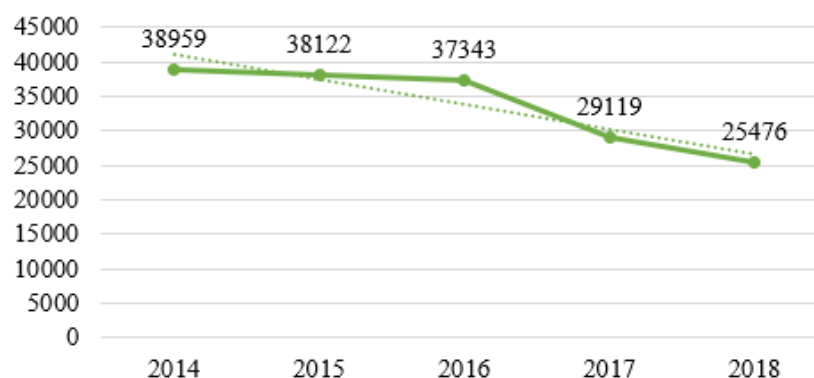


Fig. 5. Average number of employees of agricultural and forestry machinery and equipment manufacturing organizations in 2014-2018 (people)

The chart shows the number of employed persons has been declining steadily in recent years, with a total decrease of 13,483 people (34.6%) in five years. This is directly related to the reduction in the number of companies engaged in the considered type of activity and the increase in production concentration. Technological progress and the replacement of human labor by machine work can also be seen as indirectly responsible for the reduction in the number of workers, but this only highlights the need to increase the number of qualified staff.

4. Reducing the tax burden in mechanical engineering and AIC.

According to the data of the Federal Tax Service of the Russian Federation, the total tax burden on mechanical engineering enterprises in 2019 was 4.68%, of which 4.01% was the value added tax burden.

In 2019, there was a reduction in the tax base on income tax for agricultural machinery enterprises in the amount of the actual costs with a coefficient of 1.5 (Decree No. 609, 988). This measure is insignificant, as the average industry's income tax burden is only 0.59% [9].

IV. CONCLUSION

An analysis of the implementation of the import substitution policy on the market of agricultural machinery in Russia showed that foreign models of agricultural machinery (mainly from Belarus and China) currently occupy most of the domestic market. Some of them are produced on the territory of the Russian Federation. The market share of domestic companies in the production of the main types of agricultural machinery remains unchanged: about 10% of the sales of tractors, less than 70% of the sales of combine harvesters. At the same time, the number of Russian machine-building companies is constantly decreasing and the number of workers in the industry is declining.

To implement the import substitution policy and stimulate manufacturers of agricultural machinery, the State is taking steps to subsidize production; simplify and insure exports and finance training; reduce the tax burden of agricultural machinery. However, based on the dynamics of the policy analyzed, the authors conclude that the scope of the measures taken is not sufficient and the task needs to be addressed more thoroughly at the methodical and methodological levels.

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Establishing Agro-Industrial Complex Innovative Development Mechanism

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Abstract—The Agro-Industrial Complex of the Russian Federation, like any other complex, cannot function without investment. The authors propose a model of the mechanism of innovation in the Agro-Industrial Complex. The article analyzes investment in fixed assets, reveals the dynamics of export of agricultural products in 2010-2019. The results of the analysis demonstrate stable dynamics of investment growth and prove that investors highly appreciate the opportunities provided for the development of agribusiness in the southern regions of Russia. But like any other way of investing money, investing in agriculture has its positive and negative aspects. The authors determine the positive aspects, which are state support, stable demand and the impact of sanctions, while the negative factors include long payback period, high risks, and territorial and climatic conditions of the region. The article analyzes the Strategy for the Development of the Agro-industrial Complex and the Fisheries Complex by 2030, which should ensure the country's food security and increase the export of agricultural products. Particular attention is paid to the financing of state programs for the development of agriculture, and a forecast of the development of the Agro-Industrial Complex is proposed for two options, taking into account the implementation of the strategy and without it.

Keywords—agro-industrial complex, state support, innovations, innovative development, management mechanism, agriculture.

I. INTRODUCTION

In modern conditions, the mechanisms for conducting innovation policy have been constantly changing. As a result, the tools for their implementation have changed multiple times. Numerous changes have resulted in decrease in efficiency and new challenges. These problematic processes

proceeded in different ways in different industries and industry complexes obviously. This article is devoted to one of the main complexes affecting the economic security of the country, the agro-industrial complex of the Russian Federation, and its innovative development.

The issues related to the management of the investment process and the development of investment policy in the agro-industrial complex of the Russian Federation were addressed by the following researchers: A.I. Altukhov, G.V. Bepakhotny, V.V. Bocharov, V.I. Gaiduk, O.S. Glushchenko, D.A. Endovitsky, S.A. Kalitko, M. A. Korobeynikova, V.D. Shapiro, U.F. Sharp, et al.

In recent years, in addition to the problem of choosing priority areas and making investments, the Russian enterprises of the agro-industrial complex constantly face the problem of finding sources of investment financing with an acute shortage of their own financial resources. Therefore, all processes occurring in the agro-industrial complex (especially investment ones) are required to be managed on a national level. In connection with the importance of this issue, the authors of the article set the goal to investigate the fundamental aspects of establishing agro-industrial complex innovative development mechanism.

II. METHODS

General scientific methods of analysis and synthesis were used as research tools, as well as specific research methods such as: monographic method, abstract-logical, calculation- graphic, economic-statistical, comparative financial- economic analysis, etc.

III. MAIN PART

The modern agrarian sector of the Russian economy is one of the effectively developing sectors of the state's national economy. The innovative development of the agro-industrial complex has an influencing factor on the level of import dependence of the state's economy, therefore, the conduct of agricultural production should be based on innovative aspects of activities and focus on the rational use of the natural, production, scientific and technical potentials of the economy [16]. The innovative aspects in the management of the agro- industrial complex are recognized as a prerequisite for ensuring economic growth and increasing the country's competitiveness, therefore, issues related to the development of mechanisms for enhancing innovation processes in this area are strategically important, require methodological refinement and methodological justification. To organize the formation of a mechanism for managing innovative activities in the agro- industrial complex, it is necessary to form a management process, i.e. an algorithm, and determine the elements, objects and subjects of management, factors and trends of influence.

To reveal the process of establishing the mechanism of innovative activity, it is necessary to trace and determine the conditions for activating innovative processes (Fig. 1).

The presented scheme for enhancing innovation in the agro-industrial complex, being an adaptation version, can be close to the system of functioning of the agro-industrial complex.

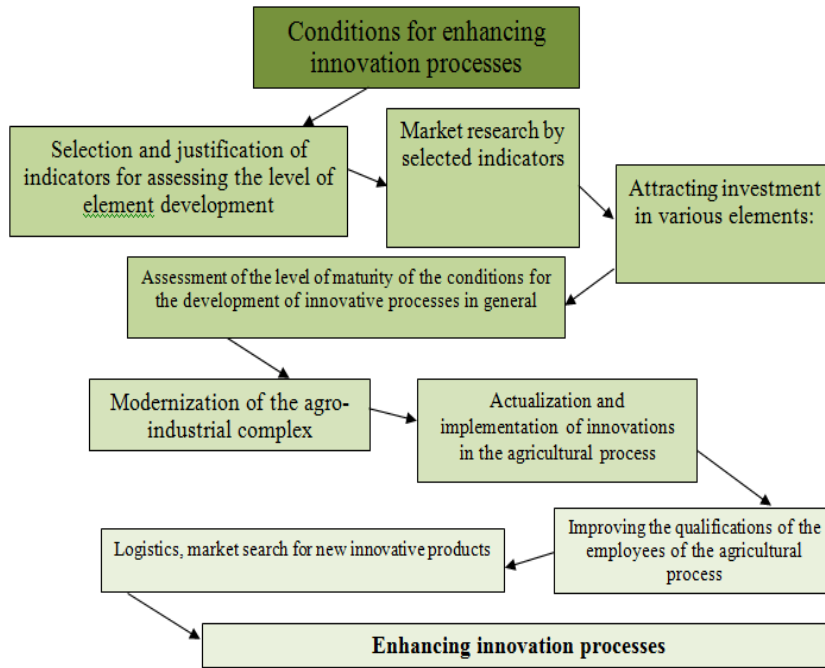


Fig. 1. Scheme of enhancing innovative processes in the agro-industrial complex

For a more intensive development of the Russia's agro- industrial complex, the Government of the Russian Federation has developed and adopted the Strategy for the Development of the Agro-industrial Complex and the Fisheries Complex by 2030 [10], which sets tasks for the agro-industrial sector to ensure the state's food security and increase exports from the supply of agricultural products. As part of the implementation of the above strategy, the volume of exports of products of the agro-industrial complex began to increase, as evidenced by the data in the diagram presented in Figure 2 [9].

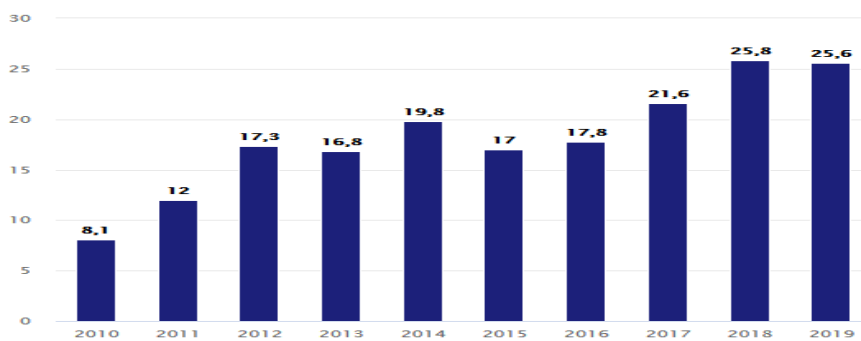


Fig. 2. Export of agricultural products in 2010-2019 (billion USD)

The fundamental fact of creating conditions for the development of innovativeness in the agro-industrial complex is the attraction of investments that will provide the domestic market with food and will contribute to an increase in the share of exports from supplies in GDP [1].

The Russian Federation is currently ranked 20th among the world's major food exporters. In 2019, the export of agricultural products amounted to more than 25 billion USD. Compared to 2010, exports increased 3 times, and almost 19 times as compared to 2000 (1.3 billion). The volume of supplies amounted to more than 60 million tons (Fig. 3) [6]. The main consumers of the Russian food products are presented in Table 1.

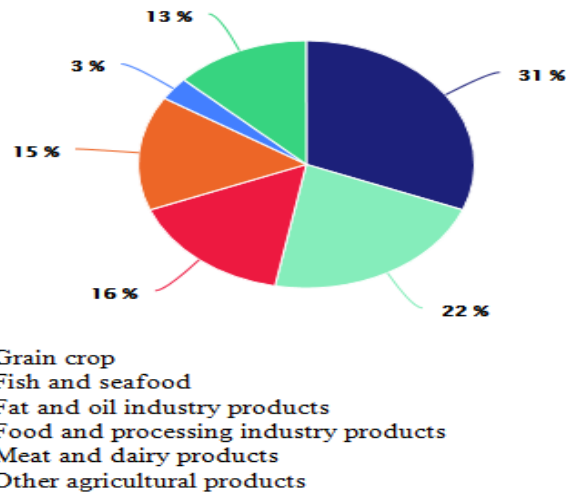


Fig. 3. Structure of exports of products of the agro-industrial complex of Russia in 2019, %

TABLE I. TOP-10 LARGEST BUYERS OF RUSSIAN FOOD PRODUCTS

Position in 2019	Country	Volume of agricultural products imported from Russia (mln \$)
1	China	3202
2	Turkey	2491
3	Kazakhstan	1809
4	South Korea	1560
5	Egypt	1470
6	Belarus	1352
7	Netherlands	1033
8	Iran	974
9	Ukraine	711
10	Azerbaijan	623

Like any other way of investing money, investing in agriculture has its own pros and cons. In Russia, the pros include:

- state support;
- stable demand;
- impact of sanctions.
- The disadvantages of investing in the domestic agro-industrial complex are:
- long payback;
- high risks;
- region dependence.

According to the research “200 Largest Investment Projects for the Construction of Agricultural Complexes in the Russian Federation. Projects 2020-2023”, prepared by INFOLine specialists, the largest investors in the Russian agro-industrial complex are the agro-industrial holding “Miratorg” and the agro-industrial holding “ECO-Culture”, the companies are implementing a number of investment projects with the total value exceeding 100 billion RUB [4]. At the same time, high investment activity in dairy farming should be noted, where 65 large projects are being implemented with a total investment of 241.5 billion RUB, but the largest amount of investments was noted in the segment of beef cattle breeding: almost 325 billion RUB (Fig. 4).



Fig. 4. Investment in the fixed assets according to type of economic activity

The leading agricultural regions of the south of Russia demonstrate the greatest efficiency from the influence of investments in the agro-industrial complex. The experience of the Rostov region is especially interesting, where the maximum growth and production volume per RUB of investments in fixed assets of agricultural organizations is observed. In other federal districts, the Lipetsk, the Kursk and the Belgorod regions are leaders in terms of investment efficiency [7].

Investment in agriculture in Russia relies on comprehensive government support (Figure 5). In this regard, it is fundamentally important to provide constant feedback with the investor through a long-term planning horizon, monitoring the effectiveness of investment projects. An important tool for supporting investments in the agro-industrial complex can be the creation of a unified information system of the investment potential of the regions [3]. This will solve several problems at once:

- improve the quality of investment planning;
- improve the efficiency of the industry management due to the possibility of identifying priority areas for the investments;
- ensure transparency and controllability of the allocation and use of state support funds for the industry;
- reduce the risks of project implementation through monitoring and early detection of problems [3].



Fig. 5. Financing of the state program for the development of agriculture for 2013-2020 from the Federal budget

As the results of the analysis show, in general, investments in the agro-industrial complex of Russia over the last three years have shown a stable growth dynamics. The investors highly appreciate the opportunities provided for the development of agribusiness by the southern regions of Russia [15].

The investors who buy agricultural assets at the current prices insure their investments against inflationary trends in the long term, and create an excellent reserve for generating good returns in the future.

TABLE II. FORECAST VALUES OF THE DEVELOPMENT OF THE AGRO-INDUSTRIAL COMPLEX FOR TWO DEVELOPMENT OPTIONS (WITH AND WITHOUT THE IMPLEMENTATION OF THE STRATEGY)

Product	2011	2020		2030		2020		2030	
		Option 1	Option 2	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
Agricultural production index, %	123.0	101.7	102.3	101.7	102.1	113.2	121.7	131.2	148.0
Grain, million tons	94.2	107.0	119.0	127.0	141.0	113.6	126.3	143.8	149.7
Livestock and poultry, million tons	11.0	14.4	14.6	15.2	16.4	131.1	132.8	138.8	149.6
Milk, million tons	31.6	37.6	38.9	42.5	46.3	118.8	123.0	134.4	146.3
Index of production of food products, including beverages, and tobacco, %	101.0	104.3	105.0	101.0	101.0	143.7	152.2	172.9	191.3

As part of the implementation of the strategy, the Ministry of Economic Development of the Russian Federation predicts an increase in agricultural production by 2030 compared to 2011 up to 31.2%, and up to 72.9% in the food industry (Table 2). The forecasted value is that grain production by 2030 will increase to 127 million tons due to the expansion of the area for grain crops to 46.7 million hectares (the current level is 43-45 million hectares), as well as an increase in the average yield from 21.4 centners/ha (2008-2011) up to 28.8 centners/ha.

The growth in grain production will be due to both an increase in domestic consumption from 72.2 million tons to

81.3 million tons (including 46 million tons for fodder purposes), and due to an increase in external demand for Russian grain from 27,2 million tons to 46 million tons. [6].

Tougher competition in the domestic and world markets is a catalyst for attracting investment, both in agricultural production and in the processing complex. In 2030, as compared to 2011, the investments in fixed assets in agriculture, according to estimates, will grow by 1.7-2.1 times, and by 1.4-1.7 times in the food industry. To carry out an effective investment process for agroindustrial enterprises, the authors have developed a mechanism for innovative development, which is based on establishing conditions that take into account the external and internal environment of the enterprise (Fig. 6).

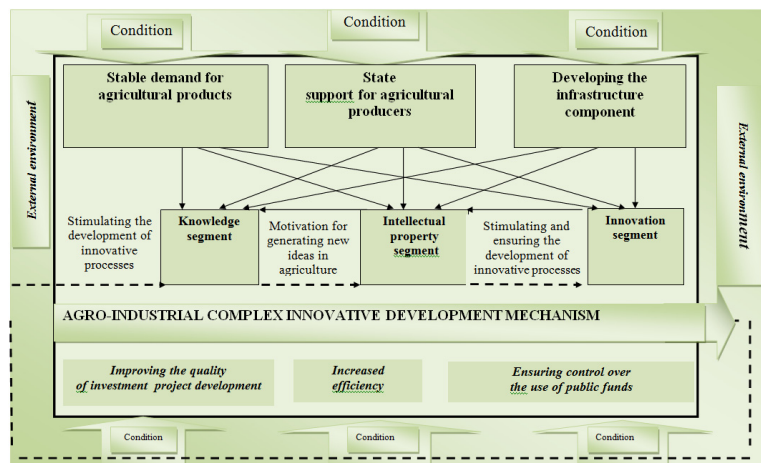


Fig. 6. Agro-industrial complex innovative development mechanism

IV. CONCLUSION

The agro-industrial complex of Russia needs constant state support. Today, the state pays attention to this industry, develops various development programs, which has a beneficial effect on agriculture. The industry becomes profitable, and thus attracts investors. The investors who have invested in quality agricultural assets are likely to be in a better position due to major fundamental trends, namely population growth and economic development. Therefore, the issues of establishing mechanisms for enhancing innovation in the agro-industrial complex will continue to occupy the minds of scientists and leaders who are trying to combine public and private funding for a long time.

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**Contemporary Empirical Aspects of Banking and Insurance
as Financial Market Segments: a Case Study of Belgorod Region**

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Abstract—The paper analyses contemporary empirical aspects of the financial market development in terms of its main segments, based on the case of an individual region of Russia. The research is focused on the recent changes in the region's financial market. The time period under study includes months before and after the first COVID-19 pandemic. The financial markets of various Russian regions are proved to follow major trends which are characteristic of the national financial market. A number of specific features are revealed, including infrastructural changes in the region's financial market, and the market participants' activity. Positive dynamics have been revealed in private deposits, despite the trend toward a decrease in average interest rates, which bears witness to people's confidence in the region's banking segment. The latter has supported a revival of demand for consumer goods and a revitalization of business activities in Belgorod region after the COVID-related restrictions were lifted. Banking and insurance as segments of Belgorod regional financial market are the objects of the study. Statistical and analytical data available at Russia's Central Bank website and some regional research findings are used as the information source. The authors' conclusions and recommendations may differ from the official stance of Russia's Central Bank.

Keywords—region's financial market, banking as a market segment, insurance as a market segment, competition development.

I. INTRODUCTION

Russia's financial market of the last few years may be described as a quickly developing one. This trend complies with the Roadmap for the Implementation of the Major Lines of the Russian Federation Financial Market Development for 2019-2021 approved by the Central Bank of the Russian Federation [1]. As a result, new financial products and services emerge in the market, while forms and patterns of service-rendering are changed. The innovations implemented lately include, in particular, remote authorization and Fast Payments system. Besides, banks have laid the foundation for the Marketplace system, which is a new financial products sale channel.

The above changes concern regional financial markets to a large extent. Taking into consideration the development specifics in each region, it would be both scholastically and empirically grounded to reveal such specifics in order to see what development indices were typical of the financial market's main segments before COVID-19 first wave, and how they changed afterwards. This explains the timely character and significance of the research both for scholars and for experts in finance, the latter representing financial market participants and executive authorities responsible for the region's socio-economic development.

II. LITERATURE REVIEW

The paper deals with the empirical aspects of the main financial market segment development. We have used the analytical and statistical data available at the Central Bank of Russia official website.

III. RESULTS

The financial market of Belgorod region follows the same trends as the national one, with the banking segment prevailing in the market structure.

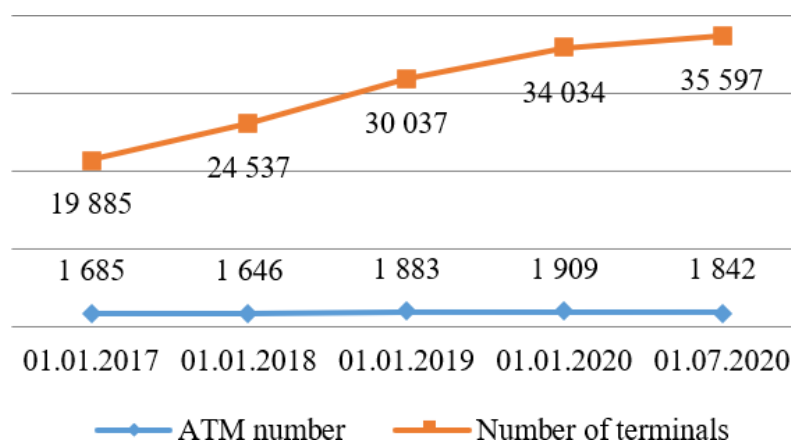
Internal bank units dominate the region's credit market. As of 1st July, there were 376 internal bank units in the region.

TABLE I. THE NUMBER OF BANK UNITS OPERATING IN BELGOROD REGION

	01.01.2018	01.01.2019	01.01.2020	01.07.2020
Banking institutions, total including:	426	392	380	376
- The Bank of Russia institutions	2	1	1	1
- independent credit organizations	3	2	1	1
- branches of credit organizations	6	5	3	3
- additional offices of credit organizations (branches)	280	281	277	277
- other structural units of credit organizations (branches)	135	103	98	94

Source: The Central Bank of Russia official website

There is a clear trend towards a reduction in the number of credit institutions. It mainly results from the remote service infrastructure development, whereby more terminals are available remotely, being an alternative to a branch network.

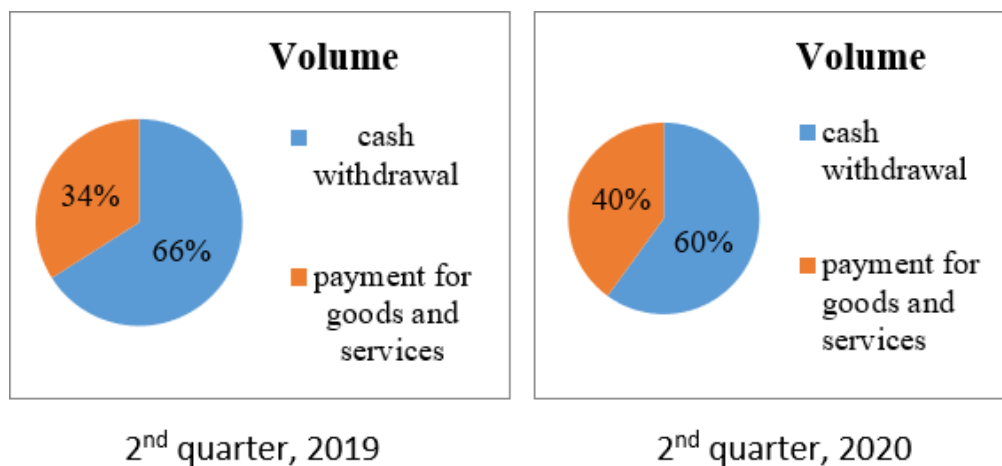


Source: The Central Bank of Russia official website

Fig. 1. Remote service infrastructure dynamics, 1st January, 2017 – 1st July, 2020

Besides, the above trend is connected with the policy of the Central Bank aimed at the country’s banking industry consolidation by disposing of unviable and unfair participants. The increase in epidemic-related risks faced by global and domestic economies shows that strategies used by banking institutions to develop remote customer service channels are timely and reasonable. Indirect results of such strategies include positive trends in the structure of operations where payment cards are used.

Though cash withdrawal remains the main type of payment card transactions in Belgorod region, the share of transactions where cards are used to pay for goods and services has increased lately, becoming a pronounced trend.



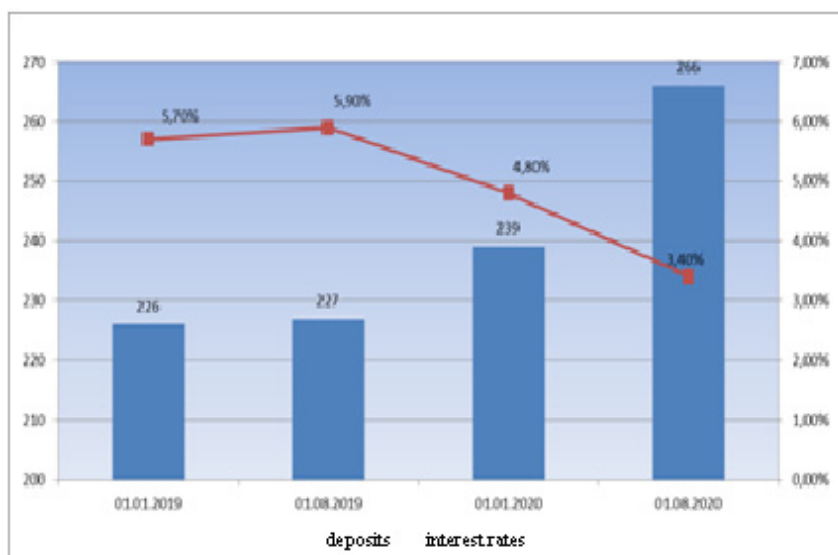
Source: The Central Bank of Russia official website

Fig. 2. Remote service infrastructure dynamics, 1st January, 2017 – 1st July, 2020

As of the end of the first six months of 2020, this share amounted to 40%, which is 6% higher than for the identical period last year, when the epidemiological situation was normal.

Analyzing the changes in the region’s banking sector, it seems reasonable to study the data which reflect the dynamics of credit and debit operations of banking institutions.

Private deposits make up another significant component of commercial banks resource base. In the last few years, there has been a positive trend toward more private deposits in banks despite lower average interest rates.



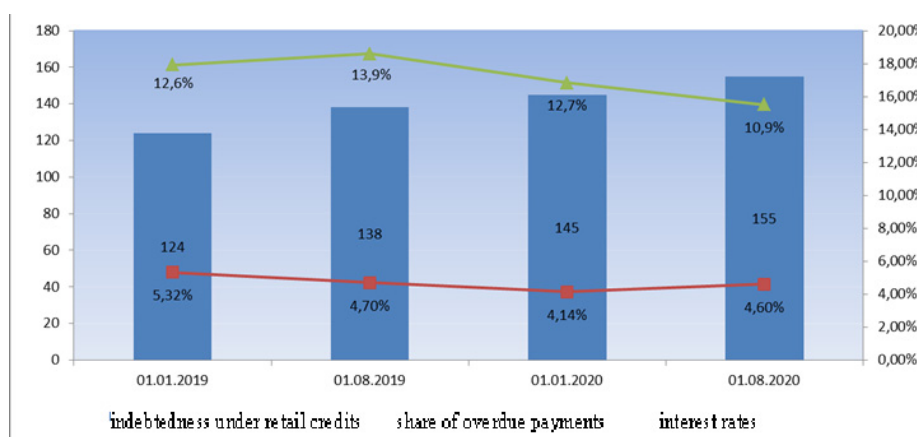
Source: The Central Bank of Russia official website

Fig. 3. The dynamics of private deposits (bln rub.) and average interest rates (%), 2019-2020

This trend has been triggered by a rise in people’s monetary income per capita. As compared to the identical period of the previous year, this index grew by 5.9% for 2019, and by 2.9% for the first six months of 2020, according to the Statistical Bulletin issued by the Territorial body of Federal State Statistics Service in Belgorod region “Monetary income and expenses of the population for the 2nd quarter of 2020”.

Another significant factor of the positive dynamics in private deposits is growing balance in escrow accounts.

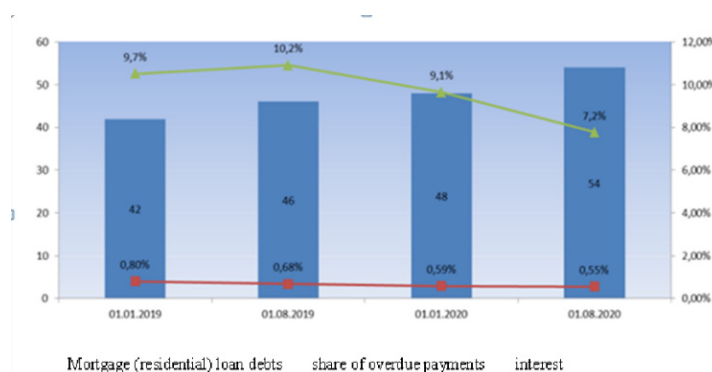
Speaking about 2019 and 2020, the retail credit market participants in Belgorod region remain active. Moreover, their activity has increased as compared to identical periods of the previous years.



Source: The Central Bank of Russia official website

Fig. 4. The dynamics of retail credits (bln rub.) and the share of overdue payments (%), 2019-2020

Mortgage (residential) loans have been a major driver in the dynamics of outstanding loans in Belgorod region.



Source: The Central Bank of Russia official website

Fig. 5. The dynamics of mortgage (residential) loans (bln rub.) and the share of overdue payments (%), 2019-2020

On the whole, it was both the reduction in the key interest rate and the implementation of government support programs that helped support the mortgage industry. A rise in mortgage debts in the 2nd quarter of 2020 partially resulted from the concessional mortgage loan program which began in May, 2020 and was designed for purchasing apartments in new residential buildings, with interest rate not exceeding 6.5%. Another factor was the preferential mortgage program for taxpayer-funded employees in Belgorod region. All of the above led to a rise in the mortgage (residential) loan debts to 54 bln rubles, as of 1st August, 2020. As compared to the beginning of the year, the increase equaled to 12.5%.

It should be stressed that despite the increase in credit indebtedness, the household debt load in Belgorod region, calculated as the ratio between a borrower's debt and the average income, remains below the nation's median value. For instance, on 1st April, 2020, household debt load in the region equaled to 10.3%, while the median value for Russia amounted to 12.8% [2].

In these unfavourable economic conditions, apart from contributing to the revival of consumer demand, the region's banking sector supported the economic recovery processes at various economic entities of Belgorod region. There has been a growth in corporate lending since the beginning of 2020.

For the seven months of 2020, the indebtedness of legal entities has increased by 3.5%, with overdue payments rising insignificantly. These changes in corporate credits are connected with the revival of business activities in the region. Another reason is the companies' need to regain part of the circulating assets which were lost during the peak of the pandemic owing to drops in revenues.



Source: The Central Bank of Russia official website

Fig. 6. The dynamics of corporate credits (bln rub.) and the share of overdue payments (%), 2019-2020

On the whole, 2020 displays a positive trend both in private and corporate bank lending in Belgorod region, despite the epidemiologic situation and tightening of non-price lending terms. Expansion of the segment makes it possible to solve many private financial problems connected with the acquisition of wealth [8]. The latter was revealed in the 2nd quarter of 2020 during a survey conducted by Belgorod Division of the Central Bank of Russia in 10 banking institutions of Belgorod region. The survey results showed that alongside with eased monetary policy, nonprice lending terms have either remained unchanged or become tightened in some segments. This is connected, in the first place, with a high degree of macroeconomic uncertainty, given the COVID-19 pandemic, and hence, higher credit risks for banks. Such risks may be expected to decrease as soon as the national and regional epidemiologic situation returns to normal.

As of 1st July, 2020, the insurance industry as the region's financial market segment was represented by 19 insurance companies. All the underwriters operating in Belgorod region are registered in other regions.

511 thousand contracts of insurance were signed in Belgorod region for the first six months of 2020, which is a little lower than for the same period last year.

TABLE II. MAJOR INDICES OF INSURANCE COMPANIES OPERATING IN BELGOROD REGION

	01.01.2019	01.01.2020	01.07.2020
Contracts of insurance, thous. units	1 155	1 185	511
Insurance premiums, mln rub.	7 828	6 578	3 193
Payments under contracts of insurance, mln rub.	2 337	2 992	1 476
Complaints	1 488	1 307	384
Contracts of insurance, thous. units	1 155	1 185	511
Insurance premiums, mln rub.	7 828	6 578	3 193

This fact is mainly connected with the COVID-related lockdown in the 2nd quarter of the 2020 which reduced the number of customer visits to financial institutions.

For the last few years, the amount of insurance premiums has reduced, alongside with the growing number of payments under contracts of insurance. It falls within the national trend. Typically, the biggest volume of insurance premiums is paid under Life Insurance and Compulsory Third-Party Liability Insurance contracts. At the same time, there is a rising trend of accident and sickness insurance.

Another positive development is a decrease in the number of complaints filed by consumers of insurance services with the Service for Consumer Rights Protection and Financial Services Availability at the Bank of Russia. For the first six months of 2020, the number of such complaints amounted to 29% of the total complaints filed in 2019. It may indirectly prove that despite the epidemic-related restrictions in 2020, the region's insurance industry has adapted to the new reality and improved customer relationship significantly.

IV. CONCLUSION

The analysis of the banking and insurance segments of the region's financial market amidst the first wave of COVID-19 pandemic has shown the expedience of remote customer service infrastructure which has been developed for the last few years.

Positive dynamics have been revealed in private deposits, despite the trend toward a decrease in average interest rates, which bears witness to people's confidence in the region's banking segment. The latter has supported a revival of demand for consumer goods and a revitalization of

business activities in Belgorod region after the COVID-related restrictions were lifted.

The study shows that though the economic situation in the 2nd quarter of 2020 was quite complicated, the regional financial institutions managed to avoid a rise in overdue payments under retail and corporate credits. This was achieved due to the government support measures for individuals and business entities, as well as due to the debt restructuring programs that commercial banks offered to the borrowers who were unable to pay because of the pandemic.

Generally, 2020 reveals a positive trend in the main credit and debit operations, despite COVID-related restrictions.

The region's insurance industry has also adapted to the epidemic-related restrictions, though there is a slowdown in business activity. All insurance services which are in demand have been provided by the insurance companies. Besides, they have improved customer relationships significantly.

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An Investigation into Factors Adoption of Electronic Banking Services in Russia

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Abstract— The purpose of this study is to investigate the factors that adopt electronic banking services. A conceptual framework is developed based on the technology acceptance model and several additional factors. After reviewing the literature, the factors that adopt electronic banking services from the point of view of customers of Russian banks were experimentally verified. For this purpose, a multiple regression model was used. The results show that Perceived usefulness, Trust, Perceived ease of use, and Technological Self Efficacy positively affect customers' adoption of electronic banking services in Russia. The researcher recommends the banks focus on the way of providing the service and its design. The electronic services provided should be easy to use and not have complicated procedures, so not all clients have the same level of technical skill. The banks should also be interested in developing the electronic services that they provide and keep abreast of everything new in this field.

Keywords— electronic banking services, Russian banking customers, Perceived usefulness, Trust, Perceived ease of use, technological self-efficacy

I. INTRODUCTION

The information and communication technology revolution has led to the expansion of the use of various e-commerce technologies, especially in the banking sector [1]. This led to rapid developments in the banking services industry. Which imposed on banks the immediate response and orientation towards developing their technologies, services and strategies, to be able to face these changes [2]. As the development of electronic commerce and the growth of bank networks and various services have led to the emergence of new forms of banking services such as electronic banking services [1].

In the past years, electronic banking services were considered an important means of developing the banking sector and its importance is increasing in most of the banking markets. Due to its many advantages in cost-saving and expanding the customer base, they provide the opportunity to develop high-efficiency and low-cost services at the same time [3, 4, 5].

Many banks have developed their marketing strategies and the way they deal with their customers after the emergence of electronic banking. This is because the criterion for the success of electronic banking is the customers and the extent of their acceptance of it [6]. According to He, et al. [7], the electronic banking system is expected to fail if customers are not encouraged to use it, and therefore banks must constantly study and address customers' concerns. It is necessary to understand the factors that influence customers' adoption of electronic banking services.

Fliginskii, et al. [8] found that electronic banking services have a negative impact on the financial performance of Russian banks in the short term. Due to the weak customer acceptance of electronic banking services when they were established, this led to a decrease in the financial return of electronic banking services compared to the high cost of establishment. Here, the urgent need to study the factors affecting customers' adoption of electronic banking services, in order to help banks, develop appropriate development strategies according to customers' needs and orientations.

Through the review of previous studies, we find that most studies focus on a single service such as Internet banking [1, 2, 3, 4, 5, 9], or mobile banking [10, 11, 12, 13, 14]. In this study, we will examine the factors affecting the adoption of all electronic banking services. This study has an important comparative advantage, which is that it is the first study in the context of adopting electronic banking services from the point of view of bank clients in Russia.

The article aims to conduct an experimental study to identify the factors affecting the adoption of electronic banking by Russian customers. The technology acceptance model is the basis on which the more comprehensive model proposed by the study is built, after reviewing the results of previous studies and adding the factors that are expected to affect the ability of customers to adopt electronic banking in Russia.

II. THEORETICAL FRAMEWORK

A. *Electronic banking services*

According to the Basel I Committee, electronic banking services are defined as providing banking services and products of small value through electronic channels [15]. Zhang, et al. [16] defined electronic banking services, which is the ability of the bank to provide remote services to customers that meet their needs for banking services, using modern information methods for the service: personal computer, phone, mobile phone, the Internet, etc. As Fliginskih, et al. [8], they indicated that electronic banking services are the process of providing the bank to its customers through electronic delivery channels with various services and innovative and traditional banking products, by making use of the latest banking innovations in this field. Thus, the concept of electronic banking services is known in several ways, but most of the definitions state that it is the provision of banking services using electronic means of communication. One of the key conditions for the successful development of banking activities is the policy of continuous innovation [24].

B. *Factors affecting the adoption of electronic banking services*

There are many studies that focus on some factors affecting the adoption of electronic banking services, such as the factor of trust and perceived risks [4, 12, 13, 17]. Other studies investigated various factors such as the design and ease of use of electronic banking services [3, 10, 16]. Several studies examined factors of Perceived usefulness, ease of use, reliability, and intention to use [1, 14]. Other studies add additional factors to the model of technology adoption as security, desire for change, accessibility, and culture [2, 6, 9, 18].

From our point of view and through a deep study of the banking market in Russia, we find that there are many factors that can affect the decision for customers to adopt electronic banking services, as shown below.

1) *Perceived usefulness*

The researchers believe that the perceived usefulness is the amount of benefit the user expects when using electronic banking services. as the study of Shareef, et al. [14], showed that the perceived usefulness factor has an impact on the level of customer use of electronic banking services, this result confirmed by Arif, et al. [1] as he showed that perceived usefulness is one of the most influencing factors on increasing the level of use of electronic banking services, and thus more customers' use of those services.

Studies have shown that the user is looking for added value when using electronic banking services, and other studies have shown that users are looking for services that save cost, time, effort and ease of use [2].

2) *Trust*

Researchers suggest that in the early stages of adopting technological innovations, trust has an important influence on individual customer behavior [12]. Malaquias, et al. [13] emphasize the interdependence of the concept of perceived risk and trust, as it is considered one of the main obstacles to adopting electronic banking services.

Gaining customer trust in electronic banking services is important to the bank, and it is an ongoing process, as trust helps mitigate the perceived risks of adopting electronic banking services [19]. It is likely that customers will continue to use electronic banking services if there

is trust in them [20]. Some studies have found that there is an indirect relationship between trust and the adoption of electronic banking services [21], it seems necessary to verify this factor and study its impact on clients' decision to adopt.

3) *Technological Self Efficacy*

There is a great disparity between users who deal with banks, whether with their traditional or electronic services, including differences in the level of education, differences in age and differences in the extent to which these customers use technology in their daily and practical lives [1], and therefore there is a disparity in the level of knowledge of customers to use modern technologies, the Internet, and techniques of electronic banking services. Generally [22].

These factors have a great influence to some extent on the percentage of customers' use of electronic banking services, which depends on the type of service used. The skill required to use an automated teller machine differs from the skill required to deal with internet banking or mobile banking and the use of its various services.

4) *Perceived Ease of use*

Ease of use of electronic banking services refers to the extent of the customers' willingness to use the service so as to make the least effort possible [13]. Customers will see that online banking services are easy to use when they realize that they have the ability to use it in their banking transactions [23]. The researchers believe that the ease of use factor plays an important role in customers' adoption of electronic

banking services, and one of the important things here is the design of the service, whether designing the service on the mobile phone or designing the website of the bank that provides the service [25], as the type of information provided by the electronic interface of the service and the language that it expresses. With the contents of the service and its design, it will affect customer satisfaction and thus the shift towards electronic methods of conducting banking transactions.

1) *Awareness*

The adoption or rejection of innovation begins when the consumer becomes aware of the product [26]. Al-Qahtani

[26] stated that consumers will look for and educate those financial products that offer the best value for money. It is imperative that banks educate consumers about the availability of electronic banking services and how they add value to their other products or to their competitors. Where the researchers believe that this requires the bank to provide information about those services it provides on a permanent and continuous basis, whether through the website or mobile phone, or by sending brochures via e-mail to customers and using media channels to introduce customers to these services and how to use them and deal with them [11, 17].

C. *Research model and hypotheses*

Based on the previous conceptual framework, the following research hypotheses were formulated:

H1: Perceived usefulness has a positive impact on adopting electronic banking services.

H2: Trust has a positive impact on adopting electronic banking services.

H3: Technological Self Efficacy has a positive impact on adopting electronic banking services.

H4: Perceived Ease of use has a positive impact on adopting electronic banking services.

H5: Awareness has a positive impact on adopting electronic banking services.

The model used in this study is illustrated in Figure 1.

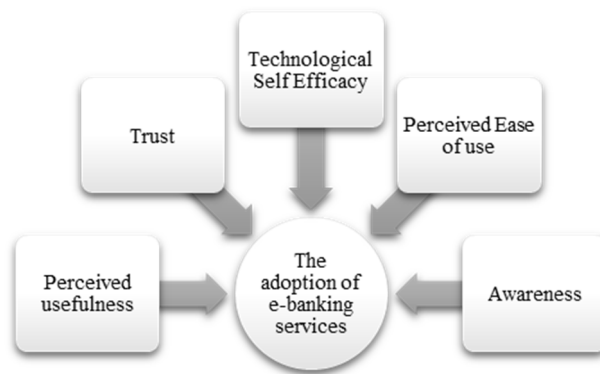


Fig. 1. Research model

III. RESEARCH METHODOLOGY

A. Population and sample

The study population is the clients of banks in Russia. In order to test the hypotheses of the study, a statistical survey method was chosen. In a random sample, the questionnaires were distributed. The total form of the distributed questionnaires was 329, of which 303 were retrieved. The sample was valid for statistical analysis 291 after deleting the incomplete or invalid questionnaires for analysis. Accordingly, the questionnaires valid for statistical analysis accounted for 88.4% of the total number of questionnaires.

B. Measurement development

A questionnaire was designed to measure the impact of several factors on customers' adoption of electronic banking services. The questionnaire was divided into two main parts. The first section dealt with the respondents' demographic information in terms of gender, age, education and income, in addition to information about the extent of using electronic banking services. The second section includes questions to measure the variables of the study, Perceived usefulness, Trust, Technological Self Efficacy, Perceived Ease of use and Awareness. The elements of the questionnaire were developed based on relevant previous studies to ensure the validity of the content. Using the five-dimensional Likert scale, all elements and questions of the second section of the questionnaire were measured.

The reliability coefficient was calculated by applying the Alpha Cronbach factor test to ascertain the reliability of the questionnaire. As shown in Table 1, all the reliability coefficients were higher than the acceptable minimum reliability of social studies questionnaires of 60%.

TABLE I. VALIDITY AND RELIABILITY OF THE STUDY VARIABLES

Variable	Cronbach's alpha
Perceived usefulness	0.78
Trust	0.83
Technological Self Efficacy	0.81
Perceived Ease of use	0.76
Awareness	0.71
e-banking services adoption	0.85

III. RESULTS AND DISCUSSION

Table 2 shows the demographics of the respondents. The results indicated that 57.3% of the respondents were female, while 43.3% were male. The age group between 26-44 had the highest percentage of respondents, at 42.7%. These results are consistent with the general demographic characteristics of the population in Russia in terms of the proportion of higher females and a

relatively young society. The results also indicated that 45.2% of the respondents have a diploma. Regarding income, the results showed that more than 50% of the respondents had a monthly income ranging from 15 to 50 thousand rubles.

TABLE II. DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Items	N	Percentage (%)
Gender	Male	43.3
	Female	56.7
Age	18-25	38.1
	26-44	42.7
	46-60	15.1
	60+	4.1
Education	High school or less	19.2
	Diploma	45.2
	Undergraduate degree	26.4
	Postgraduate degree	9.2
Monthly income *	Less than 15000 RUB	10.6
	15000-30000 RUB	24.7
	31000- 50000 RUB	32.9
	51000-70000 RUB	17.1
	70000 +	14.4

Note: (*) RUB (Russian Ruble) USD 1=RUB 75 as of 2020

Before starting the procedure of regression analysis to test the study hypotheses, it was confirmed that there is no high correlation between the independent variables (Multicollinearity) by using the variance inflation factor test (VIF), and the variance allowed test (Tolerance) for each variance of the study variables. Taking into account that the variance inflation coefficient does not exceed the value (10), and the Tolerance test value is greater than (0.05), and it was also ensured that the data were followed by the normal distribution by calculating the skewness coefficient, taking into account that the data follow the normal distribution if the value of the convolution factor was less than (1) as shown in Table 3 below.

TABLE III. VERIFICATION TESTS BEFORE PERFORMING MULTIPLE REGRESSION

Variable	VIF	Tolerance	skewness
Perceived usefulness	2.236	0.442	-0.651
Trust	2.578	0.358	-0.532
Technological Self Efficacy	3.032	0.247	-0.738
Perceived Ease of use	2.921	0.498	-0.459
Awareness	2.084	0.356	-0.371

To test the hypotheses of the study, a multiple regression analysis was performed. Table 4 shows the results of the regression analysis of the study variables. A large and statistically significant F value at 0.01% level indicates the validity of the multiple regression model. The regression analysis also shows that 59% of the electronic banking services adoption variance is explained by Perceived usefulness, Trust, Technological Self Efficacy, and Perceived Ease of use. From table 4 we find that the Perceived usefulness coefficient is positive and statistically significant at a significance level of 0.01%, meaning that the higher the Perceived usefulness, the positive effect on customers' adoption of electronic banking services. Hence,

Hypothesis H1 is supported. This result is consistent with the findings of Santouridis and Kyritsi [3], Alalwan, et al. [2] and Arif, et al. [1].

TABLE IV. REGRESSION RESULTS

Independent variable	β	t-value	Sig. t
Perceived usefulness	0.272	9.723	0.000**
Trust	0.469	3.291	0.000**
Technological Self Efficacy	0.247	2.849	0.014*
Perceived Ease of use	0.131	2.354	0.048*
Awareness	0.090	1.132	0.278
R. squared	0.592		
F. Value	16.567		
Sig. F	0.000**		

According to the results of the regression, The Trust coefficient is positive and has a statistical significance of 0.01%. The Trust coefficient is the most coefficient that explains the variance in the adoption of electronic banking services. Clients are always looking for security in their financial transactions, and the higher trust in security and efficiency of these services has a positive impact in adopting these services. Hence, Hypothesis H2 is supported. This is consistent with the findings of Luo, et al. [19], Lin, et al. [20] and Hanafizadeh, et al. [12]. The Technological Self Efficacy coefficient is positive and has a statistical significance of 0.05%, and this is an expected result. The more technological knowledge, the positive impact on adopting electronic banking services. thus, hypothesis H3 is supported. The results of the regression also showed that the Perceived Ease of use coefficient is positive and statistically significant, thus, hypothesis H4 can be supported. It can be seen that the perceived ease of use is less influential than the Perceived usefulness in the decision to adopt electronic banking services for customers in Russia. The possible explanation for that is that electronic banking services are becoming more common and therefore the difficulty of using electronic services has become less important. This finding is consistent with Al-Smadi [6]. As for the awareness coefficient, the result of the regression showed that there is no effect on awareness of the decision to adopt electronic banking services, therefore Hypothesis H5 is not supported. This can be explained by the fact that customers in Russia have become sufficiently aware of electronic banking services and their features, and the decision to adopt will not be affected by the increased awareness of them. This result differs from Al-Qahtani [27] and [10].

IV. CONCLUDING REMARKS

The aim of our research was to determine the factors of adoption of electronic banking services for bank customers in Russia. This supports the banks' position to know the factors that limit customers' conversion to electronic banking services. In order to achieve this goal was to develop the study model based on previous experimental research's to be reliable and adequate validity. In light of the results of the study, the researcher recommends the importance of diversity in educating customers about the adoption and use of electronic banking services, in addition to providing them with the information and services they need to achieve this. With an emphasis on the need for banks to pay attention to the trust factor, as it is one of the factors that contribute significantly to the adoption of electronic banking services. The researcher also recommends that the banks focus on the way of providing the service and its design. The electronic services provided should be easy to use and not have complicated procedures, so not all clients have the same level of technical skill. The banks should also be interested in developing the electronic services that they provide and keep abreast of everything new in this field.

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SECTION 2. World Economy and International Business

Environmental Policy and Directions of Development of "Green Economy" in Ecuador

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Abstract—The article considers the essence of "green economy" and its role in improving people's welfare in the framework of the concept of sustainable development. The current model of development of the world economy as a whole and its individual countries is aimed at implementing the "greeneconomy" model as the economy of the future. This model does not disrupt the balance of economic, social and environmental interests. The article examines the processes of implementation of the environmental and economic policy of Ecuador, examines the impact of various sectors of the economy on the environmental situation of Ecuador, in particular the impact of the industrial sector, the irrational use of resources, and agriculture. Barriers and difficulties in the development of the green economy in Ecuador were identified; an important problem was highlighted – corruption in the country, which hinders the development of the "green economy" in Ecuador in General and the processes of investment in environmental projects, in particular. The authors present an overview of current projects and programs of development of green economy in the context of sustainable development of Ecuador (development project for indigenous and black peoples of Ecuador (PRODEPINE), aimed at strengthening the cultural identity, economic development and environmental protection with the participation of indigenous peoples; the local development project (PROLOCAL), developed with the necessary support to vulnerable groups of métis). The article offers key recommendations for the development of a green economy in Ecuador.

Keywords—"Green economy", Ecuador, environmental problems, social and environmental projects.

I. INTRODUCTION

The industrial revolution gave rise to certain problems, primarily related to the environment. Humanity has already realized what consequences the current model of development can have. And in this millennium, the world will have to change this model in favor of the model of the "green economy" as the economy of the future, which would not violate the balance of economic, social and environmental interests.

The transition to a green economy is inevitable, and therefore many countries are preparing their strategies for the transition to this very model, and the most developed ones have already taken practical steps in this direction.

The new human development strategy was named sustainable development after the publication in 1987 of the report "Our Common Future", prepared by the Brundtland Commission.

The strategy was based on the task of long-term satisfaction of basic human needs while preserving the life support systems on planet earth.

In this paper, we turn to the experience of implementing the environmental model of development in Ecuador, as well as to problems and promising areas of the "green economy" in Ecuador.

II. THE MAIN PART

The correct term to be used to describe economic development is "balance" of a system that seeks to ensure an equilibrium between economic growth, environmental protection and social security.

The desired outcome is a social situation where living conditions and resources are used to further meet human needs without undermining the integrity and stability of natural resources. This phenomenon can also be defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

TABLE I. MAIN INDICATORS OF THE ECONOMY OF ECUADOR

#	Indicator	Value	Period
1	GDP volume	\$109 billion	2019
2	Annual GDP growth rate	-1 %	Q4/19
3	GDP growth rate	-0.68 %	Q4/19
4	GDP per capita	\$5,185	2018
5	Inflation rate for the year	0.75 %	May 2020
6	Interest rate	8.98 %	May 2020
7	Unemployment rate	4.9 %	Q4/19
8	Wages	\$467 / month	2020
9	Trade balance	\$6,2504 thousand	March 2020
10	Current balance	\$146 million	Q4/19
11	International foreign exchange reserves	\$2,860 million	April 2020

Source: "Stock exchange portal", URL: <https://take-profit.org/statistics/countries/ecuador/>

Measures to guarantee the rights to nature were among the first in Latin America to appear in the Ecuadorian constitution. The Ecuadorian Constitution, approved in 2008, spelled out the Law on Environmental Protection, there is a description of environmental justice.

The Law on Environmental Protection is directly related to the control, the necessary imposition of sanctions, as well as the complete cessation of all kinds of activities that pollute the environment and destroy natural resources. The law establishes guidelines for environmental policy, as well as defines the obligations, levels of participation of the public and private sectors in environmental management and specifies the acceptable limits for control and imposition of sanctions in this area.

The adoption of the Law on Environmental Protection in 1999 confirmed that the Ministry of Environment, created in 1996, is the national environmental authority that has established the general framework for the development and approval of environmental norms and principles of sustainable development, enshrined in the UN Rio Declaration on environmental protection and development.

The Law stipulates that the Ministry of Environment, for its part, must coordinate control systems with the competent authorities to verify compliance with environmental quality standards regarding air, water, soil, noise, waste, and pollutants.

In Ecuador, the most important environmental regulatory framework is the Organic Code on the Environment (OCE), approved in April 2017. The Code deals with issues such as: climate change; protected areas; wild nature; forest heritage; environmental quality; waste management; environmental incentives; coastal sea area; mangroves; access to genetic resources; biosafety; biomass and more.

The Ministry of Environment of Ecuador is responsible for regulating the Organic Code on the Environment. Table 2 provides an overview of the articles of the Code directly related to the green economy and sustainable development.

In addition to the above, it is worth noting that Ecuador is implementing the "Ecuador" model, created to analyze the energy sector of the Republic of Ecuador. The model examined the efficiency of investing in the energy sector to mitigate the negative economic consequences of global warming, and also performed a comprehensive analysis of the possible impact of investments on improving efficiency in the energy sector and redirecting savings to other areas.

TABLE II. OVERVIEW OF THE MAIN ARTICLES OF THE ORGANIC CODE ON THE ENVIRONMENT OF ECUADOR

Article	Content
Article 16	Discussion on environmental education; training in sustainable development and environmental protection
Article 37	... protected areas will be priority locations for sustainable development, the state will allocate the necessary economic resources for the financial sustainability of the National Protected Areas System...
Article 88	Discussion on social public participation and effective contribution to sustainable development, especially in rural areas.
Article 224	Discussion of the problems of disposal and correct use of waste for sustainable development of the country

Source: "The Organic Code on the Environment of Ecuador (Código orgánico del medio ambiente del Ecuador)", URL: https://www.ambiente.gob.ec/wp-content/uploads/downloads/2018/01/CODIGO_ORGANICO_AMBIENTE.pdf

With all the positive aspects of the active implementation of environmental policy in Ecuador, there are also "environmental difficulties":

- Deforestation. Ecuador is the country with the highest deforestation rates in Latin America. For thirty years, the area of forest plantations (planted forests) has tripled. The National Afforestation and Reforestation Plan was developed and entered into force in 2013. The plan calls for planting trees for productive purposes to reduce pressure on local forests.

Forest cover in Ecuador in 1990 was estimated at 14,630 847 hectares of forest. However, the cover declined by 6% in 2000, by 10.5% in 2008 and by 12% in 2014. It is estimated that nearly 2 million hectares of natural forest were lost during this period.

It is also worth noting that the clearing of the forest has not yet been stopped, despite the worsening situation every year. In 2018, Ecuador registered 12.5 million hectares of natural forest, showing a steady decline since the 90s, when the forest cover was over 14.5 million hectares.

Forest fires, urban expansion, extractive activities (mining, oil and oil products), and expansion of agricultural boundaries are the reasons for the decline in forest land.

The expansion of agriculture is one of the biggest challenges today, as vast areas of natural forest have been cleared and planted for production purposes such as the cultivation of African palms, teak and melina trees.

According to the Ministry of Agriculture (MAG), there are approximately 180,000 hectares of commercial forest in Ecuador, or approximately 180 million trees. 160,000 hectares of the total area are planted with pine, teak, eucalyptus, melina and balsa trees. Some cities like Cotopaxi, Los Rios, Guayas, Pichincha and Santo Domingo de los Tsachilas have 65% of these plantations.

Teak and melina trees are introduced forest species from Asia and are one of the most common in the area.

These trees are planted not only by small and medium-sized farmers, but also by large, well-developed companies (to reduce carbon dioxide and increase the export of light wood species to Europe).

The scope of the permitted area of forest use decreases every year. The largest volume was observed in the period from 2009 to 2012, during this period a maximum value of more than 100,000 ha was recorded. In 2018, the figure was 60,000 ha, which is 20,000 ha less than ten years earlier. In 2019, there is a decline to less than 40,000 ha, in subsequent years the downward trend will continue if the government does not take appropriate measures.

- Extraction, processing and consumption of fossil fuels. The extraction of oil and oil products in Ecuador has always been carried out without considering the costs that this process brings to the local population and the environment in general. Thus, oil production has become a direct threat to deforestation of large areas of tropical forests, since it is in the forests that some of the most promising oil and gas fields are located.

More than 80% of the energy used in Ecuador comes from oil and gas. Transport is the sector with the highest demand for fossil fuels (gasoline and diesel), followed by residential and industrial sectors.

Brazil, Colombia, Ecuador, Peru, Bolivia, and Nigeria have significant oil activity in rainforest areas suffering from deforestation caused not only by oil drilling directly, but also by construction of roads through the forest that allow for oil prospecting in areas using remote devices. A negative phenomenon in oil production is appearance of toxic by-products, which are often discharged into local rivers, and pipeline ruptures with oil products are also a problem.

In Ecuador, similar exploratory companies are concentrated in the north of the Amazon region. This area is the original territory of the indigenous peoples of Kofan, Zion, Sekoya and Vaorani. It is also the territory of the napo chichuas and several Shuar families who settled there long before the start of extensive oil production. Therefore, attempts are being made to move oil production to the south of the Amazon during the next reform of the oil concessions.

Before the oil activity reached the aforementioned part of the Amazon, the main characteristics of the area were: hunting and fishing; wandering agriculture, which enabled indigenous peoples to create and conserve productive soils in clay soil areas where agriculture was previously not possible, and to create and conserve biodiversity in this rainforest; cultural, religious and

recreational activities through land use regulation and "respect for territory".

The first economic activity aimed at overseas markets in Ecuador was rubber and wood production. Then, along with the expansion of oil production, new protected areas such as the Cuyabeno Wildlife Sanctuary, Yasuni National Park, Kayambe Koka Ecological Reserve and Limonkocha Biological Reserve were established.

In turn, the impact of oil production in the Ecuadorian Amazon was documented, largely through a case against Chevron-Texaco, which operated in the northeastern part of the country for 26 years. During this period, Texaco drilled 339 wells on 430 hectares, producing more than 1.5 billion barrels, dumping billions of barrels of toxic water and other toxic waste and burning billions of cubic feet of gas. Although it is impossible to establish the price of environmental impact, the damage caused by the company's activities was estimated at tens of billions due to oil spills, the death of flora and fauna, the appropriation of territories, salinization of rivers, the occurrence of dangerous diseases (31/1,000 cases of cancer, when the average value in the country is 12.3 per 1,000), low-paid wages in difficult and dangerous conditions, and other reasons.

- Industry. The industrial sector in Ecuador is represented to the greatest extent by production of food and beverages, followed by the automotive industry, derivatives of petroleum products and nuclear fuels, as well as manufacture of rubber and plastic products.

Industry is one of the sectors that requires an increased demand for energy, as well as the demand for energy is observed in the residential and transport sectors. The concentration of industries leads to growth of urban settlements and an increase in the car fleet, therefore, there is an increased demand for electricity in these sectors. The largest emissions of chemicals are observed from the production of food products, paper and its derivatives, oil refining, and the production of chemical products.

- Irrational use of resources. Ecuador's fish resources decrease mainly due to overfishing caused by an increase in the fishing fleet. It is estimated that over 20 key species for the fishing industry and artisanal fisheries are currently under threat, namely: eleven species are threatened with extinction; seven species are at risk; four species are vulnerable.

Another form of wasteful use is trafficking in flora and fauna. In the Yasuni National Park and the surrounding area, wild meat is sold in local markets for free access in large quantities, while some species of animals are on the verge of extinction.

- Agriculture. Agriculture plays an important role in the economy of Ecuador as it is the backbone of the economic system. Agriculture not only provides the population with food and raw materials, but also employment opportunities for most of the population.

Agriculture contributes on average 8.5% to the country's GDP and is the main source of employment in the country, representing 25% of the economically active population, employing more than 1.6 million people in this sector.

Agriculture is a sector that stimulates the country's trade. Agricultural products such as bananas, cocoa, flowers and coffee are Ecuador's main exports. The process of agricultural development is unstable, however, the state policy is aimed at increasing exports and significantly reducing imports.

Agriculture is a source of raw materials for major industries such as cereals, corn, sugar, edible and non-edible oils, and more.

Thus, from all of the above, we can conclude that agriculture plays an important role in the development of the economy of Ecuador.

In addition to the highlighted environmental problems of Ecuador, it is worth mentioning such an important problem as corruption, which hinders the development of the "green economy" in the country in general and the processes of investing in environmental projects, in particular.

Despite the above barriers and difficulties in the environmental development of Ecuador, the country is implementing a number of projects supported by the World Bank and aimed at the interests of vulnerable groups in mountainous areas. These include:

- The Ecuadorian Indigenous and Black Peoples Development Project (PRODEPINE) aims to foster cultural identity, economic development and environmental conservation with the participation of indigenous peoples;
- The Local Development Project (PROLOCAL) is designed taking into account the necessary support for vulnerable mestizo populations.

Environmental projects, although they contribute to the environment, are not all focused on social development.

- Forest pastoral systems. The transformation of traditional livestock farming into forest pastoral systems consists of improved site management and includes the following elements:
 - fractionating pastures through fences and corridors of fruit trees or shrubs that integrate moisture into the soil, sequester carbon, conserve biodiversity and allow the grower to market their fruit, timber and other products in the medium to long term;
 - rotation of cattle between several areas, which allows the soil to have a better vegetation cover for a longer time, as well as to maintain moisture and increase its fertility, which leads to growth in herd productivity;
 - plantations of high-protein pastures and feed, which, in addition to sequestering carbon and producing oxygen, allow better feeding of livestock and thus higher productivity.

These systems restore the environmental state of farms, and with it their ability to generate environmental services, and provide producers with higher and consistent yields in the medium to long term, preventing the clearing of forests and jungle to create new fenced areas.

- Agroforestry. Agroforestry systems are an alternative to intensive agriculture and consist of a combination of trees and crops on the same farm, allowing growers to maintain profitable and sustainable production activities while conserving and restoring forest areas.

An example is the cultivation of shade-grown coffee and palm trees in various states in the country. These products, which have a high market value, require the correct growth of tree shade, which contributes to the conservation and restoration of forests and jungle as part of production activities.

- Non-wood forest products are products of biological animal or plant origin, other than wood, that are obtained from forests, and woodlands and trees isolated from forests, usually harvested by hand. However, they can also occur on forest plantations and/or exploitation systems for food, energy, cultural, medical or cosmetic use by the public.
- Private nature reserves. Currently, in Ecuador, private nature reserves cover only 19% of the continental surface. At the same time, the reserves have great potential, since owners of such territories can conclude contracts for production of oxygen with factories and enterprises that have harmful emissions. You can also get data on how much carbon is consumed by the forest per year and how much oxygen is produced, due to which factories receive the necessary certificates, which demonstrate the elimination of emissions.
- Carbon capture and recycling. Ecuadorian companies launch projects to convert carbon captured in factories and power plants into products like plastic or cement. In addition to preventing greenhouse gas emissions, it turns out that carbon is an economical material and provides the end product with greater resistance and durability.

III. CONCLUSION

Summing up all of the above, we can say that the following key points will contribute to stepping on the "green path" in Ecuador:

- increasing public and private investment in those sectors of the economy that in their work can reduce environmental risks and resource scarcity;

- developing green policies and reforms that provide a legal basis for green action and establish market incentives for its creation. National and local authorities as well as international organizations are involved in this area;
- green investments will open up a number of new opportunities to advance business and infrastructure reengineering processes in general. The results of reengineering are more active participation of green sectors in the gross domestic product, more jobs, reduced use of energy and materials in production, as well as reduction in polluting waste and greenhouse gas emissions.

We have to choose between environmental sustainability and economic progress. Both processes are interdependent. The choice of a green economy model allows achieving sustainable development and at the same time eradicating poverty.

There is a misconception that a green economy is a luxury that only rich countries can afford. In fact, developed countries bear a greater responsibility for greenhouse gas emissions and, therefore, must take on more obligations, while they will receive economic, social and environmental benefits from the introduction of a green economy, which gives them certain advantages and further development.

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About the Possibility of Building of the System- Phenomenological Models of the World Economy

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Abstract—The historical and most widely known “Mir-2” and “Mir-3” models developed at the initiative of the club of Rome by J. Forrester and D. Meadows are analyzed. The model of M. Mesarovich and E. Pestel is briefly described. The analysis of such models of the world economy as the model of A. Onishi, V. Leontiev, the FUGI model, the LINK model of L. Klein, the “SARUM” and globus models is carried out. It is shown that the process of building models of the world economy rests on a problem of extreme complexity associated with a large number of interrelated subjects, a significant number of indicative indicators that require accounting, analysis and forecasting, low adequacy and accuracy of the models used, as well as the logical complexity of linking components, relationships and relationships into a single whole within a common model. In general, this work is aimed at finding new ways to model the description of national economies, the world economy and their development processes. It is proposed to create phenomenological models of urban, regional, national (industry) economies and the world economy as a whole based on the use of natural science methods that implement a system-phenomenological approach to describing multidimensional statistical data. At the same time, to describe each hierarchical level, you can use a general standard phenomenological model, which in its class of objects is configured for the necessary list of indicative indicators and state variables. Particular phenomenological models are combined into object models at a higher level of the hierarchy and identified by the corresponding phenomenological models that characterize this class of objects. In each case, linking components, relationships, and relationships into a single whole within a more general model is based on logical, balance, or other methods for establishing relationships between objects and their attributes. Concrete examples show the possibility of constructing phenomenological models in the form of equations of state for cities, regions, and countries that are structural elements of the general model of the world economy.

Keywords—phenomenological models of the world economy; interconnected economic space; system-dynamic models of the world's countries; linking components, connections and relations into a single whole within the framework of a common model; model description of hybrid economies, the world economy and their development processes; multidimensional statistical data.

I. INTRODUCTION

Since the appearance of the works of J. Forrester and D. Meadows, devoted to system

dynamics and the study of long-term trends in global development [1, 2], proposed a number of models that characterize the world economy, as well as the processes and consequences of its development. The world economy is a set of national economies of all countries of the world that form an interconnected economic space of the planet. Various spatial models of the world economy are known: two-, three-termed-, ten-termed and etc., which distinguish a different number of centers of the world economy.

There is a problem of linking spatial models of the world economy with system-dynamic models of countries and national economies. System dynamics models allow combining various spheres of human society functioning based on the use of simulation methods and tools. Development in this area follows the path of increasing complexity of the initial models, increasing the number of input and output variables, and representing national or industrial economies as a set of flows (monetary, material, commodity, human, etc.), which are described by a system of differential equations, agent-based or hybrid models. In turn, spatial models of the world economy are descriptive and expert in nature and develop along the way of increasing the centers of influence, complicating national, sectoral, spatial and hierarchical structures, using various development criteria in modeling, etc.

The process of building models of the world economy rests on a problem of extreme complexity associated with a large number of interrelated entities (more than 50 economic unions and more than 200 countries), a significant number (dozens and hundreds) of indicative socio-economic indicators that require accounting, analysis and forecasting, low adequacy and accuracy of the models used (econometric, neural network, simulation, economic equilibrium models, etc.), as well as the logical complexity of linking components, connections and relationships into a single whole within the framework of a common model [3].

Based on the above, the search for new ways to model the description of national economies, the world economy and their development processes is relevant.

II. RESULTS AND DISCUSSION

A. Models of the World Economy

The modern world is entering an era of political instability, local wars, economic crises and the struggle for resources, so strategic assessment and planning of the development of any country in the rapidly changing world of the XXI century becomes a vital fact. Protests, revolutions, external influences and changes of power in many countries indicate that the world is governed, and any country with a weak economy, unstable society and unpopular government can become the object of a large-scale political experiment.

Recently, such methods, measures and means of influencing states have been called predictive weapons. In this regard, the development of methods and tools for modeling and forecasting the development of countries and the world as a whole is an extremely urgent task of national security for any country. Therefore, researchers pay much attention to the development of a variety of models for the development of regions, countries, and the world economy (simulation, agent-based, object-oriented, system-dynamic and etc.).

The world economy consists of a historically established set of national economies of all world governments that are connected by world economic relations. Classical projects and models of global development (52 programs) are studied in the paper[4]. Another large group of models and projects consists of developments made by research departments of large international corporations, banks, and international organizations. First of all, these include, the models of the Japanese center for economic research, the annual reports of the World Bank, Chase Manhattan Bank and others. These developments are mainly devoted to the analysis of problems in the development of the world market economy and represent the interests of large businesses. The next group includes research carried out in recent years directly commissioned by the governments of the most developed countries. Here we should note the forecast developments of the state department and the Council on environmental quality of the United States, reports of the

Organization for economic cooperation and development, the "SARUM" model, the FORCAST model complex, and others. Many global developments are becoming focused on the interests of the military-industrial complex. Finally, the fourth group of projects and models of global development is represented by developments carried out in various organizations under the auspices of the United Nations, such as UNESCO, UNIDO, UNCTAD and others. There are currently more than a dozen projects and models in this group. The reasons for the sharp increase in interest in forecasting development prospects are the need to study future alternatives for harmonious global economic development, significant improvement in computer technology capabilities, and the availability of financial resources during a period of intense economic growth.

The first, historical and most widely known models are "Mir-2" and "Mir-3"-were developed at the initiative of the club of Rome by American Professor J. Forrester (1971) [1]. The first global model is based on a simplified extrapolation of the five main factors of "global concern": population growth, industrialization, environmental pollution, food production, and natural resource extraction. The purpose of these studies using system dynamics methods is to trace the development of crisis trends in the interaction between society and its environment in the next century, based on the assumption that the nature of socio – economic development remains largely unchanged.

In 1972, the Forrester model was detailed, at the same time an attempt was made to introduce extensive statistical data and verify the adequacy of the model. D. Meadows, the lead developer of the "Mir-3 model", which served as the basis for the report "Limits to growth" (USA, 1972), a decade after its publication, recognized that in the first global models, socio-political, cultural, and even scientific and technical factors were practically ignored. Subsequent global models were characterized by a much more objective approach to describing global processes.

In response to the criticism of the first models, the club of Rome proposed a new project – the search for a strategy for human survival based on the concept of "organic growth", which was created under the leadership of M. Mesarovich and E. Pestel (USA-Germany, 1974). In the model, the whole world was divided into 10 regions. The hierarchical system of models was based on the allocation of three levels: causal (including environmental and economic processes), organizational and the formation of social norms, values and goals of society. A system of submodels common to all regions was also developed, which included submodels of demography, economy, energy, oil crisis, and food problems.

This approach, which considers the world as a dynamic system of interacting regions at different stages of development, allowed us to take into account the specifics of the development of various countries, to trace the causes and dynamics of a number of crisis processes. In General, the main contribution of Mesarovich and Pestel is to develop a new class of models based on the theory of multilevel hierarchical systems, and to create a methodology for analyzing and evaluating alternative future scenarios.

Various modifications of such models are widely used by developers in many countries of the world in the analysis and forecasting of socio-economic development at different levels. An example is the Mesarovich-Pestel model-based study of the problems of urbanization in Mexico City as the world's largest megacity until 1990, the "China 2000" project, and the "FORCAST" model complex (USA).

The "World tension and a new perspective on development" model is dedicated to finding ways to reduce the income gap between developed and developing countries. According to the authors, the concentration and development of the most high-tech industries should be carried out in the most developed capitalist countries, and first of all, in Japan. The analysis of long-term strategies for the development of the Japanese economy in the context of global problems and structural crises of the world system is devoted to two more forecast developments of Japanese researchers: "the World economy and Japan in 1990" and the global macroeconomic model of A. Onishi, which has two forecast horizons: 1990 and 2000.

A. Onishi's macroeconomic model is intended for a comprehensive analysis of the world

economy and global development alternatives for the third ten-year UN development program. Special attention is paid to the extraction and consumption of natural resources. The model consists of three interrelated submodels: a macroeconomic model designed to develop a system of scenarios for the development of the world economy; and a global input-output model designed to analyze various alternatives to global industrial development; a forecast model focused on predicting the dynamics of production and consumption of natural resources. One of the latest modifications of the model includes about 10,000 equations describing world trade, taking into account the mechanisms of current price formation for 62 regions of the world [4].

In 1977, the FUGI model developed in Japan was introduced. The model represented the world in 15 areas with the main goal of depicting future scenarios [5]. In the early 80's, the FUGI 4.0 model classified the world into 62 countries and regions. In 1981-1990, this model was used as a long-term forecast model for Forward planning studies in the division of International economic and social Affairs of the UN Secretariat in New York. During the 1980s, the UN Secretariat used the FUGI model for long-term economic research and the LINK I model in parallel. For short-term global economic forecasts, the model of the world economy developed by Professor V. Leontiev was also used at the same time [6]. Developed in the early 90's, the FUGI 7.0 model divided the world into 180/80 countries and regions. This model expanded the block of the model that takes into account the interaction of the environment and the model of energy production was presented in a new interpretation [7].

By the end of the 1980s, about ten global models and integrated forecasts of global development had been developed in various international organizations under the auspices of the United Nations [8, 9]. The most interesting of them are: the "Future of the world economy" model, models and forecasts of UNCTAD (United Nations Commission on trade and development) and the DIEM (UN Department of international economic and social Affairs).

The UN model "the Future of the world economy" was developed under the leadership of the Nobel prize winner V. Leontiev (1977). The purpose of the study is to analyze the impact of economic and political problems on the international development strategy formed by the UN in the future for three decades (1970–80, 1980–1990, 1990–2000). The model has a regional structure: it represents 15 regions of the world: eight developed country regions and seven developing country regions (three "resource rich" and four "other"). A description of each region is carried out in 45 sectors of economic activities. The integration of regions into a single model is carried out through a complex mechanism of relations, including export-import of goods and services, capital flows, aid transfers and interest payments abroad.

In General, the model of the V. Leontiev group represents a significant step forward in comparison with previously developed global models, primarily in the field of more objective, realistic consideration of the problems and features of the modern world, recognition of the determining role of socio-political factors of social development.

Within the framework of the UN economic Commission for Europe (ECE), an interconnected system of regional models was developed to forecast the economic development prospects of the ECE countries for the 80–90s. Various sub-models of individual regions were linked by means of matrix systems describing trade flows for different product groups. The following regions are identified in the UNECE model system: European market economies; European centrally planned economies; North American countries; and other economically developed countries; developing country. Statistical filling of models is carried out with the help of specialized international agencies coordinated by the UNECE Secretariat in the following main areas: supply in the economy of individual countries, production development, employment, capital accumulation processes, labor productivity; final demand, profit distribution, consumption, investment and savings; energy use; international trade relations.

In the early 1980s, the United Nations Commission on trade and development (UNCTAD) also published two major projections: "Report on trade and development", "review and analysis of the main goals of the international development strategy for the third ten-Year UN development program".

These developments were based not on traditional econometric models, but on carefully formed complex systems of parameters, the analysis of which allowed us to draw conclusions about the future prospects for trade, Finance, and economic growth in developing countries. The structure of the parametric system used by UNCTAD consisted of six sectors (regional modules) describing different groups of countries. Regions were connected through trade and financial flows.

One of the most comprehensive forecast developments is the report “Meeting the future”, prepared in 1979 by a group led by J. Lezurn. The report was devoted to the search for ways to mitigate the progressive contradictions between developed capitalist countries and between them and the developing world in the context of escalating structural crises, raw materials, energy and environmental problems of our time. The methodological development of the project was based on the global “SARUM” model created by the Ministry of environment of Great Britain. The authors of the model focused on describing the economic processes of global development in the framework of neoclassical economic theory.

A number of major banks, in particular the World Bank, pay considerable attention to the development of global models and alternatives for socio-economic development. The main tool for developing forecasts of the World Bank is the “SIMLINK” model, created to study the impact of changes in world oil prices and trade dynamics in the OECD countries, capital flows of various types of “aid” to developing countries. Later, the model was upgraded to take into account the peculiarities of national economic development and various aspects of international trade and monetary and financial relations. In the modern version of the model, exports from developing countries are correlated with the level of economic activity of developed countries using individual sub-models of commodity exchange. The economic growth of developing countries is linked to the level of investment and exports. The model describes imports and GDP growth in developing countries. The “SIMLINK” model was used in another major forecast study – the report to the US President “global problems 2000”.

The global models of the World Bank are closely related to other model developments carried out in a number of international and private economic organizations: the Wharton Association for econometric research, the Basler research group (“the BAK” model), the research center in West Berlin (the “Globus” model), the International energy Agency (IEA), and others.

Summing up the review of global models and projects of global development, it should be noted that when making scientific forecasts and comprehensive assessments of the development of the world and individual countries, usually well-known and numerous teams of researchers are involved. Among them are the Forrester model, the Mesarovich – Pestel model, the PricewaterhouseCoopers Forecast “The world in 2050”, the long – term model of energy development and the state of the EU environment-VLEEM, the forecast of J. F. Coates “2025: scenarios for the development of the United States and the world community under the influence of science and technology, the forecast of new technologies of the University of Washington”, forecasts of global climate and environmental changes, etc. Time usually shows low reliability of such forecasts and estimates, but they are of great importance for the development of integrated assessment and forecasting methodology in the study of global and regional processes.

The main directions and trends of research in the field of modeling and forecasting of development of countries and the world in General associated with the accumulation and development of more extensive databases of indicators of countries, using new methods of visualization and evaluation of data, using mathematical methods of data analysis, the creation of national information-analytical systems, storage, presentation and analysis of data, development of mathematical and simulation modeling, development of theory and methods of system dynamics.

One of the new ideas in this area is related to phenomenological approaches to the analysis and description of statistical data. This idea is related to the possibility of creating a set of models in the form of phenomenological descriptions based on extensive statistical information about the state and development of countries and the world economy. Government programs to create and

develop technologies for analysis, modeling, and forecasting based on statistical data for key areas of public policy exist in the United States (2012), Japan (2013), Australia (2013), the United Kingdom (2011), and so on.

B. Hypotheses and Methods Used in Creating Models

The object model, which represents the structural aspects of the world economy system, consists of various models that are grouped according to a hierarchical principle: cities and districts are grouped into national regions, regions into countries, and countries into the world economy.

To solve these problems, it is proposed to create phenomenological models of urban, regional, national (industry) economies and the world economy as a whole based on the use of natural science methods that implement a system-phenomenological approach to describing multidimensional statistical data. In this case, statistical data sets are presented in a single structured form, and the form of their representation (in the form of objects – indicative indicators – time of statistical observations) is common for various hierarchical levels: world economy – national economies – regional (sectoral) economies of countries – urban economies. It is assumed that for each hierarchical level it is possible to use a common generic phenomenological model, which in class object is configured for the required list of indicative indicators and state variables, uses its own set of laws characterizing the state of objects and processes of their changes, and is based on temporal statistical data, which characterize these objects in several specific aspects (demographic, economic, social, etc.) in statics and dynamics. Particular phenomenological models are combined into object models at a higher level of the hierarchy and identified by the corresponding phenomenological models that characterize this class of objects. In each case, linking components, relationships, and relationships into a single whole within a more General model (for example, in the cities – regions – countries – world economy line) is based on logical, balance-based, or other methods for establishing relationships between objects and their attributes. Thus, object-oriented modeling technology is used when building models.

When creating such a model, we assume that the position of each socio-economic object is determined by a set of values of its indicators, which are formed at a certain point in time. To describe the position of an object relative to all other objects of the same class, we will use the natural science concept of state space—an abstract space formed for socio – economic objects by several state variables. As state variables z_1, z_2, \dots, z_n we will take indicators selected for econometric analysis that are considered important among experts, characterize the studied objects in a certain aspect, are variable, and the significance of which can be justified by statistical methods. For each hierarchical level, all other indicative indicators (which could be significantly more than state variables) will be linked to state variables using event-based estimation methods [10, 11].

The main hypotheses adopted for modeling processes and justifying criteria for assessing the socio-economic situation and development of countries, regions, cities and others are as follows.

Let's assume that for m socio-economic objects (countries, regions, cities, etc.) there are statistical data for a certain list of indicative indicators, from which attribute indicators are selected z_1, z_2, \dots, z_n and which we will consider as state variables. Let's form a multidimensional state space in the form of a cartesian reference system with respect to these variables.

The main idea of the study is to study the possibility of creating models that differ in the description of geometric objects of points (states) and lines (processes) in the state spaces of socio-economic objects based on available statistical information. The simulation is based on the hypothesis of the existence of various complex measures of similarity of object states $W = W(z_1, z_2, \dots, z_n)$. This value is considered as a function of several variables. Various simple systems for measuring W values are proposed for relative comparison of the position of objects in a multidimensional state space. Among the many models obtained, the most qualitative phenomenological models are selected according to the adequacy criteria and statistical criteria, which are accepted for further analytical work.

The construction of models is based on the use of the principle of corresponding states, according to which the positions of objects can be described by a single equation of state, if you build an effective scale for comparing states with each other and use some of the given variables [10]. The equation of state is usually represented as: $F(z_1/z_{1_0}, z_2/z_{2_0}, \dots, z_n/z_{n_0})=0$, where z_{k_0} – indicator values for the reference state (for the corresponding object class).

In this approach, modeling objects are states of socio-economic objects that can be characterized by a general equation of state that is valid for the entire observed state space. The equation of states is created with respect to a particular selected state.

To construct an equation of state for a group of objects (countries, regions of countries, cities), a reference object or reference state is selected, and all other states are associated with the selected point in the state space. The validity of the principle is checked on a case-by-case basis based on available data.

The principle of corresponding states allows you to build a scale for relative comparison of the position of objects among themselves, in the form of an index $\theta = W/W_0$ that is linked to a certain class of objects. After creating a measuring econometric or sociometric scale, the equation of States is searched for as a regression relationship $\theta = f(z_1/z_{1_0}, z_2/z_{2_0}, \dots, z_n/z_{n_0})$. The procedure for constructing such scales is thoroughly worked out in thermodynamics. The paper uses the appropriate logic for constructing scales to compare the States of socio-economic objects. The essence of the method is to select both a reference state and a certain reference process in the state space [12]. This is due to the fact that when modeling the dynamics of objects, it is necessary to be able to compare both the States of objects and the processes performed by these objects over time.

Let's assume that a relationship can be established between the value W , as a measure of similarity of object states $z_1/z_{1_0}, z_2/z_{2_0}, \dots, z_n/z_{n_0}$ can be established link based on regression dependencies obtained from statistical data. and the given values of indicators based on regression dependencies obtained from statistical data. From the above, it is important to choose indexes θ for characterizing the states of objects or processes of state change, as well as to develop systems for measuring these values. The measure of similarity of states W will be represented as dependencies relative to the values of quantities z_1, z_2, \dots, z_n . Various values can be used as such a measure: geometric measures, as models and metrics of the state space; probabilistic measures, as statistical characteristics of groups of analyzed objects; empirical measures in the form of comparisons of relative changes in the states of objects in relation to the states of the reference object or control groups of objects [10, 11].

Thus, the tools used include econometric tools for comparing (measuring) States and processes in multidimensional spaces of socio-economic variables, methods for constructing and selecting empirical measures for complex characterization of object States and metrics for describing state spaces, methods for creating measurement scales and accepted measurement systems, methods and techniques for constructing state equations for homogeneous groups of objects that take into account the features of their collective behavior, methods for obtaining empirical dependencies and determining the values of phenomenological quantities and etc. [10, 11].

The general method of obtaining equations of states and phenomenological relations for various classes of objects in each case includes the following steps:

- a database is compiled in the form of a single structured array of statistical data, for which information is collected, processed and analyzed from various international sources. The data array for each class of objects is represented by two-dimensional tables “objects-indicative indicators”, and the set of tables is ordered by time with a certain step. Indicative indicators for uniformity are systematized and unified;
- for each hierarchical level (class) of objects (countries, regions, cities, etc.), a General list of indicative socio-economic indicators is formed, and a group of indicators is selected that act as state variables and characterize the class of objects in a certain aspect;

- based on the selected variables, a multidimensional state space is formed for each object class. Select a process that can act as a reference process in the state space. This process may correspond to a certain reference object whose indicators have changed over a certain period of time. In the reference process, reference points are set for building a linear scale of an index $\theta = W/W_0$ in order to compare the States of objects relative to each other. A measure of similarity of states W is determined in the form of some reasonable dependence, the States of objects are measured using the created index scale θ , and the values of this index for each object are found. Various options for constructing a measurement system for this value are studied and the most optimal measurement systems are selected;
- next, a set of empirical scales is created to measure the States of various classes of objects, their States are measured, and the regression method is used to find equations of state that characterize the collective behavior of objects in each specific case;
- state and phenomenological relations for state spaces are used to construct a system of phenomenological models for various classes of objects and their totality as a whole.

C. *Examples of the Construction of Phenomenological Models*

To measure the states of objects, we use values that allow us to evaluate the overall state of the object in relation to the selected reference states based on experimental data. This approach basically requires the creation of empirical measurement scales based on the use of various methods of scaling values. In general, the task is to establish a correspondence between the values of a certain conditional value, measured, for example, in percentages, degrees, points, points, etc., and the values of one or more input values. For this purpose are usually used devices, the computing algorithms, regression, etc. This approach is widely used in physics, chemistry, meteorology, geology, biology, psychology, sociology, as well as in the sciences related to system security, etc.

The most common form of obtaining empirical scales can be described as a two-point method (for example, creating scales in thermometry). In this case, two states are selected that can be reliably reproduced or observed, and two reference points are marked on the scale for these States. This method forms the base of the scale and sets the linear relationship between the values. Next, the entire scale interval is divided into a randomly selected number of equal divisions (most often 5, 10, 12, 100). A change in one division is taken as the unit of measurement of the scale, which is called a percentage, fraction, degree, point, point, etc.

Among all the observed objects of the same class, a reference object is selected for which the condition of linearity of the scale for intermediate values of the measured value is most feasible. If necessary, an ideal class object can be formed for which the linearity condition of the scale is absolutely feasible. For complex measurement of object states, a certain value is selected, for example, x , which is a quantitative measure and is uniquely related to the measured complex index of the scale θ . A relationship is established between the values of these values. For non – stationary arrays of statistical temporal data, time can be used as the value x , for stationary arrays, it can be the length of the line connecting the reference points. In both cases, the value x can be set as a statistical or geometric probability of the position of a point in a multidimensional space. There are many other ways to establish a correspondence between the values x and θ , the use of which is determined by the specific application.

Let's create a measuring empirical scale θ based on the state variables that characterize the real economy sector of the Russian regions, which are taken as:

- the volume of goods produced in-house, works and services performed in-house;
- extraction of minerals z_1 ;
- manufacturing industries z_2 ;
- production and distribution of energy, gas and water z_3 ;

- agricultural product z_4 ;
- scope of work in construction z_5 ;
- volume of paid services to the population z_6 ;
- retail trade turnover z_7 .

Dimension of all the listed values – million rubles/thousand people (thousand rubles/person).

We will use the two-point method to build a linear scale. for this purpose, we will select a reference object and several reference States of this object. As the first reference state of the measuring scale (reference point), we will take the state of the Belgorod region in 2005, and as the second reference state (reference point M_0) – its state in 2018. Other reference points on the scale will be determined by the object States for several years of statistical observations in the period from 2005 to 2018. For this region, as the test showed, the condition of linearity of the scale for intermediate values of the measured value (data in the range of 2005÷2018) is fulfilled with high accuracy.

In this case, when analyzing data, a value θ measured in degrees of this value is taken as a complex index. The measurement scale was formed by establishing a linear relationship between the index θ and specific indicators of the development $z_1 \div z_7$. The values θ of the value in the time interval 2005–2018 depended linearly on time: 2005 – 0 G, 2006 – 10 G and others until 2018 – 130 G. Thus, the scale in the time interval 2005–2015 was divided into 100 equal divisions. The change in one division was taken as the unit of measurement of the scale (1 G), and each year corresponded to 10 G.

Data processing allowed us to establish a functional relationship for building the scale (fig. 1):

$$\theta = -27.754 + \Theta$$

$$\Theta = 0.101z_1 + 0.128z_2 + 0.490z_3 -$$

$$-0.254z_4 - 0.0212z_5 + 0.417z_6 + 0.470z_7 \quad (1)$$

The maximum error of the scale does not exceed 0.57 G the average 0.38 G. Reference points for two years (2008, 2009) were excluded.

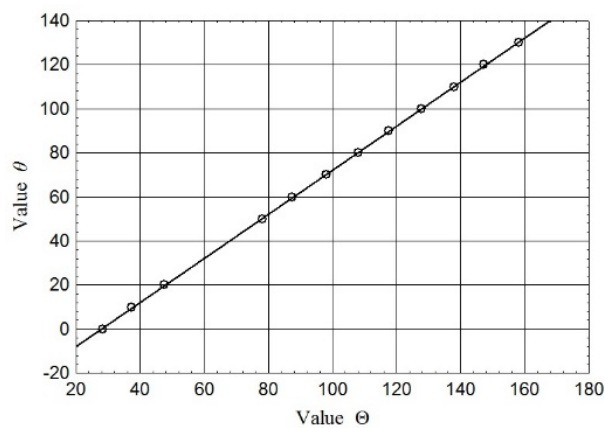


Fig. 1. Compare of empirical scales of values θ and Θ when assessing of the similarity of the states of the Russian regions

By analogy with thermodynamics the value Θ obtained by adding the constant $a_0 = 27.754$ to the value θ (see formula (1)), we call the absolute index and denote it by the letter Θ . Dependence (1) was used to measure the states of Russian regions on a scale Θ that acts as a measure of similarity of states and is related via the constant a_0 to an empirical value θ in the form

$\Theta = \theta + 27.754$. At the same time $\theta_0 = -27.754$ receive $\Theta = 0$ this state is called absolute zero, and the values of the state $z_k = 0$ variables correspond to it. Using of the absolute index Θ for measurements is determined by its positive values, as opposed to the value θ

We establish the relationship between the absolute value Θ and the function of the measure of relative changes for the state space of the form:

$$T = \frac{z_1 z_2 \dots z_n}{z_{1_0} z_{2_0} \dots z_{n_0}} \quad (2)$$

Processing all data for 80 regions of Russia over 14 years allowed us to get the following:

$$\ln T = -25.550 + 6.434 \ln \Theta \quad (3)$$

The correlation coefficient of dependence (3) was 0.91, the results of data processing are shown in figure 2.

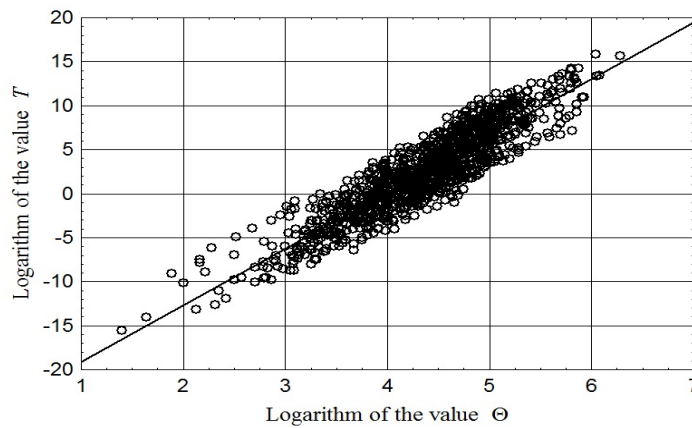


Fig 2. Compare of empirical scales of values θ and Θ when assessing of the similarity of the states of the Russian regions Equation of the relationship between the values T and Θ to assess the similarity of the states of the Russian regions (the entire object class was processed, time range 2005–2018 years)

As can be seen from the figure, the time dependence of equation (3) in the range of 2005–2018 is weak, despite the fact that the change in state variables over time is very significant. This indicates that by introducing corrective corrections for each instance of the class, state equations that characterize the collective behavior of objects can be obtained with high accuracy.

As a second example of building a phenomenological model in a certain aspect of country development, we will consider the processes of land use in countries of the world in accordance with the data [13]. Let's create an empirical scale based on the state variables that characterize these processes:

- natural land area z_1 , km^2 ;
- area of mosaic (managed) land z_2 , km^2 ;
- area of cultivated land z_3 , km^2 ;
- marginal land area z_4 , km^2 .

Choose a reference object and several reference States of this object. As the first reference state of the empirical scale (reference point M_0), we will take the state of Austria in 1995, and as the second reference state (reference point M'_0) – its state in 2015. Other reference points on the scale

will be determined by the object States for different years of statistical observations in the period from 1995 to 2015.

In this case, when analyzing data, a complex index θ measured in degrees of this value is taken as an empirical measure. The measurement scale was formed by establishing a linear relationship between the index θ and the variables $z_1 \div z_4$. The values of the value θ in the time interval 1995–2015 depended linearly on time: 1995 – 0 G, 2000 – 25 G and so on until 2015 – 100 G. Thus, the scale in the time interval 1995–2015 was divided into 100 equal divisions. The change in one division was taken as the unit of measurement of the scale (1 G), and each year corresponded to 5 G.

Data processing allowed us to establish a phenomenological relationship for constructing the scale:

$$\theta = -7680.52 + \Theta;$$

$$\Theta = 0.090z_1 - 0.002z_2 + 0.080z_3 + 0.470z_4 \quad (4)$$

As well as, the index Θ obtained by adding the constant $a_0 = 7680.52$ to the value of the value θ is called the absolute index and will be denoted by a letter Θ . Dependence (4) is used to measure the state of countries in the world according to accepted land use indicators on a scale of absolute value Θ , which is positive.

Let's establish the relationship between the absolute index and the function of the measure of relative changes of the form (2). processing all data for 250 countries of the world over 20 years allowed us to obtain the following equation:

$$\ln T = -35.391 + 3.944 \ln \Theta \quad (5)$$

The correlation coefficient of dependence (5) was 0.99 the results of data processing are shown in figure 3.

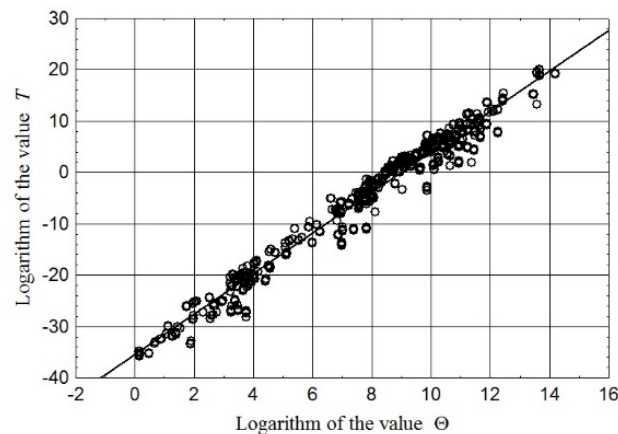


Fig. 3. Equation of the relationship between the values T and Θ for assessing the similarity of the states of the world's countries in terms of land use (the entire class of objects was processed, the time range 1995–2015)

As can be seen from the figure, the time dependence of equation (5) in the range of 1995–2015 is poorly expressed, so for each country the corresponding equations of States can be obtained in the form of phenomenological relations with very high accuracy.

A number of other examples of constructing phenomenological relations to describe the collective behavior of objects: cities, regions, and countries are given in the works of the authors [10–12, 14].

By analogy with the logical approach adopted in thermodynamics, equations of States of the form (3) and (5) allow us to establish a relationship between the values of state variables and the

values of the absolute indices of the state space of objects. It is known that such relations are the basis for applying the theory and mathematical apparatus used in creating system-phenomenological descriptions of objects.

III. CONCLUSION

Thus, the examples show the possibility of constructing phenomenological models for cities, regions, and countries that are structural elements of the general model of the world economy. Linking these components into a single whole, taking into account existing connections and relationships, will allow us to develop an object model of the world economy. This scientific direction in modeling belongs to the relevant sections of econophysics and sociophysics and allows us to formulate a fundamentally new approach to describing and predicting the development of territorial entities. The proposed approach will make it possible to develop algorithms for processing, analyzing and describing statistical data and create methods and information and analytical support for open collective access, allowing experts and analysts to develop phenomenological models of countries, regions and the world economy as a whole.

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Digital Transformation of the Economy: Problems and Trends of Development

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Abstract—This article examines the digital transformation of the economy, which has become a significant phenomenon for the entire world economy. The results of Russia's transition to the digital economy are considered and analyzed. A number of problems arising in the development of the domestic digital economy have been identified and ways to overcome them have been proposed. Authors note the need for monitoring implementation of information technologies by the Government. Promising directions of development of digital transformation of economy are suggested. Digital transformation of the Russian Federation will lead to a new digital society in which the following components will grow, increase and develop: the role of knowledge and information in life; level of automation; a share of information communications, products and services in GDP; global availability of information resources; level of communication through the use of information technology; degree of satisfaction of human needs in information products and services; and digital competitiveness rating.

Keywords—digital economy, digitalization, information technology, IT, ICT, digital transformation of the economy.

I. INTRODUCTION

The relevance of the suggested research topic driven, on the one hand, by the existing contradictions between the active development of digital technologies in a number of countries and their increasing role in the economy, and on the other hand, by the low growth rate of this segment in our country.

G. I. Abdrakhmanova, K. O. Vishnevsky and L. M. Gokhberg [1] paid special attention to the current state and trends in the development of digital transformation, they considered key indicators that reflect the level and dynamics of the development of the digital economy in Russia in the context of international comparisons. A. Demyanova, O. Zhikhareva, Z. Ryzhikova [6] studied the labor market and presented data on employment in professions that are associated

with intensive use of ICT according to the OECD methodology. Russian researcher S. P. Zemtsov [17] considered the potential of robotics and the economy of ignorance in Russian regions. O. A. Vostrikova, M. S. Agafonova [15] studied the problems and prospects of development of the Russian and foreign digital economy in their works, and S. Baller, S. Datta, B. Lanvin [3] studied features of the processes of development of national innovation systems and identified barriers and prospects for the development of digital technologies in the world.

There is still no single approach to defining the essence of the concept of digital economy, there is no single justification for the criteria for evaluating the process of digitalization, despite the significant scientific contribution of domestic and foreign scientists to the theory of digital transformation of the economy. The urgency of the problem, the lack of scientific development of certain aspects of it and its great practical significance determined the purpose and objectives of this research.

The purpose of this research is to identify the global trends of digital transformation of the economy, as well as the problems and prospects for the development of Russian digital transformation.

The research objectives are:

- to identify the most significant areas of digital transformation of the economy;
- to identify the problems of Russia's transition to the digital economy; and
- to formulate the main prospects for the development of digital transformation of the national economy.

Today, the economic opportunities of all industrialized countries are determined by a significant increase of the significance of science and technology in public consumption, and digital technologies are one of the most important economic resources and have recently received rapid development.

Digital economy requires complex processes and technologies to build platforms and their content, the system requires professionals, powerful infrastructure, high-performance Internet access, powerful mobile networks and telecommunications.

In course of this research the authors applied methods of analysis and synthesis, the method of graphical display of data, the method of large-scale comparison and comparison of the analyzed phenomena and processes in economic reality, which enabled us to implement the goals and objectives of this study.

II. RESULTS AND DISCUSSION

In recent years we have observed active penetration of digital technologies in all spheres of life, which contributes to the rapid development of the digital transformation of the economy in our country. However, objective indicators show that Russia is significantly inferior to the leading countries in the digitalization process, as indicated by Russia's rank in the world digital competitiveness ranking the IMD WORLD DIGITAL COMPETITIVENESS RANKING 2019 published by the Swiss business school (Table 1) [16].

TABLE I. THE DIGITAL RATING OF COMPETITIVENESS OF COUNTRIES FOR 2019

Rank 2019	Rank 2018	A country	The value of the 2019 index, %
1	1	United States of America	100
2	2	Singapore	99,37
3	3	Sweden	96,07
4	4	Denmark	95,22
5	5	Switzerland	94,65
6	9	Netherlands	94,26
7	7	Finland	93,73
8	11	Hong Kong	93,68
9	6	Norway	93,67
10	14	South Korea	91,30
...
22	30	China	84,29
38	40	Russia	70,40
60	58	Ukraine	55,26
63	63	Venezuela	27,76

The IMD ranking uses 50 criteria, most of which are based on statistical data and survey results. There are 63 places in the rating, which are assigned based on the total result shown in 3 categories:

"Knowledge": countries are ranked in the descending order of the quality of training, education, and science – Russia is ranked 22nd (rank 24 in 2018);

"Technologies": experts rank countries according to the state of Internet and communication technologies, financial capital in the IT industry, and the regulatory environment. In this category Russia maintained rank 43;

"Future readiness": assesses the readiness to use digital transformation – in this category, Russia is in the 42nd rank according to experts (rank 51 in 2018).

The final position of Russia in the IMD 2019 digital competitiveness rating is 38, which indicates an upward trend.

The United States of America, Singapore, and Sweden have consistently led the rankings for the second year in a row. Denmark and Switzerland are ranked 4th and 5th. None of the CIS countries could come close to the leaders of the rating, however, Kazakhstan (currently ranked 35th in the rating) demonstrates the best growth trend in 3 categories, and Ukraine demonstrates the worst downward trend with its rank dropping by 2 positions to rank 60. Venezuela takes the last place in the rating [16].

Russia has the necessary list of indicators for the development of the digital economy [3]:

- the availability of ICT;
- population's ability to use technology;
- high level of education and literacy; and
- development of the ICT infrastructure.

We note that the transformation of existing economies in the world may lead to significant changes in existing business models and even possibly result in change of world leaders. Therefore, for the prosperity of our state at this stage, one needs to take implementation of digital infrastructure and its modernization seriously, especially given that Russia is far behind the digital leaders in the rankings (Fig. 1) [10].



Fig. 1. The level of digitalization of the world's countries

The Russian "companies" segment has the lowest digitalization index, however, the indicator is slightly higher in other segments.

We selected the following criteria that affect changes in the dynamics of statistical indicators to assess the level of digital transformation of the Russian economy:

- assessment of the overall level of digital technology use in the Russian Federation;

- introduction of digital technologies to Russian business; and
- impact of digitalization on employment.

It is necessary to consider the impact of the information and communication sector within the most important sectors of life in order to assess the level of use of digital technologies in Russia, see figure 2 [1]. In total, the ICT sector contributed RUB 2,443 billion to the Russian economy. Trade, mining and real estate operations account for the largest percentage of the ICT contribution – 349.3 billion rubles (14.3%), 315.1 billion rubles (12.9%) and 224.7 billion rubles (9.2%), respectively. The lowest contributions have been made by the content and media sector – 7.3 billion rubles (0.3%), the production of motor vehicles – 9.8 billion rubles (0.4%), and the chemical industry – 24.4 billion rubles (1%).

Over the past years, information technologies have become widespread in business. Many traditional business models and concepts have been modernized.



Fig. 2. Contribution of the ICT sector to the development of the Russian economy in 2018 (as a percentage of GDP)

To assess the level of digital technology penetration in Russian business it is necessary to review the annual rating provided by the financial and economic magazine Forbes. The 2020 the rating covered only those companies that specialize exclusively in the Internet business (Table 2) [12].

The top three most expensive companies remained unchanged. The market value of Yandex has increased by 36.5% to \$ 14.6 billion. Valuation of Mail.ru Group has decreased by 1.4% to \$ 5.3 billion, whereas valuation of Avito has remained approximately the same at \$ 3.9 billion.

Seven new companies entered the top twenty for the first time in 2020. These companies initially relied on business in the Internet, their products or services can not exist outside the online environment. In 2019, a similar rating also considered large online platforms with offline points of sale.

In general, domestic companies have started to implement technologies in their fields of activity quite actively. However, most companies currently do not have a comprehensive digitization program, which may negatively affect the results in the future. The use of IT technologies such as robotics, chatbots, big data analysis and machine learning has become widespread in companies. In fact, more than 50% of companies have already used such information technologies, although percentage of digital technology adoption varies depending on the industry.

TABLE II. TOP 20 THE MOST EXPENSIVE COMPANIES IN RUNET

Rank 2020	Rank 2019	Company name	Company value 2020, USD million	Company value 2019, USD million	Variation, %	Function
1	1	Yandex	14 640	10 724	+36,5	Search, advertising, services
2	2	Mail.ru Group	5 285	5 362	-1,4	Mail, games, services
3	3	Avito	3 850	3 850	0	Bulletin board
4	-	QIWI	1 160	-	-	Payment service
5	6	HeadHunter	1 150	299	+284,6	Job search
6	8	2Gis	320	243	+31,7	The geolocation service
7	-	Rambler Group	305	-	-	Advertising, services, online media
8	10	IVI	255	204	+25	Online video
9	-	Eruditor Group	225	-	-	Online recruitment and education
10	11	Aviasales	180	196	-8,2	Traveling
11	15	1С-Битрикс	135	106	+27,4	Services
12	-	ЛитРес	130	-	-	Digital book stores
13	14	Skyeng	130	109	+19,3	Online education
14	16	TalentTech	120	97	+23,7	Online education and recruitment
15	-	CarPrice	115	-	-	Online auction
16	17	CIAN GROUP	115	96	+19,8	Bulletin board
17	19	Superjob	115	93	+23,7	Job search
18	-	ESForce	110	-	-	ESports, online media
19	-	Дром.ру	100	-	-	Bulletin board
20	18	B2B-Center	95	95	0	Electronic bidding

Digitalization has also had a huge impact on employment. According to the research conducted by the Higher School of Economics, the share of employees engaged in ICT sector in foreign countries ranges from 5% to 22%. The highest values were recorded in Luxembourg – 22%, the USA – 18% and the UK – 17%; the lowest – in Italy, Slovakia, Greece – approximately 7% each and Turkey – 5%. The Russian indicator is comparable to the average for the European Union. Also in the countries included in the study, ICT professionals make up between 1% and

7% of the employed in the economy, while workers of other ICT professions make up between 4% and 17%. For ICT professionals in all ICT professions, it the share varies from 17% in Lithuania to 43% in Finland [6].

The Russian Federation has set out a list of professions that may be replaced by robotics in the coming years (Fig. 3) [17].



Fig. 3. Probability of automation of the most popular professions in the Russian Federation

Drivers and sellers are two categories that are most susceptible to automation, these categories together account for 13.8 million jobs and 16.2% of the total working-age population of our country.

The tasks and responsibilities of employees will be markedly different from the modern ones with the advent of automation.

Digital transformation in the labor market suggests that by 2030, people will begin to create new production infrastructures to acquire the skills and knowledge they need to successfully perform their work. They will regularly improvise, learn from each other, and create their own path. Some will rely on past experience, frameworks, or mental models. Others will experiment on different platforms, discovering their own paths and innovating.

Based on the data of The Institute for Development of the Information Society, the results of assessing the level of development of the digital economy in Russia were revealed (Fig. 4) [2].



Fig. 4. The level of development of the digital economy in Russia in 2018

The experts have transferred quantitative indicators into a 5-point scale using various algorithms, depending on the availability of comparable data for other countries:

1. If international data was available (for individual indicators or composite indices) for a wide range of countries with different levels of development (for example, data from the UN-ITU, UNESCO, UNDP, DESA, World Economic Forum data), to determine the rating on a 5-point scale,

the interval from the lowest to the highest value in the world was divided into 5 intervals and, depending on the interval in which the value of the indicator fell for Russia, a rating from 1 to 5 was assigned.

2. If there was comparable statistics only for Russia and developed countries (OECD and / or EU), the difference between the maximum and minimum values of the indicator for the OECD or EU countries was divided into 4 intervals (score from 2 to 5) and, depending on the values of Russia, an estimate was made. If the value of the indicator in Russia was less than the minimum in developed countries (almost never the case), a score of 1 was given [2].

The introduction of digital technologies has already affected every vital sector. Almost every sector under review has average results of readiness for digital transformation. However, at this stage of development, it is already possible to identify five areas with a good indicator of readiness for digital transformation, namely: new digital technologies, digital platforms, digital infrastructure, trust and security, and human capital.

Non-digital sectors also affect the overall development of the digital economy, and the indicator for the non-digital sectors is satisfactory. The reason is weak interaction of the state with the private sector and scientific and educational communities, which negatively affects the pace of digital transformation, the implementation of key governmental programs, and the introduction of new technologies.

According to the Institute for Statistical Research and Economic Knowledge of the Higher School of Economics the forecast estimates of the resource support for the development of the digital economy are as follows (Fig. 5) [9]:



Fig. 5. Forecast estimates of resource support for the development of the digital economy in Russia

One can observe a trend of the gradual increase in spending on research and development during the period under review. By 2030 the expenditures are planned to increase by approximately 9 times and will amount to just under 600 billion rubles.

If Russia raises funds from households, corporations and state funds to increase its investments in information and communication technologies, the level of digitalization of the economy can grow to 5.9% of GDP. According to forecasts, the percentage of the digital economy in Russia's GDP may increase to 5.6% in 2021, mainly due to the process of digitalization of industries (No.13, 2020).

Increasing investment in scientific research should help increase the number of researchers by 3 times, as well as increase the number of people employed in the field of digital technologies.

The program "Digital economy of the Russian Federation" was developed and approved in Russia for effective formation of digital transformation and development of the digital economy. The application of this program will contribute to the transition into a new digital format in the economy [7], however, the program is not sufficiently developed at this time. Against this background, application of the following solutions aims to improve the program and the legal regulation of relations that emerge in the Russian digital economy.

It is necessary to:

1. Finalize the existing national project "Digital economy of the Russian Federation", namely:
 - determine technological development of the digital economy as a priority area;
 - emphasize individual areas of the digital economy;
 - develop specific plans for growth of certain areas of the digital economy; and
 - involve regional authorities in the implementation of the program.
2. Consider the possibility of various risks, so it is important to adopt a special document that will elaborate on the development of the digital economy in Russia.
3. Adopt a list of benefits for companies that develop digital technologies, as well as to develop state standards for product quality.
5. Form new legal institutions of the digital economy. Rules for disclosure of any type of information, copyright protection in the web, financing of innovative developments – all these matters should be regulated by certain standards [15].
6. Provide a favorable legal environment for data collection, storage and processing.
7. Create certain legal conditions for the most effective use of the results of intellectual activity in the digital economy.
10. Implement a set of measures to improve standardization mechanisms.
12. To introduce new reporting rules, including statistical information.

The main problems of Russia's transition to the digital economy today are:

1. Slow pace of development and adoption of legislation and bylaws in the field of digital economy development.
2. Insufficient involvement of business in the formation of the legal framework.
3. Low level of digital literacy of the population.
4. The use of outdated technologies which contributes to the emergence of infrastructure constraints.

As a condition for Russia's effective transition to digital transformation, it is necessary to:

1. Modernize the non-digital foundations of the economy with the government focusing on the role of digital transformation in achieving national economic development goals.
2. Ensure flexibility in adopting changes to legislation necessary to adapt to the rapidly changing requirements of the digital economy.
3. Increase the efficiency of using digital technologies and ensure that it can be used to achieve the development goals of the domestic economy.
4. Expand the rights and opportunities of the digital system, which includes government agencies, institutions and organizations responsible for promoting digital transformation and mitigating the disruptive effects of technology applications.

III. CONCLUSIONS

Over the past decade, we observed an increase in the volume of digital technologies, which has led to structural changes in the country's economic activity. IT contributes to the rapid development of the digital economy of our state; however, the level of digital competitiveness of Russia is estimated as average today. The reasons are weak interaction of the state with the private sector and scientific and educational communities, which results in reduced effectiveness of digital transformation, of implementation of key state programs and of introducing new technologies. In general, the companies are not prepared to carry high costs of acquisition and further maintenance of IT programs, which further results in low level of application of digital technology.

To maintain the growth trend, increase the level of digital competitiveness, and then consistently maintain its position, Russia should pay attention to improving the economic security when implementing digital technologies.

The Government should monitor implementation of information technologies and impact of digital transformation in all sectors of the country's economy, both at the regional and municipal levels, as well as in the areas of public administration, industry and services. It also needs to continue improving digital funds through investment in intellectual infrastructure and security, which in turn contribute to the active promotion of digital growth. Further, to successful development of society as a whole, it is necessary to improve digital education, as well as digital literacy of Russian entrepreneurs.

Digital transformation of the Russian Federation will lead to a new digital society in which the following components will grow, increase and develop:

- the role of knowledge and information in life;
- level of automation;
- a share of information communications, products and services in GDP;
- global availability of information resources;
- level of communication through the use of information technology;
- degree of satisfaction of human needs in information products and services; and digital competitiveness rating

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The Cost-Effectiveness of Export of Educational Services in Russian Universities

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Abstract—Although Russia has a strong educational potential, its share on the market for educational service is insignificant. This article analyzes the structure of income from export of Russian educational services and reflects on the problems that create barriers to enhancing such income and cost-efficiency of the export of education as a derivative of such income. The article discusses recent developments in the policies that could provide significant support to the export of the Russian education by increasing the number of foreign students, which is expected to raise the share of exports of educational services in the Russian GDP as well as the competitive ability of the national economy as a whole.

Keywords—international market of educational services, income from export of Russian educational services, efficiency of export of educational services, education, education of foreign citizens, higher education.

I. INTRODUCTION

The total volume of the global educational market currently exceeds 100 bln US dollars [13]. Although Russia has a strong educational potential, its share on the market for educational service in year 2017/2018 was only 5.7% [3]. Russia was ranked 8th in the rating of countries exporting educational services in the years 2017/2018 based on the total number of foreign students falling behind such countries as the USA, the UK, China, Germany, Australia, Canada and France [2]. Against this background, the problem of increasing volume of exported educational services, income from the export of such services and enhancing its efficiency is now becoming ever more relevant.

The problem of international export and internationalization of educational services has become subject of studies by a number of foreign researchers, including Phillip Altbach Jr. [11], Eric De Korte [6], Krum [10]. L.I. Abalkina I.V.[1], Balikhin G.A. [3], Kosevich A.V. [8],

Dorokhova E.I. [4], tackled problems of export of educational services by the Russian universities and benchmarks for development of the Russian system of education. Phillip Altbach Jr. [11], Ya.G. Sadlak [12], and R. Eland [5] have analyzed imperfections of the international export of educational services, problems relating to its internationalization, as well as issues relating to forecasting student mobility.

Publications of recent years contribute significantly to the research on educational services. At the same time, it is still necessary to scrutinize the possibility of increasing the volume of export of Russian educational services and income from such services which absent increase expenditures should also boost cost-efficiency of such export. One needs to run a profound analysis on current export of educational services, including barriers slowing down the flow of foreign students and hinder the possibilities for the Russia universities to improve and develop their educational services.

II. RESULTS AND DISCUSSION

By year 2018/2019, the number of foreign students in Russia was 266.8 thousand. Only 23.3% of them (62 thousand students) were financed by the state or municipalities with the remaining 76.8% (204.8 thousand students) paying for their education (Table I).

TABLE I. DISTRIBUTION OF FOREIGN CITIZENS WHOSE EDUCATION WAS FINANCED BY THE STATE AND WHO RECEIVED EDUCATION IN RUSSIAN UNIVERSITIES ON CONTRACTUAL BASIS IN YEAR 2018/2019

Educational Program	From Federal Funds		From Funds of the Constituent Entity of the Russian Federation		From the Local Budget		On Contractual Basis		Total
	Students	%	Students	%	Students	%	Students	%	Students
Bachelors	43 093	25,1	785	0,5	6 004	0,004	127 633	74,4	171 517
Specialists	7 798	12,0	59	0,1	0	0	56 958	87,9	64 815
Masters	10 102	33,2	156	0,5	0	0	20 194	66,3	30 452
Total	60 993	22,9	1 000	0,4	6 002	0,002	204 785	76,8	266 784

Compiled from the data in: [7]

Foreign students receiving education in Russian universities on contractual basis are a significant source of income for universities. The so-called “economic effect” from export of educational services is a composite of the funds raised from the students as payment for educational services as well as those “injected” into the Russian economy in course of their education (payments for the dormitory or rent, food, transportation, entertainment, Internet and cell phone charges and other expenditures).

Economic cost-effectiveness of the export of educational services is a ratio of the volume of income of universities from education of foreign citizens to expenditures on providing such education. Income of universities from education of foreign citizens is determined by the number of foreign students (including PhD candidates), the size of tuition and fees, lodging, food and other expenditures of the students.

Thus, the result of the export activity of an educational institution is the income received from providing educational services to foreign citizens, which depends on the volume services sold at a set price. The “economic effect” from export of educational services is calculates as follows:

$$Y \times n \quad (1)$$

where Y – is an average price of the service, and n – the amount of the services sold (number of students).

Knowing the number of foreign students and the average cost of education in universities one can calculate the economic effect from export of educational services – see the calculations for the Russian universities that are national leaders in export of educational services based on the number of foreign students (Table II).

TABLE II. ECONOMIC EFFECT FROM EXPORT OF EDUCATIONAL SERVICES BY RUSSIAN UNIVERSITIES THAT ARE LEADERS BASED ON THE NUMBER OF FOREIGN STUDENTS (YEARS 2017/2018)

No.	Name of the University	Number of Students, n	Average Price of the Service, Y, rub	Economic Effect, thousand rub
1	Peoples' Friendship University of Russia	7 500	220 950	1 657 125
2	Saint Petersburg Polytechnical University of Peter the Great	7 012	209 400	1 468 313
3	Kazan (Provolzhsky) Federal University	5 573	167 430	933 087
4	Lomonosov Moscow State University	4 278	328 870	1 406 906
5	Tomsk National Research Politechnical University	3 813	173 627	662 040
6	National Research Technical University "MISiS"	3 386	214 020	724 672
7	Ural Federal University in the name of the first President of Russia B.N. Eltsin	3 114	179 758	559 766
8	Far-Eastern Federal University	2 988	233 000	696 204
9	Tomsk National Research State Politechnical University	2 483	166 152	412 555
10	First Moscow State Medical University in the name of I.M. Sechin	2 200	169 400	372 680
11	South-Ural State University (national research university)	2 003	144 489	289 411
12	Tyumen State University	1 960	124 379	243 783
13	National Research University "Higher School of Economics"	1 711	321 700	550 429

Compiled from the data in: [14]

As mentioned above, economic efficiency of export of educational services by a university depends primarily on the number of foreign students that pay for their educational services, tuition (which usually depends on the ranking of the given university), facilities and resources, qualification of the faculty etc. Based on the data above, Peoples' Friendship University of Russia is a leader in economic cost-efficiency among the Russian universities due to the largest number of foreign students educated in this institution.

Managerial decisions adopted by the Russian universities may have significant influence on the income of a given university from educational services in the future. Thus, income and cost-efficiency from export of educational services should be measured for a certain period. For

example, when a university lowers its requirements for the foreign applicants the number of foreign students increases but this may subsequently result in the “devaluation of the degree”, damage to the reputation of the university and, accordingly, to the volume of the exported educational services. Or, for example, the university may invest in the development of the educational facilities and resources, educational programs for foreigners in English, all of which will lower cost-efficiency from export of educational services for a certain period of time. However, such measures may in the future increase the demand for such services from foreign students and increase income from such services.

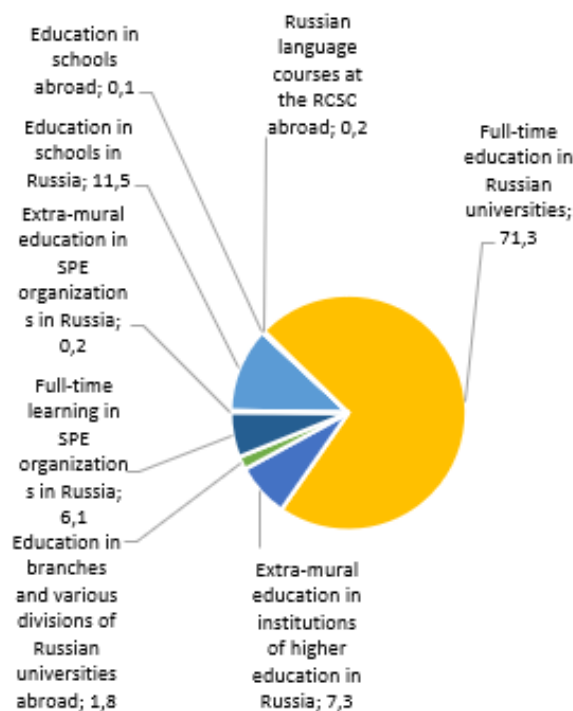
Attracting foreign applicants is a key priority for universities of various departmental affiliation. Based on the data set out in the Table III below, universities affiliated with the Ministry of Science and Higher Education have the highest cost-effectiveness with the total tuition of 13 655.3 mln rubles.

TABLE III. AVERAGE COST OF EDUCATION AND TOTAL INCOME FROM TUITION PAYMENTS FROM FOREIGN STUDENTS IN THE RUSSIAN UNIVERSITIES WITH DIFFERENT DEPARTMENTAL AFFILIATION AND OWNERSHIP IN THE YEAR 2017/2018

Departmental Affiliation / Ownership	Number of Students Paying Tuition	Average Cost of Education, rub	Total Size of Tuition, thousand rub
Universities of the Ministry of Science and Higher Education	97 377	140 231	13 655 330
Universities of the Ministry of Health	31 887	168 562	5 374 965
Universities of the Government of the Russian Federation	8 703	267 552	2 328 508
Universities of the Ministry of Culture and Mass Media	2 442	211 762	517 124
Universities of the Ministry of Foreign Affairs	1 005	463 008	465 323
Universities of the Ministry of Agriculture	4 263	90 628	386 350
Universities of the Federal Agency of the Railway Transportation	2 450	131 649	322 542
Universities under the President of the Russian Federation	773	203 407	157 234
Universities of the Federal Agency of Fishery	1 307	121 829	159 232
Universities of the Ministry of Transportation	1 050	133 538	140 215
Universities of the Ministry of Communications and Mass Media	464	111 453	51 715
Universities of the Ministry of Sport, Tourism and Youth Policy	704	101 938	71 764
Universities of the Ministry of Economic Development and Trade	291	81 923	23 840
Universities of the Ministry of Justice	138	126 254	17 423
Universities of the General Prosecutor's Office	13	12 703	165

Compiled from the data in: [2]

The key source of income from export of the educational service remains education of foreign citizens in the full-time programs by the Russian universities located on the territory of the Russian Federation – 71.3% from the total income from export of the Russian educational services, which is a 4.8% decrease compared to the year 2016/2017. At the same time the share of income from full-time secondary-level professional education increased by 1.7% to 6.1%, and the share of extramural education in Russian universities increased by 1.1% to 7.3% (Fig. 1).



Compiled from the data in: [2]

Fig. 1. Structure of income from export of Russian educational services in year 2017/2018 based on the type of the Russian educational institutions, their location and mode of education, %

Increase in the volume of exports of educational services could increase the cash flow of the Russian universities. At the same time, we note that mutually beneficial economic and political contacts with different countries could be established through foreign students that return to their home countries after having received their education in Russia. Hence, through expansion of the export of the Russian educational services Russia could also increase its geopolitical influence in various regions of the world. Finally, one may also observe a demographic effect of increase in volume of educational services export and educational migration as foreign students may stay in Russia as permanent residents and start families, if the necessary conditions are created. With reduction of the Russian population from 1993 and workforce – from 2007 such demographic potential is more than ever important for the economic development of Russia.

When discussing the problems and barriers on the way of increasing the volume of export of educational services one should note that those could be classified as institutional problems whose solution will require tectonic upheaval in economic development of our country, and problems that can be resolved in the short run.

One of the key institutional problems is that Russian economy and the country as a whole is relatively unattractive for the subsequent employment of young specialists. Indeed, when we analyze why certain countries are leaders in the area of export of educational services, we see that the US leadership is determined not only by high quality of the educational programs and prestige of the educational system as a whole but also by the fact that the country is attractive for subsequent employment. Moreover, US diplomas and work experience are widely recognized in the world. The US also has a number of programs like Optional Practical Training (OPT) that allow foreign students to stay and work in the US without a new visa within a year after graduation from university, which eases the first stages of the immigration process for many young specialists.

Problems that can be resolved in the short run include, first – the need to increase funding of the Russian system of education. Currently, more than half of foreign students in Russia are citizen of the former republics of the USSR, which chose cheap extra-mural and distance education programs. Other numerous groups of foreign students include citizens of China, India, Vietnam, countries of

Africa and Latin America: many of these countries get quotas to receive education in Russia. Thus, such students may not be a substantial source of income for their educational institutions, and Russian export of educational services as a whole does not currently bring substantial income. Thus, increase in financing can either occur as a result of increase in state funding, or as a result of increase in income received by educational institutions from tuition.

Second, there are a number of problems that complicate the process of export of educational services: imperfections of the regulatory framework for the channels of migration in the area of educational services, difficulties that foreign students experience when looking for practical training opportunities or subsequent employment, difficult social and living conditions and unsatisfactory command of the Russian language by many foreign students [10].

A number of the problems above is expected to be resolved through implementation of the Federal Project "Export of Education" of the National Project "Education". As a part of implementation of the Rules on Providing Grants in the Form of Subsidies from the Federal Budget to Implement Certain Measures under the Federal Project "Export of Education" of the National Project "Education" (hereinafter – the "Rules"), approved by the Government Decree No. 569 "On Approving the Rules on Providing Grants in the Form of Subsidies from the Federal Budget to Implement Certain Measures Under the Federal Project "Export of Education" of the National Project "Education"" dated 8 May 2019, the Government shall issue grants for, among others, the following purposes:

- creation of programs to support and develop export of education to the reference groups of the partner countries and territorial and sector segments of the global market;
- information campaign to attract foreign citizens to obtain education in the Russian universities;
- increase by no less than 2 times of the number of the foreign citizens attending Russian universities compared to year 2017; and
- employment of no less than 5 per cent of foreign students that completed their education in Russian universities with high-demand majors by the Russian companies, including for work abroad.

III. CONCLUSIONS

We believe that the funds issued and yet to be issued under the Rules should provide significant support to the export of Russian education. In particular, they could increase the number of foreign students obtaining education in the Russian universities and scientific institutions, and as a result, increase the volume of funds that Russian universities will receive as a result of the provided educational services. The latter may lead to increase of the share of exports of educational services in the Russian GDP and enhance the competitive ability of the national economy as a whole.

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Anti-Aging Healthcare Programs at Companies of the Russian Federation Regions: Relevance, Conditions and Algorithm for Successful Implementation

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Abstract—This article substantiates the relevance of anti-aging healthcare programs implementation at companies from the point of view of their impact on the efficiency of these companies; reveals the relationship between the health status of employees, maintaining a healthy lifestyle and absences from work due to illness, employers' expenses for healthcare of employees.

The article presents the results of the study aimed to reveal the relationship between the implementation of anti-aging healthcare programs at companies in the regions of Russian Federation, the health of employees and the efficiency of companies. A questionnaire designed by the authors was used to collect primary data. 580 employees of companies in Belgorod region took part in the survey. The survey conducted using the questionnaire allowed us to determine the most common lifestyle-related (diet, bad habits, physical activity) chronic diseases among the employees of companies in Belgorod Region. Also, healthy lifestyle practices observed by the interviewed employees were identified along with their bad habits and preferable measures for implementing anti-aging healthcare programs.

Data obtained from the survey of employees in Belgorod region companies allowed us to establish a relationship between bad habits, low physical activity, unhealthy diet and health status, as well as a link between absences from work due to illness and healthy lifestyle practices.

Based on the results of the study, the authors proposed the main factors that affect the efficiency of companies in connection with absenteeism of employees due to illness.

The article notes the crucial importance of employees' personal interest for successful implementation of anti-aging healthcare programs. The article emphasizes the necessity for companies to take measures aimed at motivating employees to participate in anti-aging healthcare programs.

In addition to motivation of employees to participate in the above mentioned programs, such factors for successful implementation of anti-aging healthcare programs in companies were determined as raising the employees' awareness about the importance of leading a healthy lifestyle (HLS) through trainings, promotion of anti-aging healthcare programs at companies, offering employees conditions for HLS practices.

The authors of the article emphasize the increasing prevalence of lifestyle-related chronic diseases, their negative impact on the health of employees and the efficiency of companies, as a result of increased absenteeism from work due to illness and reduced work performance of employees. Based on the results of this study, a number of foreign and Russian studies, the authors came to the conclusion that the implementation of anti-aging healthcare programs at companies in regions of Russian Federation in order to preserve the employees' health and improve the efficiency of companies is currently extremely relevant. Based on the results of the survey, the authors also propose an algorithm for successful implementation of anti-aging healthcare programs at companies in regions of Russian Federation.

Keywords—anti-aging healthcare programs, anti-aging medicine, regions of Russian Federation, chronic diseases, disease prevention, healthy lifestyle, work performance, economic costs, economic efficiency.

I. INTRODUCTION

Recently, more and more attention has been paid to lifestyle-related diseases. Unhealthy lifestyle, associated with risk factors for chronic diseases, such as low physical activity, unbalanced diet, bad habits, chronic stress leads to increased morbidity, reduced life quality and life expectancy. According to the Ministry of Health of Russian Federation 45% of the population Russia have chronic diseases [1]. The increase in the incidence of diseases and the deterioration of the health status of employees, in turn, becomes a serious burden for companies and affects their efficiency.

The purpose of this article is to justify the relevance, identify the conditions and propose an algorithm for successful implementation of anti-aging healthcare programs in companies of regions of Russian Federation.

Chronic diseases among employees increase the economic costs of companies as a result of an increase in employees' absenteeism from work due to illness and a decrease in their productivity, on the one hand, and an increase in the employers' expenses for healthcare of employees, on the other hand. This determines the crucial importance of researches describing the relationship between employees maintaining a healthy lifestyle, preserving their health and improving the efficiency of companies where they work [2].

II. METHODS AND MATERIALS

In order to obtain primary data for the research, the authors of the article developed a questionnaire for conducting a survey among employees of Belgorod Region companies. Further, the primary data obtained by the method of interviewing were processed using the methods of statistical analysis.

The article presents the materials of the research results aimed at substantiating the relevance, conditions and algorithm for the successful implementation of anti-aging healthcare programs at companies in the regions of the Russian Federation. The study was carried out on the basis of a survey of employees of Belgorod Region companies using the questionnaire designed by the

authors. As part of the survey, data were obtained on the diseases of employees, their diet, physical activity, absence from work due to illness and preferable measures for implementation of anti-aging healthcare programs.

III. RESULTS AND DISCUSSION

One of the areas of modern healthcare in which preventive measures can be successfully applied, in particular, measures to promote a healthy lifestyle and programs to prevent diseases, is anti-aging medicine [3].

In Russia, a number of research institutes and centers study anti-aging medicine: Russian Clinical and Research Center of Gerontology, Research Medical Center "Gerontology", St. Petersburg Institute of Bioregulation and Gerontology. However, it should be noted that studies in this area are at the initial stage of development. There are very few studies proving the relevance of anti-aging healthcare programs implementation at companies in the regions of Russian Federation, and offering recommendations for their successful implementation.

At present, a promising direction of healthcare development in Russia, along with treatment of chronic diseases, is the implementation of medical examination of the population with the aim of early detection and prevention of various diseases development. Therefore, anti-aging medicine is firmly strengthening its position, since it is primarily prevention, in particular, leading to healthy lifestyle to preserve health and prolong the life of the population.

Anti-aging health care program at a company is a program organized and paid for by the employer aimed at stimulating employees' personal responsibility for preserving their health and maintaining a healthy lifestyle, reducing the risks of health loss and increasing their individual effectiveness (work productivity) at work.

Anti-aging health care programs in companies usually consist of two blocks: lifestyle management programs and chronic disease management programs. The programs of the first block are mainly aimed at working with employees who have risk factors for health deterioration, such as bad habits (smoking, drinking alcohol, etc.), a sedentary lifestyle, obesity, etc., and are aimed at reducing these risks and preventing the development of chronic diseases. Disease control programs are aimed at working with employees who already have chronic diseases in order to compensate for diseases and prevent exacerbation [4].

The idea of implementing anti-aging healthcare programs at companies is relevant today, since according to statistics, most people older than 40 years old start to develop age-related changes: involutive changes in organs and tissues, decreased joint mobility, changes in the vascular wall, attention and memory deterioration and others that have a negative impact on the quality of life, in general, and ability to work, in particular.

Anti-aging healthcare programs implemented at companies should be aimed at both preventing the onset of diseases among employees (primary prevention) and at diagnosing and treating diseases in the early stages before complications arise (secondary prevention). Primary prevention focuses on promoting healthy lifestyle and identifying risk factors to prevent the development of diseases, such as maintaining a low-fat and low-calorie diet, which can prevent the development of a number of diseases, in particular diabetes. Improving the health and quality of life of employees, with primary prevention, is associated with the prevention of diseases through lifestyle changes. Secondary prevention is aimed at achieving compensation for diseases and preventing exacerbations and relapses – for example, for someone with bronchial asthma, it is necessary to monitor the intake of prescribed medications in order to prevent an exacerbation in the form of an attack, which can lead to hospitalization [5].

This article presents the results of the study conducted at Belgorod Region companies aimed at substantiating the relevance of implementing anti-aging healthcare programs at companies in regions of Russian Federation and also determines the conditions and offers an algorithm for their successful implementation. Common chronic diseases of employees at Belgorod Region companies were identified within the framework of the study. The most common diseases among employees of Belgorod Region companies are diseases of the gastrointestinal tract, diseases of

the musculoskeletal system, neurological diseases and hypertension. Statistics on the diseases prevalence among employees interviewed in the study indicate that most of the study participants lead a sedentary lifestyle, do not exercise or rarely exercise, have unbalanced diet and often experience stressful situations at work.

The most common bad habits and observed healthy lifestyle practices of employees of Belgorod region companies were revealed. There is a serious problem with physical activity, since most of the interviewed employees of Belgorod region companies rarely engage in sports and physical exercises.

Also, the majority of the interviewed employees of Belgorod Region companies choose diets that are not balanced and adequate to their condition. More than 50% of the interviewed employees of Belgorod Region companies are subject to chronic stress at work.

According to the results of the study, a link was established between employee absence from work due to illness and leading healthy lifestyle practices. Fig. 1 shows that employees who follow healthy lifestyle practices have less absence from work due to illness. This undoubtedly leads to an increase in the productivity of employees and an increase in the efficiency of the companies where they work.

In Fig. 1 we can see that the difference in absence from work among all interviewed employees of Belgorod Region companies and those employees who do not follow healthy lifestyle practices does not differ much within the range up to 2 weeks of absence at work due to illness. Thus, the rate of absence at work due to illness less than 1 week among interviewed employees who do not adhere to any healthy lifestyle practices is only 1.47% higher than among the total number of interviewed employees, and the rate of absences from work due to illness from 1 to 2 weeks is higher by 0.48%.

A significant difference in absenteeism between all interviewed employees of Belgorod Region companies who do not adhere to any healthy lifestyle practices is observed in the range of absenteeism from 2 to 4 weeks. Thus, the rate of absence from work due to illness from 2 to 3 weeks among employees who do not adhere to any healthy lifestyle practices is 18.08% higher than among all interviewed employees of Belgorod Region companies. And the rate of absence from work due to illness from 3 to 4 weeks among employees who do not adhere to any healthy lifestyle practices is 12.29% higher compared to absence from work due to illness among all interviewed employees.

It should also be noted that there is a significant difference in the number of employees who were not absent from work due to illness. As we can see in Fig. 1, 39.94% of all interviewed employees of Belgorod region companies were not absent from work due to illness, while among interviewed employees who do not adhere to any healthy lifestyle practices, this indicator is by 33.56% lower and amounted to only 6,38%.

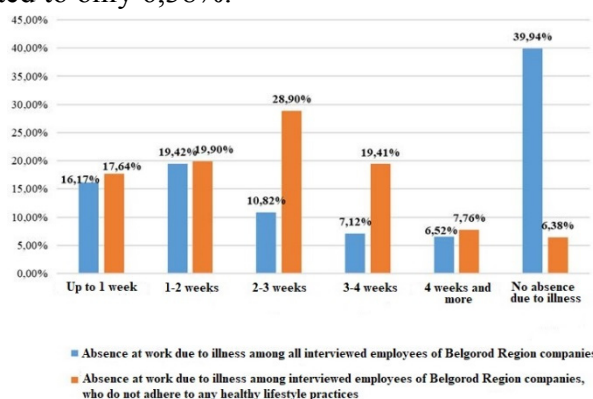


Fig. 1. Absence of employees from work due to illness within a calendar year at Belgorod Region companies

The results of the study show that bad habits, low physical activity, and unhealthy diet among

employees of Belgorod Region companies lead to their health status deterioration and increase in the incidence of chronic diseases.

The deterioration in the health status of employees of Belgorod Region companies, in turn, leads to an increase in the employees' absenteeism due to illness, which in turn affects the efficiency of these companies.

Attention should be paid to the fact that for any company, the main purpose of implementing anti-aging healthcare programs is their economic efficiency, which is mainly achieved through increasing employee productivity by reducing absenteeism from work due to sickness as a result of the implementation of anti-aging healthcare programs at companies in the regions of the Russian Federation and reducing healthcare costs of employers.

The decrease in the efficiency of companies in the regions of the Russian Federation as a result of an increase in employee absenteeism due to illness occurs due to two groups of factors:

- effect on the amount and quality of business due to the decrease in the employees' work performance;
- an increase in the employee's expenditures on the employers' healthcare associated with the treatment of a new disease or an exacerbation of chronic diseases.

These groups of factors are presented in Table 1.

TABLE I. FACTORS AFFECTING THE EFFICIENCY OF COMPANIES IN THE REGIONS OF RUSSIAN FEDERATION IN CONNECTION WITH THE ABSENCE OF EMPLOYEES FROM WORK DUE TO ILLNESS

Effect on the amount and quality of business	Increase of employers' expenditures on the employee's healthcare
- reduction of work performance of employees absent from work due to illness	- additional costs due to deadline delays
- part of the work performed by employees who are absent from work due to illness falls on other employees of the company	- additional costs related to using additional resources
- decrease in the quality of work performed by those employees who get extra amounts of work	- depending on the payment system, additional costs may arise for the remuneration of those employees who are responsible for performing the work of employees who are absent from work due to illness
- delays of deadlines	- expenses for sick leave payments for employees who are absent from work due to illness

In addition to the factors indicated in Table 1 that cause the decrease in the efficiency of Belgorod Region companies due to the absence of employees from work due to illness, it should also be noted that more than 50% of the employees at Belgorod Region companies interviewed in the study noted that they go to work being unwell.

It is obvious that the quality and volume of performance of employees who go to work, feeling unwell, decreases. This also leads to a decrease in the efficiency of the companies where they work [6].

When implementing anti-aging healthcare programs at companies in the regions of Russian Federation, it is important to ensure that the main conditions for their successful implementation, given below, are met.

1. Personal motivation of employees.

This condition involves implementation of measures aimed at motivating employees of companies to participate in anti-aging healthcare programs and comply with healthy lifestyle principles [7].

Employees of companies can be motivated to participate in anti-aging healthcare programs

and lead a healthy lifestyle through a system of rewards and fines for compliance and non-compliance with healthy lifestyle practices, respectively. However, a survey conducted among employees of Belgorod region companies showed that the system of rewards and fines is not in the list of preferable ones for the interviewed employees.

According to the results of the conducted survey among the employees of Belgorod region companies, it was revealed that employees of Belgorod region companies are most interested in such types of anti-aging healthcare programs as support for physical activity and an active lifestyle, adherence to a balanced and healthy diet, periodic medical checkups. More than 50% of the interviewed employees prefer such healthy lifestyle supporting measures as compensation of gym costs by the employer, providing employees with conditions for a healthy balanced diet at the workplace, partial compensation of food costs by the employer and assistance in diseases prevention.

Less than 50% of the interviewed employees of Belgorod Region companies show interest in activities aimed at combating bad habits, providing psychological counseling and stress relief, events and trainings aimed at promoting healthy lifestyle.

The low interest of interviewed employees of Belgorod region companies in such activities as providing psychological counseling and stress relief is confusing, since the study showed a fairly high level of frequency of stress situations at work among employees. Thus, approximately 22% of the employees of the Belgorod Region companies interviewed within the framework of the study note that they constantly experience stress at work, and about 45% of the interviewed employees experience stress at work from time to time.

2. Raising awareness among employees of companies about the importance of anti-aging healthcare programs for maintaining their own health. For example, about the importance of a balanced diet which most of the interviewed employees of Belgorod region companies do not follow, the importance of medical checkups for early diagnosis of diseases, their timely and accordingly more effective treatment, the relevance of the psychological component in health status.

3. Active campaigning of employees to participate in healthy lifestyle programs, for example, through the personal example of anti-aging healthcare programs implementing company managers.

4. Providing measures aimed to encourage employees to participate in healthy lifestyle maintaining programs – co-financing of physical activities, healthy diet, providing an effective medical examination system, etc.

5. Studying the results of scientific researches in the field of antiaging medicine.

6. Studying the experience of practical implementation of anti-aging healthcare programs at companies.

7. Evaluation of the possibilities of applying different experiences at a particular company and developing their own model of an anti-aging healthcare program, taking into account the characteristics of the company and the employees' health and psychological state.

It is important to note that there is no single model of anti-aging healthcare program that would be successful and effective for all companies. When developing an anti-aging program, one should rely on scientifically based practical strategies and, on their basis, build their own model for implementing an anti-aging program in a particular company.

Based on the studied Russian and foreign materials, we have developed an algorithm for successful implementation of anti-aging healthcare programs at companies in the regions of Russian Federation [8, 9]:

- to assign a group of employees responsible for the implementation of the anti-aging healthcare program and performing coordinating and information functions;
- to define measures included in the anti-aging healthcare program;
- to determine methods for assessing the effectiveness of the anti-aging healthcare program implementation at the company for the employer and employees;

- to compile questionnaires for the program participants at the stages of development and implementation of the anti-aging healthcare program at the company;
- to provide monitoring of the employees' health status at the company where the anti-aging healthcare program is implemented;
- to track changes in indicators of economic efficiency of implementing the anti-aging healthcare program at the company;
- to develop and implement measures to encourage employees to participate in the anti-aging healthcare program at the company;
- to create a system of indicators that will be used to evaluate the economic efficiency of the anti-aging healthcare program (the average number of working days of employees per year, the average number of employee absent days for all reasons (including due to sickness), the working time, working productivity, savings in employee healthcare costs, etc.);
- to perform measures at the company aimed to promote a healthy lifestyle among employees;
- to arrange educational training for employees of the company that implements anti-aging healthcare programs (for example, about the harmful effects of smoking);
- to refund employees' expenses related to maintaining a healthy lifestyle (for example, gym costs);
- create a corporate culture of healthy lifestyle among employees of the company through direct participation and on the example of senior managers.

IV. CONCLUSION

Thus, one of the major problems of the modern society from the standpoint of health and socio-economic aspects is the increasing prevalence of chronic diseases, leading to the decrease of companies efficiency as a result of increased absences of employees from work due to illness and reduction of their work performance.

In Russia, the number of people suffering from chronic diseases, often associated with a sedentary lifestyle and unbalanced diet, is growing annually. According to statistics, the number of people suffering from diabetes is 369.6 thousand people, respiratory diseases – 52832.6 thousand people, digestive diseases – 4856.3 thousand people [10]. However, there are no significant theoretical or practical studies on the implementation of anti-aging healthcare programs at enterprises in the regions of the Russian Federation to maintain public health and improve their work performance. At the same time, the need for medical guidance to determine how to maintain health, increase work performance of employees and contribute in the national economy on the level companies, regions and countries is becoming more and more obvious.

The results of numerous foreign and a number of Russian researches and practical experience of foreign and Russian companies indicate that the most promising and relevant intervention to change the situation in a positive way is to identify the conditions and design an algorithm for wide implementation of anti-aging healthcare programs at the companies of regions of the Russian Federation aimed at maintaining the health of employees and improving companies efficiency. And the main conditions for successful implementation of anti-aging healthcare programs at the companies of the Russian Federation regions are personal motivation of employees, awareness of employees about the importance of anti-aging healthcare programs for their own health preservation, encouraging employees to participate in healthy lifestyle program, studying the results of scientific researches in the field of anti-aging medicine and the experience of practical implementation of anti-aging healthcare programs at companies, Evaluation of the possibilities of applying different experiences at a particular company and developing their own model of an anti-aging healthcare program, taking into account the characteristics of the company and the employees' health and psychological state.

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China's Migration Policy and Direction of Improvement

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Abstract—Population migration, as a manifestation of globalization, has become a popular phenomenon in the XXI century. It affects the political, socio-economic and demographic development of countries all over the world and interaction and integration process among them. China has become the most dynamically growing participant in international migration processes with huge potential. The article is devoted to the study of the modern migration policy of China and the directions of its improvement. This paper examined the current state of China's migration policy from both theoretic and legal aspects, valued its place in international migration, and revealed the reasons for reforming and improving the state migration policy in China, which should result in improved coordination and management of migration processes. It is suggested that this policy will have a positive impact on the country's socio-economic development and the standard of living of the Chinese population.

Keywords—migration, emigration, immigration, international migration, globalization, international migration processes, labor migration, educational migration, irregular migration, migration policy, migration policy of China.

I. INTRODUCTION

Migration, as a manifestation of globalization, has become a popular phenomenon in the twentieth century. It affects the political, socio-economic and demographic development of various countries of the world, interstate interaction and integration processes in the international community. At the same time, increased migration is exacerbating security and crime problems in the form of illegal migration, trafficking, xenophobia and terrorism. All of this draws close attention of international organizations, national governments, scientific communities and the general public to this phenomenon. In today's world, migration policy is seen as a socio-economic phenomenon that has a direct or indirect impact on the development of the world economy. Migration flows between countries have an important

impact not only on macroeconomic growth, foreign exchange earnings and employment, but also on the a countries' environment culture and society as well as on the strengthening of peace and international cooperation. According to the International Organization for Migration, there are currently 214 million international migrants in the world. One of the largest suppliers of them has traditionally been from China. China is now the fastest growing participant in international migration processes with enormous potential. The large population of the People's Republic of China, along with its high density, form objective prerequisites for the mass departure of Chinese citizens. The gradual lifting of restrictions on departure from China as part of opening up policys has created massive opportunities for migrants of the country. Therefore, the study of the issues of China's modern migration policy and the direction of its improvement is a hot topic of study.

II. METHODS AND MATERIALS

The article uses the following methods of research: historical, logical, interdisciplinary approach, search, accumulation, grouping and processing of scientific information, analysis and synthesis, induction and deduction, statistical, graphic, etc., which will solve the tasks and achieve the goal of the study.

International migration refers to people who move across the border for resettlement in other countries, including temporary accommodation. Tourists and short-term business guests are not generally considered migrants. Migration can be divided into internal migration and cross-border migration, which in turn is divided into emigration and immigration. The problem of overcrowding has been one of the key issues for China throughout its history. The big size and high density of residents, combined with a limited resource base, raises issues of poor ecology, poverty and unemployment, which has led to the migration of the excess population in order to find a better life abroad. It should be noted that the advantage of increasing the scale of labor emigration was the increase in income and for relatives remaining in China. In China there is an opinion that if one person went abroad to work - one family began to live better. As reforms and economic modernization and liberalization of many areas of life have progressed, China's economy has developed. Improvements in improving living standards have contributed to the emergence of sufficient money for migration, including going abroad for education. Therefore, in the near future, we should expect an increase in the migration flows of Chinese youth to study abroad. China's migration policy has Chinese characteristics in a sense. Describing China's migration policy, it should be noted that on the one hand, it includes a policy of attracting talent (highly skilled professionals) from abroad and a policy of returning Chinese students after graduation abroad. On the other hand, there has been a tough crackdown on illegal migrants entering China without permits, which has contributed to an increase in China's population due to undesirable migrants and increased competition in the labour market.

In order to attract highly qualified professionals from abroad, the Chinese Government is actively calling for the return to China of those citizens who have studied abroad. In 2018, the number of students studying abroad reached 662,000, 按increase of 8.8% over 2017, and the number of returning Chinese students in 2018 reached 519 thousand (78%), an increase of 8% compared to 2017.

Figure 1 shows the number of Chinese students who returned to China after studying abroad between 2007 and 2018.



Source: Number of students studying abroad,
URL:<http://www.chyxx.com/industry/202003/846042.html>

Fig. 1. Number of Chinese students studying abroad who returned to China after studying abroad between 2007 and 2018 (thousands)

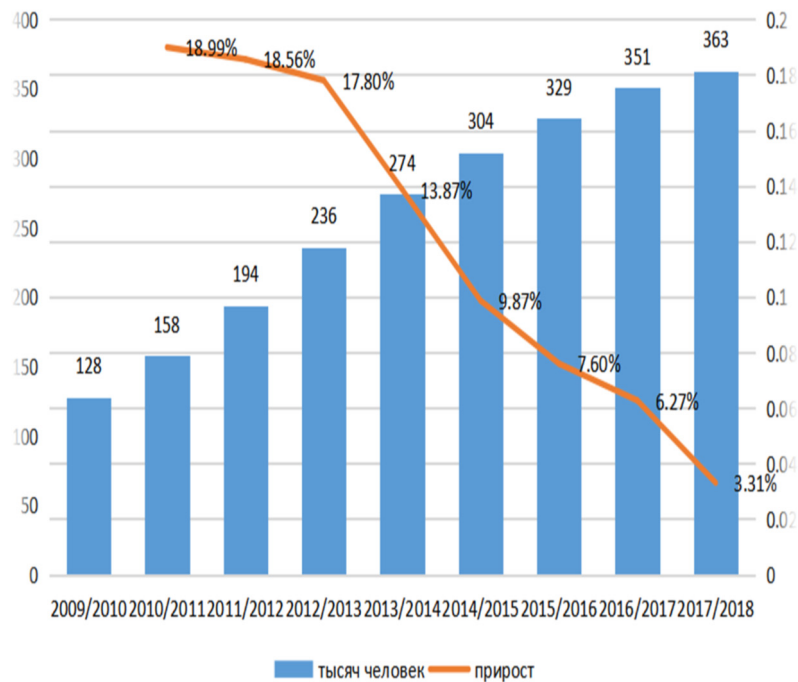
According to the data presented in Figure 1, it can be concluded that in 2007, after studying abroad, 44,000 Chinese students returned to China, and in 2018 519 thousand Chinese students returned home(11, 8 times more).

The main countries where Chinese students go to study are: Australia (152,06 thousand in 2018), the United States (363,000 in 2018), Russia (294,000 in 2018).

Figure 2 shows the number and rate of growth of Chinese students studying in the U.S. between 2009 and 2018.

The number of Chinese students studying in the United States accounts for more than 50% of the total number of Chinese students studying abroad. The increase in the number of Chinese students studying in the United States has a direct impact on the overall rate of growth in the number of students studying abroad. Since the 2012/2013 academic year, the growth rate of Chinese students studying in the U.S. has decreased (see Figure 2). For example, in the 2013/2014 academic year, the rate of increase in the number of Chinese students U.S. students accounted for 13.87% compared to the 2012/2013 academic year, down 3.93% in the 2016/2017 academic year compared to the 2015/2016 academic year this figure decreased by 1.33 and amounted to 6.27%, in the 2017/2018 academic year compared to the 2016/2017 academic year, this figure decreased by 2.96% to 3.31%. In the 2017/2018 academic year, the number of Chinese students studying in the United States was 363,000, which is 2.8 times more than 2009/2010 academic year. Thus, in recent years there has been a decline in the number of Chinese students studying in the United States, which has clearly slowed the increase in the overall rate of growth in the number of Chinese students studying abroad.

Число и темпы роста китайских студентов,
обучающихся в США за период 2009-2018 гг.



Source: Analysis of the number of Chinese students studying abroad, the number of students returning to China, and trends in international education in 2019, URL: <http://www.chyxx.com/industry/202003/846042.html>

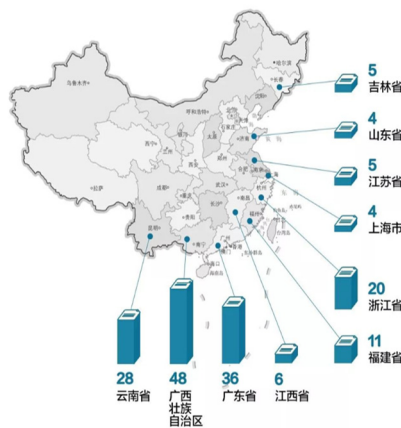
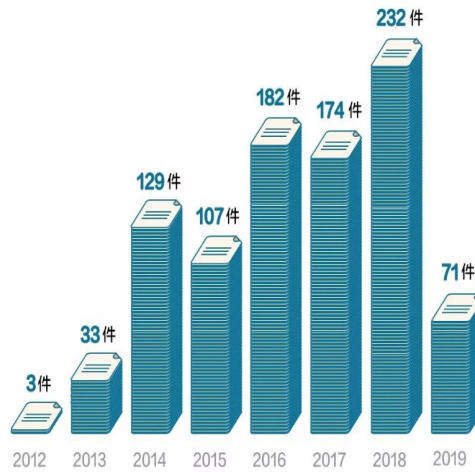
Fig. 2. Number and growth rate of Chinese students studying in the U.S. (thousands)

On the other hand, the Chinese government has actively encouraged the immigration of foreign professionals to China. To do this, the Foreign Entry and Exit Control Act provides that foreigners who, under Chinese law, have investments in China or perform economic, scientific, technical, cultural cooperation with Chinese industrial enterprises and economic organizations, as well as other foreigners who require a long stay in China, on the basis of the permission of the competent authorities of the Chinese government, may be entitled to live in the country for a long time or permanently residency. In order to create the most favoured regime for foreign professionals and investors to enter and work in the country, the Chinese Government has drafted a number of laws and by-laws on entry and exit, as well as long-term residence or permanent residence of foreigners [14].

Despite the measures taken by the state, the situation with illegal migration in China has worsened in recent years. The latest official statistics on the number of illegal migrants in China are not yet available. But Ujiang's website provides information on the increase in court decisions to deport illegal migrants from China (from 3 to 232 court cases from 2012 to 2018, or 77 times), which can serve as an indicator of an increase in the number of court cases on this issue [13].

Figure 3 shows the provinces of The People's Republic of China where illegal migrants live and countries that supply illegal migrants to the country between 2012 and 2019.

With the improvement of china's socio-economic development, the country's attractiveness to illegal immigration has increased. Particularly attractive provinces of the People's Republic of China for illegal immigration have been Guangxi, Guangdong, Yunnan and Jilin, which are geographically close to the country of residence of illegal migrants, as well as Fujian and zhejiang, which have a high level of economic development in comparison with other provinces of China. Myanmar (including border residents), Vietnam (including border residents), South Korea, Japan, the United States, Russia, Mongolia, Malaysia, the Philippines and Singapore were among the top ten countries in terms of the number of foreign visitors to China in 2018.



Source: Illegal migration of foreigners to China,

URL: https://www.sohu.com/a/351815609_611053

Fig. 3. Provinces of residence in China and countries that supply illegal migrants between 2012 and 2019

China has actively developed international cooperation to prevent illegal migration. China not only strongly fights illegal migration on its own at home, but has also developed cooperation in this area with more than 40 countries, including the United States, Canada, the European Union and Russia.

According to media reports, the Canadian Border Services Agency (CBSA) listed illegal migrants repatriated in 2017 with more than 15,000 people and repatriated a total of 180 countries in the destination country, including 209 stateless persons. In this list, the number of Chinese citizens is the largest - 2,066, followed by India and Latin America, 1029 and 977 respectively. The statistics of repatriated Chinese citizens increased sharply in 2017 compared to previous years (in 2013, 618 people were repatriated; in 2015 - 605 people; in January-September 2016 - 324 people). It is projected that the number of repatriated Chinese nationals will average about 400 Chinese nationals annually. But compared to 2016, the number of repatriated Chinese nationals is growing rapidly in 2017, and according to the analysis, this may be due to some cases of migration fraud.

According to data released by CBSA, there are seven main reasons for the deportation of Chinese citizens from Canada:

1. False information to obtain preferential right to an invitation to work from the migration service.
2. False information about experience in the required specialty.
3. False information about the time of residence in Canada when applying for a New Maple Leaf Card.

4. False information about the time of residence in Canada when applying for naturalization.
5. False application for a fictitious marriage.
6. Fake marriage application for immigration status.
7. Fake rating statement when applying for an extension of a student visa.

In many countries of the world, special migration laws have long been adopted and are in place, which are an important means of regulating migration. In China, it was decided to improve migration legislation, provided that foreign experience of migration legislation will be used.

After years of economic development in China, more and more Chinese citizens prefer to live abroad, and now the list of countries in which Chinese expats live abroad is very wide. The Chinese Government has taken serious steps to improve the national migration policy, namely, the reforms have affected the national administrative authorities for the coordination and regulation of migration processes, the strengthening of Chinese legislation on migration regulation, and the emphasis on strengthening the control of illegal migration in China, etc.

On March 13, 2018, the Council of State formally submitted an institutional reform plan for consideration by the 13th National People's Congress. The State Institutional Reform Plan refers to the establishment of a national migration administration, which for the first time in China has established a special agency for the coordination and management of migration affairs. The National Migration Administration is administered by the Ministry of Public Security and will integrate the functions of citizens' entry and exit management and border inspection. This agency will serve as both a coordinating agency and a management agency: in terms of coordination, the agency will become the core of China's migration policy, and will oversee the coordination of the "Three Unrelated" (illegal employment, illegal entry, illegal residence).

The establishment of a national migration administration is not only a deepening and extension of previous measures to reform the central government, which are aimed at deepening reforms for the legal residence of foreigners, but also generalizing and advancing migration policy reforms in Beijing, Shanghai, Zhejiang and other local authorities, as well as adapting to China's global status in the world, not only in terms of GNP but also in terms of international migration.

III. RESULTS AND DISCUSSION

International migration thus refers to people who move across the border for resettlement in other countries, including temporary accommodation, and tourists and short-term business guests are not generally considered migrants. Migration can be divided into internal migration and cross-border migration, which in turn is divided into emigration and immigration. The problem of overcrowding has been one of the key issues for China throughout its history. High numbers and high population densities, combined with a limited resource base, raise questions for the Chinese government about poor ecology, poverty and unemployment, which has led to the "pushing out" of the state of the excess population in order to find a better life abroad (labour migration). It should be noted that the advantage of increasing the scale of labor emigration was the increase in income and deductions for relatives remaining in China. In China there is an opinion that if one person went abroad to work - one family began to live better. As a result of the implementation of reforms and economic modernization and liberalization of many areas of life, the growth rate of China's economy has increased. Improved living standards have contributed to the emergence of enough money for migration, including for Chinese youth to go abroad to study.

China's migration policy has a "Chinese specificity" in a sense. The characteristics of China's migration policy, on the one hand, include a policy on talent (highly skilled professionals) and a policy of returning Chinese students studying abroad. The number of students returning to China after studying abroad is gradually increasing, from 44,000 in 2007 to 519,000 in 2019 (growth of 11, 8 times). There is an active involvement from abroad of highly qualified specialists for use in various fields of science, technology, production of China (at the moment in China for a long time there are about 3000 foreign specialists who are going to apply for permanent residence in China). The migration policy of the Chinese government is constantly being improved and corrected. The Chinese government is working hard to identify and repatriate illegal migrants

who are increasing China's population, increasing unemployment, increasing competition in the labour market and increasing pressure on China's state budget.

IV. CONCLUSIONS

Thus, the following results were obtained during the study process.

1. China's large population and high population density, combined with limited resources, contribute to increased labour emigration, resulting in an increase in income and cash contributions for relatives remaining in China.

2. "Chinese specifics" of China's migration policy: on the one hand, actively attract talents (highly skilled professionals) to the country and facilitate the return of Chinese students studying abroad to their homeland. On the other hand, the number of illegal migrants is actively hindered.

3. The direction of improving china's national migration policy is the creation of the National Migration Administration, which for the first time in China has established a special Agency for the Coordination and Management of Migration Affairs, which will lead the coordination of the "Three Unrelated" (illegal employment, illegal entry, illegal residence).

4. The long-term implementation of China's migration policy should result in improved coordination and management of migration processes, which will have a positive impact on the country's socio-economic development and the standard of living of the Chinese population.

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Genesis of International Commercial Custom (Lex Mercatoria): the Role of Rôles d'Oléron

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Abstract—In this article, the authors made an attempt to appraise the role and significance of the Roules d'Oleron in the formation of lex mercatoria as a special legal phenomenon on a par with the conflict of law, as well as in the development of both the national law of European countries and the norms of international trade law. It was made in a historical retrospective as historically, lex mercatoria came into existence arbitrarily, but its efficiency, timeliness and flexibility guaranteed long life. The authors identified the reasons for appearance and popularity of the Roules d'Oleron, as well as their further transformation into a broader form - lex mercatoria. Based on the analysis of various points of view, the authors come to the conclusion that the Roules d'Oleron became the basis of international commercial customs, that reflected not only in urban (statutory) law, but also in the legislation of the states of medieval Europe. The peculiarities of the content not only of the Roules d'Oleron, but also of the collections of trade customs derived from it are also highlighted and described. The article reveals various doctrinal approaches in terms of determining the significance of the Roules d'Oleron in formation of medieval legislation, as well as the preservation of its strength up to the present day.

Keywords—lex mercatoria, international commercial customs, international commercial law, history of INCOTERMS, history of UNIDROIT, history of law, international private law

I. INTRODUCTION

The issue of legal support for commercial activities which is an important part of active development of international business at the present stage should be managed first. However, the problem of unifying the rules of world trade has always been acute for mankind since the creation of the first trade relations between nations.

Despite the fact that an effective system of generally recognized rules of international trade, called "Lex Mercatoria" had already existed in our history and it stood the test of time, the creation of unified rules for the regulation of international business still continues. Unfortunately, many opponents still believe that *lex mercatoria* is nothing more than a myth.

The truth in this issue can be established only with the help of deep comprehensive historical research that deals with the process of formation and development of the rules. Today these rules are known as INCOTERMS, that mistakenly considered only since the creation of the first collection in 1936.

However, it's impossible to go against the importance of detailed international transport research as its formation begins in ancient times. Nonetheless this search is extremely difficult owing to the absence of written original sources and unified understanding of the term *lex mercatoria*.

It's proved by scientific efforts of such specialists as V.A. Kanashevsky, I.S. Zykin, M.V. Majorina, N.A. Novikova, I.A. Getman-Pavlova, J.O. Alimova, E.N. Puzyreva, A.I. Loboda, A.A. Merezko, Stephan W Schill, Monika Martišková, Ralf Michaels, Friedrich K. Juenger, Klaus Peter Berger, Gannagé Léna, Andreas F. Lowenfeld, David J. Bederman, Robilant di A., H. Berman, B. Goldman etc. However, the *lex mercatoria* and private international law research is incomprehensive. The reason is very little attention paid to the history of the issue in legal doctrine. In such a case, we should pay attention to the medieval statement that has become a legal formula «*stylus mercatorum et consuetudo debet praevalere jure communi*», and to the unexceptionable statement that «The Law of the Sea has been from the earliest times exceptional to the Law of the Land. No nation has ever claimed to exercise jurisdiction over the open sea on the ground of exclusive possession. The sea has thus been exempt from legislation in the sense of the word, in which it is said to impose upon a subject the will» [1]. The purpose of this article is to fulfill this historiographic gap. The main objective of the article is to trace the evolution of the international trade customs at the stage of their first writing and spreading in European countries.

II. METHODOLOGY

To solve this problem, the authors used traditional methods of scientific knowledge, including the dialectical method, that made it possible to identify not only the causes of genesis, but also the very fact of the existence of *lex mercatoria*. It was also used to consider it in conjunction with other legal phenomena. The historical and legal methods contributed to the disclosure of the *lex mercatoria* genesis problem. It also conducted the identification of the formation and evolution reasons of various legal institutions in the field of international trade legal regulation. The comparative and legal methods made it possible to reveal the features of international trade legal regulation, depending on the region of *lex mercatoria* usage.

III. RESULTS AND DISCUSSION

As noted by P.P. Tsitovich, all "the most important monuments of medieval commercial law mainly relate to maritime commercial law" [2]. Upwards XI century, each city presenting itself as a leader in maritime trade had its own collection of maritime customs. But closer to the XIII century it became a tradition to "consolidate maritime statutes, to regulate trade at sea, the rights and obligations of ship owners, sailors, merchants ..." [3].

In the late XI - early XII centuries. a collection of maritime customs, that extended its effect to sea voyages in the ocean and northern seas appeared in the late XI - early XII centuries. D.I. Kachenovsky suggested that these laws appeared in western Europe earlier than Consolato (approximately 11th century). They included customs and judicial decisions, that recorded at the end of each article - "tel est le jugement" [4]. The collection was called "Les Rôles ou jugements d'Oléron" and was especially popular in western European ports. There is no exact information about the collection origin. There is a legend that the French queen Eleanor of Aquitaine, wife of Louis VII, accompanied her husband to the Holy Land.

There they saw the *Consolato del mare* in its force. The *Roules d'Oleron* were drawn up by the Queen's order and named after the island of Oleron, her favorite island. It is believed that the *Roules d'Oleron* are the first written European maritime code based on ancient customs - the *Rhodes Maritime Law*. Right this period the center of international maritime trade was replaced from the Mediterranean towards the north. The island of Oleron became the main center where the Guild of Maritime Trade was placed. And disputes between merchants were also considered here. Afterwards Eleanor married the English king Henry III, she is the mother of Richard the Lion heart, so English writers dispute the nationality of the collection among the French [5; 6]. According to K. Berger, the publishing of the *Oléron Scrolls* could be associated not with Eleanor, but with her son - Richard: «However, the English *Fasciculus de superioritate maris* of 1339 contains a document stating that it was Eleanor's son, King Richard I ("the Lionheart"), who formulated the *Rôles* ("ley Olyroun") while on passage from the Holy Land. Alternatively, he may also have simply approved the work of the Queen Regent after his return» [7].

Nevertheless, the *Roules d'Oleron* formed the basis of maritime commercial law of many European states, including the states of the Hanseatic League. It also had some influence on Russian law.

Probably, it was also a private collection of practical (judicial) decisions [8], which were selected to regulate the most important issues in the field of maritime transport and trade. In reliance on the text language, this collection is attributed to French authors of the XI-XIII centuries. Despite its popularity, relating to the content it was far below the *Consulado del mar*, including 56 articles in later periods [9]. According to L. Otfel, in the original version there were 25 articles, 10 more articles are attributed to the British. After that, when it was actively used in Spain and Flanders, it was supplemented with the remaining provisions. So, the *Rules of Oleron* included 46 articles when they were in force in France during the XVI century [10].

P.P. Tsitovich claimed that only 25 articles were added much later [11]. The researchers noted that, at core, *Roules d'Oleron* is a list of the sea law customs (expressed in judicial decisions) that were in force during its formation period on the Atlantic coast. However, the functionality of this collection contributed to its further spreading. In the Middle Age this collection wasn't adopted only by France, England, Prussia, Castile but by many other countries. It was used as the basis for their national legislation. In the United States, even today, ships refer to Oleron's maritime customs [12].

Its compilations are known under the name of the Amsterdam or Enhuizen and Saverne laws. The importance of the Oleron Laws as the fundamental principle of Visby law, the Hanseatic-Teutonic regulations "Flemish and Amsterdam customs", the "Black Book" of the Admiralty was also confirmed by A.I. Dolivo-Dobrovolsky. He was referring to the fact that it is useless to speculate about the content of the lost collections of Trani, the *Pisa Ordo maris* and *Tabula Amalphitana*. Moreover, it's useless to consider the ancient foundations of the *Marseilles Statutes* of the year 1256 and the distorted *Jerusalem Assizes* of 1099, although "elements of the doctrine about the responsibility of ship owners" that are already outlined in them [13]. The epic character of the Law of Oleron was also noted. It was expressed in the presence of blank pages for additional entries.

According to T. Twiss, the *Roules d'Oleron* provisions are nothing more than the results of legal proceedings. As before Oleron became a part of Great Britain on the basis of the Eleanor and Henry II marriage, the community of Oleron was granted a number of privileges, one of which was the dispensation of judicial power in maritime matters, according to the sea customs, merchant and maritime customs. According to the available written evidence (manuscript No. 227 of the Bodleian Library of Oxford dated by 1344), such justice was carried out on Oleron until the end of the XIV century [14].

"The Black Book of the Admiralty" the Code of Maritime Commercial Law of England in early XIII-XVII centuries is directly associated with the *Roules d'Oleron*. There are different variants of the book content. As even the book that was published by T. Twiss [15] on these customs was not

reliable. The fact is that the original version of the "Black Book of the Admiralty" was kept in the archives of the Admiralty of England until 1874 and was not available, as it was considered lost.

Everyone referred to the ancient translation from French by the edition of "Rutter of the See", dated by 1536 until the end of the XIX century. The Black Book peculiarity was in absence of the word "customs" in the title like other collections. Section "C" of the Black Book was called "Sea Sentences" and included 34 articles. The phrase "Such a judgment" at the end of each clause distinguishes the English collection of customs. For the most part, the articles of the Black Book repeated the provisions of the Roules d'Oleron.

Since the Black Book was unavailable for a long time, there were about ten manuscripts (manuscripts from the Black Book), which were used by sailors: the Bodleian manuscript of the beginning of the XIV century (22 articles) - storage area is Bodleian Library in Oxford; Rawlinson's manuscript of the XIV century (24 articles) - a copy of the Laws of Oleron from the archives of the Guilds House of London, storage place is the Bodleian Library; Selden's manuscript of the 15th century - storage area is also Bodleian Library; Oleron version from 1344 - Bodleian Library; Vespasianus manuscript of the 15th century - storage area is the British Museum; Gascon version - Manuscript of the British Museum; Garcie P. Le Grant Routier 1483 (46th articles) and others.

In addition, the laws of Oleron were applied much earlier than the report of the royal judges was made to the reign of Edward III, who officially introduced these customs. The archives of London contain a copy of the Roules d'Oleron, made in 1314, as well as the second copy of the scrolls, which was included in the collection of acts called the "Book of Horn" in 1311. These provisions were actively used in English commercial courts, since there was already a clause in the Black Book about the operation of the law of King John on the captain right to sell a part of the cargo to cover necessary expenses. In addition, according to the well-known Domesday Book, all the courts of the coastal English cities applied customary law, deciding cases between merchants and sailors.

The Roules d'Oleron were also used in France, in particular, in the ordinance of Charles V of 1364, they are recommended to be used in courts to decide commercial cases involving Castilians in the ports of Leura and Garfleur. Moreover, a single text of the Roules d'Oleron was adopted in Europe in the XVII century. It happened due to the popularity of the publication in 1641, the work of the French Lawyer E. Kleirak under the title "Les Us et Coustumes de la Mer". Flanders also borrowed an early version of Oleron's Law, as the Judgments of Damme contains the first 24 articles of the scrolls without any changes. In German trade centers, in particular, in Bruges at the end of the XIV century the so-called "Purple Book" was put into operation. According to the compilers, its content is an exact copy of the Roules d'Oleron.

There was no development of trade legislation, that considered the norms on maritime transport until the end of the 17th century. In the maritime states, there were a significant number of legal acts regulating contractual relations. The generally accepted Rôles d'Oléron no longer meet modern requirements, despite editions and additions. By the end of the 17th century the French Ordinance of 1681 gained the popularity. But another set of customs was taken as the basis of the ordinance.

IV. CONCLUSIONS

The custom appeared in the form of consolidation of the most useful and effective experience of mankind in a certain area. And as the first and ancient form it is essential to the formation of both national and international law. Its role was changing at different times, but had never been canceled or challenged. On the principle that the written legislation had already been existed, maritime customs continued their ubiquitous action, and the states laws contained a reference to the operation of these rules. The importance of the Roules d'Oleron in the development of both international trade relations and in the formation of branches of international and national law is undeniable [16].

Meanwhile, T.A. Batrova points out that *lex mercatoria* ceased to be a universal law for merchants already in the Middle Ages and even then lost its significance as a legal regulator of relations [17]. This position is also supported by S. Sachs, who asserts that the merchants in the Middle Ages used mainly legislative acts - the Merchant Charter of 1303 and the Statute of the Market of 1353 [18].

However, these rigid positions contravene the surviving sources of law enforcement practice, where the provisions of trade customs were actively used in the decisions of fair courts [19]. Modern commercial practice also stands for the importance of trade customs, where the model contracts formulated on the basis of the experience of international trade associations in the lead, not the norms of international or national legislation. [20].

Despite the fact that the French Ordonance of 1681 constituted the basis of international legal regulation in the field of trade, based on the work of the lawyer Etienne Kleirak, who summarized the customs of the maritime law. It's worth noting that most of the customs from the Oleron Scroll still were included in the final text of The Ordinance of 1681. Moreover, being quite widespread in medieval Europe, the Roules d'Oleron in one way or another had a direct impact on the formation of both city (statutory) law and the national commercial law of all European countries.

The systematic editing of Rôles d'Oléron confirms the frequency of its use. It also supports the fact that Rôles d'Oléron were always brought in line with the requirements of the times and the changed conditions of maritime trade owing to the establishment of three key principles - freedom of the sea, independence of states and freedom of trade. As a result, these key principles allowed not only the maritime trade development but also the development of international maritime law in general.

This study is one of the elements of a scientific work devoted to a deep study of the history of the international commercial customs development. It also allows to determine the place and role of Rôles d'Oléron in the formation of not only the rules, but also the doctrine of private international law. These studies can be used in the further study of the international commercial customs application, disclosure of the INCOTERMS rules history and the UNIDROIT principles, the formation of a holistic conceptual view on the problem of the legal customs application in the modern world.

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Evolution of International Commercial Customs (Lex Mercatoria) in European Countries of the XII-XVI Centuries

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Abstract—This article studies the history of international trade customs formation and development on the territory of Europe in the XII-XVII centuries, analyzes the collections of trade customs known in history. The reasons for the spread of some collections and the interest decrement to another ones are also revealed in this article. The features of the commercial customs formation in large trade medieval "corporations" are also revealed, the reasons for the first consulates appearance are reflected and options for the status of the consul are revealed. The wide use of European trade customs in Muslim countries and Asian countries is also noted by the authors. In these countries they were also actively used on the basis of agreements between the rulers of the countries and large merchant guilds. The article reflects the influence of European trade customs on the formation of Russian trade law, since the well-known trading centers of Russia. The results of this article can be used in educational, scientific and practical activities by specialists in the field of jurisprudence and the world economy, and will also be of interest to a wide range of readers interested in common history.

Keywords—lex mercatoria, international commercial customs, international commercial law, history of INCOTERMS, history of law, international private law

I. INTRODUCTION

The issues of unifying the rules of international trade have always been acute for states. Trade, despite its long history, still has not received adequate legal regulation at the international level. At the present stage, the importance of international trade customs (lex mercatoria) is increasing again, as international trade by its nature requires universal rules [1]. However, in both foreign and Russian legal science, this term raises many questions, from its full-throated denial to endowing it with the status of a regulator, superior in force to international law.

This is evidenced by the research activity of specialists in this field M. Berezhev, V.F. Gelbke, A.P. Grigoriev, V.P. Grigoriev, A.A. Dyakonova, I.S. Zykina, V.A. Kanashevsky, N.A. Karsakova, L.G. Klimanov, N.V. Lazareva-Patskaya, A.I. Loboda, M.V. Majorina, A.A. Merejko, G.G. Mikaelyan, N.A. Novikova, I.L. Tannenbaum, G.F. Shershenevich, H. Berman, Klaus Peter Berger, David J. Bederman, Braudel Fernand, B. Goldman, Peisson E., Pigeonneau H., Roussel A., Stephan W. Schill, Monika Martišková, Ralf Michaels, Friedrich K. Juenger, Gannagé Léna, Andreas F. Lowenfeld, Robilant di A., Tracman L. et al.

Discussions about the existence of *lex mercatoria* require a more detailed study of the historical side of this issue. Meanwhile, there are very few historical and legal studies on the formation and development of international commercial customs in the modern doctrine. The history of the *lex mercatoria* evolution during the Middle Ages has not been studied in detail. The purpose of this article is to fulfill this historiographic gap. The main objective of this article is to trace the history of the formation and development of international commercial customs (*lex mercatoria*) in Europe in the XII-XVI centuries. This chronological framework was not chosen by chance, as from the end of the 16th century there was a consolidation of customary rules of international trade in the national legislation of European countries, that gradually changes the status and meaning of *lex mercatoria*.

II. METHODOLOGY

To solve this problem authors used the methodological principles of historical knowledge, such as historicism, scientificity, objectivity, integrity and consistency along with the methods of scientific knowledge traditional for jurisprudence. The evolution of international commercial customs was viewed as an integral legal phenomenon in a specific historical period of the XII-XVI centuries in close interaction of objective and subjective factors. Study of the formation of international commercial customs in Europe in the Middle Ages was based on general scientific methods: analysis, synthesis, comparison and generalization, which allowed the authors to analyze the main problems of the formation and development of general principles of international trade. The comparative-legal method made it possible to reveal the features of international trade regulation on the legal base, depending on the region of use of specific collections of maritime trade in medieval Europe. The authors had an opportunity not only to research but also to evaluate the results of the activity of the compilers of medieval maritime trade customs collections due to the retrospective method of study. This method also allowed to determine the effectiveness degree of decisions taken by states.

III. RESULTS AND DISCUSSION

The fall of Roman Empire almost had no influence on a radical change of the legal framework of newly formed "barbarian states". Initially, the relations established between the new states were highly private. Its basis was the trade regulated by the norms of Roman law. Due to the *jus gentium* in Roman law, that made it possible to create a strong legal basis for trade relations. This legal basis covered even new forms of trade relations, unknown to Roman law. K. Gareis directly points to the joint influence of cultures and the active reception of foreign norms in the course of implementation of foreign trade [2].

These relations became a basis for the principle of free sea trade. It arises and receives its development due to those relations. This principle is extremely important for the evolution of commercial customs. However, freedom of maritime trade was not unconditional, everything depended on the presence or absence of contractual relations. The need for new forms of civil transactions also arose right in the Middle Ages [3]. The establishment of a feudal regime led to the decline of all industry in Europe, as well as all types of trade and navigation. Despite the feud between the emperors and the papacy, they all agreed on the unity for the struggle against cities and international trade. It was made because of religious fanaticism towards foreigners that caused significant harm to trade [4]. However, some Italian cities, which escaped invasion and enslavement, proclaimed sea trade as their main activity. In the Middle Ages, all maritime trade was concentrated primarily in the Mediterranean region.

Severe political problems and a rather closed sphere of activity did not allow it to be regulated *de jure*. Due to this situation, collections of decrees as lists of customs appeared in the field of maritime trade law. Institutions accompanying sea trade - the activities of brokers, commission agents, charterers - also receive rapid development in this period.

The activities and customs of Marseille and Barcelona deserve special attention in this area in spite the fact of their inferior to Venice, Genoa, Pisa and other Italian cities. Meanwhile, Marseille and Barcelona were successfully engaged in maritime trade. The custom was the first manifestation of trade practice. Collections of customs of that time were widely represented, but many of them had extremely local significance: *Ordinamenta et consuetudo maris edita per consules civitas Frani* 1063, Arles statutes 1150, Montpellier 1223, Marseille 1253, Genoa 1186, Aragon 1270 and 1340, Barcelona 1258, *Breve della curia del mare* 1298 and 1305, Hamburg 1301-1306, Danzig 1429, Revel 1482, Lubeck 1537, Florence statutes 1577. etc. [5].

The collection of maritime customs especially popular in western European ports "*Les Rôles ou jugements d'Oléron*" was fixed in the northern seas in the late XI - early XII centuries. During the research period it's possible to note only the Brussels Ordinance of Charles V of 1551 and Edict of Charles IX in France of 1563 as at that time in the field of merchant shipping a lot of legislative acts weren't issued. At the same time, all these documents had a casuistic character, that allowed to solve momentary problems in private order, that was caused by an underestimation of the sea trade importance.

The Northern and the Western Europe began to develop maritime trade as the basis of economic prosperity only by the end of the Middle Ages [6]. The customs of Northern Europe became dependent on Italian trade customs and the provisions of Roman law that caused subsequently transformation into their own local statutes of the merchant class. For a calm sea trade merchants began to unite in whole flotillas, accompanied by escort vessels. In addition, the bills of exchange were introduced by Lombard merchants and banks were organized in Venice in the 12th century along with many other important things etc. [7].

Gradual transformation of trade customs into the generally admitted law indicates its power [8]. As a special judicial system, the institution of the consulate receives a new spur in development. It is worth noting that in Roman classical law, commercial law was not detached. The direct difference between commercial and civil law appears only in the Middle Ages [9].

The formation and development of maritime trade law was connected to the appearance and development of a number of institutions, in particular, the institution of agents. The institution of agents included people in foreign state who defended the interests of their compatriots, conducting commercial affairs abroad. In the Middle Ages, trade agents began to be called consuls, who initially had the position of elected judges to resolve conflicts between merchants. Later they officially received the right to administer justice. This fact caused the development of international trade law.

A new custom has emerged: "where three merchants come together the position of consul or arbitrator is assigned to one between them, at the choice of the others [10]. Merchant guilds received the right of jurisdiction over their members, having their own judicial bodies and the right to apply not only the law, but also trade customs, right before the states got it. A distinctive feature of this period was the fact that all "new forms of transactions that manifested themselves in commercial practice, were lead under the principles of Roman and canon law" [11].

As a result of this practice, the ancient commercial law was gradually supplanted, but the new rules extended their effect extremely to the people belonging to some "corporation". At the same time, collections of maritime customs and judicial codes of sea merchant ships and consuls made it possible to develop a certain set of general basic concepts of maritime trade law. These concepts could have insignificant differences depending on local conditions [12].

All coastal cities engaged in trade made a lot of efforts to establish a consul on the territory of a foreign state. It often led to open armed conflicts between competitors. By the XII century the

custom of establishing a consulate became a general rule. It is believed that the first consuls from Christians were admitted to the Saracens in Palestine around 800 years [13].

The rapid development of the consulate shows that the trade interests overlapped religious differences. Sea trade continued even during the time of the Crusades. It is extremely difficult to establish the limits of the consuls' power. It is understood that in Muslim countries the powers of consuls were much broader than in Christian states.

At the same time, it is known that the limits of the consuls' jurisdiction were established by the monarch of the receiving part and were confirmed by a special act - capitulation. In fact, this act was unilateral and did not create any obligations. Under certain circumstances it was also canceled unilaterally [14]. The consul was empowered to decide civil and commercial matters where his compatriots were as a disputing party.

The consuls of Venice achieved significant privileges in Byzantium and the Golden Horde. The reason is their ability to deal with cases where the role of the defendant or plaintiff was taken on by a Venetian. In 1322 there was the first mention of the Venetian consul representing the commercial interests of Venice in Tana (Azov) [15]. It is known that since 1333 there was a treaty between Venice and the Tatar emperor Uzbek. According to this treaty the consul of Azov (Tana) considered commercial affairs together with the daruga – prince, i.e. consul status was extremely significant. It is assumed that all this is the result of already established relationship [16].

The consul status and powers equated to a qadi (religious judge in the Muslim community) were established in Kumanikus Code, existing in the Golden Horde at that time [17]. Moreover, the consuls could apply national law on the basis of existing agreements. In particular, representatives of the Teutonic Hansa obeyed only their own law and courts, regardless of their trade place [18].

The power of the Venetian consul in Armenian Kingdom of Cilicia is evidenced by the text of trade treaties dated 1245 and 1271. According to those treaties, the consul had the authority to deal with the affairs of the Venetians. In addition to this, the consul was regarded as a public individual who was affected only by his government and had complete independence from the receiving party [19].

Assizes de Jerusalem (1099) are concerned with the consuls and magistrates of the sea. When The Crusaders seized a part of the territory in the East, they were forced to solve numerous questions of merchants and sailors. Assizes are associated with the appearance of international maritime law [20]. It was impossible to solve maritime questions with the civil proceedings rules as the civil cases were solved by duel. The crusaders courts began to apply customary merchant law. It resulted in the appearance of a special set of laws.

Jerusalem Assizes (Assises de royaume de Jérusalem) were divided into 2 parts: baronial assizes (les assises des barons) and petty-bourgeois assizes (les assises des bourgeois). The petty-bourgeois assizes contained decrees on sea trade and were applied by consuls or maritime magistrates. Between 1162 and 1173 the Maritime Laws of the Kingdom of Jerusalem joined the petty-bourgeois assizes body. King Amaury added material and procedural norms into the assises.

Maritime laws began from the 43d chapter of the bourgeois assizes. According to them the consideration of cases between merchants and sailors was carried out in the maritime chamber - the so-called "chain court" [21]. The significance of assizes in the formation and development of international commercial customs is ambiguous. Amory restored assizes after their lost in Cyprus, but in 1194 they were lost again and were restored by Jean-Ibelin. In 1535 the Venetians translated them into Italian, the gaps in Assizes were fulfilled by the French, Greek and Italian customs. "Jerusalem assizes" were viewed as a law book, not as the code [22].

Despite the creation of new laws, the Rhodian law still was particularly influential in the form of the Byzantine legal monument "Lex Rhodia de jactu". However, its provisions were so scanty that it was necessary to resort to other regulations of maritime trade relations. In the field of maritime trade there was an urgent need for precise and general rules, since all the monuments of medieval trade law related to maritime trade law [23].

Since the 11th century, each city that positions itself as a leader in maritime trade has its own collection of maritime customs. By the XIII century, “to consolidate maritime statutes, to regulate trade at sea, the rights and obligations of ship owners, sailors, merchants ...” became a tradition [24]. Particularly, the collection called “Tavola di Amalfi” (Tabula Amalphantana) was in its force in Amalfi [25]. However, in the XI century, other Italian cities took the lead at sea. But the popularity of this collection was quite significant, as was established later – its surviving copy was found only in 1844 in the Vienna Imperial Library [26].

The Amalfi tables of the Vienna counterpart contained 66 chapters, and all of them were devoted to the regulation of maritime trade relations [27]. The probable date of the Amalfi tables compilation is the XI-XII centuries. However, there is an assumption only of the local significance of "Tavola di Amalfi", as well as the ancient collection of sea customs of the city of Pisa - *Ordo maris* of the 12th century [28]. The Statutes of Pisa, published in 1160, were renewed and supplemented in 1225. At the same time, it is believed that the "case of legal settlement of maritime relations" was spread to the entire Mediterranean and the Adriatic from the Amalfi customs [29].

French doctrine recognizes the special role of the Amalfi Laws [30]. They were used until the 16th century under the Latin name "*Capitula et ordinationes Curiae Maritimae nobilis civitatis Amalphe*". The "conosamento" that was used in the carriage of goods and proving the fact of the contract, gained its popularity due to the texts of this collection. Later, as a document in Italian practice, "conosamento" was called "Polizza di cario".

After the fall of Amalfi, Venice, Genoa and Pisa began to share the status of the leading maritime power. The first Venice laws on navigation are almost unknown, but in 1255 the "*Capitulaire nauticum*" was published. It included 126 articles and regulated contracts in sea trade and issues of insurance against risks. It is worth noting that all contemporaries admired the power of the Venetian fleet and the system of merchant galleys (*galero da mercato*) [31]. The trade policy of Venice towards foreigners was also different.

When German merchants sold their goods in Venice, they could buy only Venetian goods, it was overseen by a special agent. For the citizens of Venice, it was forbidden to trade with the German goods in Germany, so all German merchants came to Venice in person [32]. The statutes of Split, Lezina, Scardona and other cities were also well known in that time, but they almost completely copied the Venetian maritime customs.

The city of Marseille, a former Phoenician colony, deserves attention as in 1203, Marseille and Genoa signed an agreement on joint maritime trade [33]. Marseille had its own ancient maritime trade customs, probably related to the ancient Phoenician laws. In written form the customs were fixed in the book of the Marseille statutes (*Statuts de Marseille*) of 1256 as the special importance were given to them, especially in the regulation of maritime trade relations in France [34].

Most scientists prefer the well-known collection "*Consulado del mare*" (*Consolato del mare*, *Consulat de la Mer*, *Consulatus maris*), that was in force on the Mediterranean and Adriatic seas, including the Middle East. The collection included both ancient customs and the provisions of later Byzantine law. At that time this collection had no equal, in terms of the importance of its decisions [35]. In terms of content, this collection was a practical guide, included consular decrees on various issues of maritime practice, combined almost all the customs that were in force at that time in the Mediterranean.

It is supposed that, it was formed in Barcelona (in some sources Marseille was mentioned). In addition, these maritime customs could have been formed in Pisa, as its "*Consuetudini di mare*" nautical customs were approved by Pope Gregory VII in 1077. It is considered that the period of "*Consulado del mare*" formation was a fairly long period of time: from the XI to the XIV century, inclusive. This collection was not edited, but was gradually supplemented by later resolutions [36]. It was also believed that the maritime trade experts compiled their own *statuti de mercanti*. The synthesis of these collections in the XIV century resulted in the appearance of famous book "*Il Consulate del Mare*".

Even Venice changed its statutes to Il Consulate del Mare [37]. D.I. Kachenovsky argued that Barcelona is the birthplace of this collection, as the researched era had freedom of trade, regardless of faith. In addition, the courts (consuls) of Barcelona had unconditional authority among sea merchants, and the consuls' decisions eventually compiled a collection of maritime customs "Consolato del mare" [38]. The collection contained the norms of material and procedural law. It was especially noted that the Consolato del mare was not a law, but its significance was great and was recognized by all seamen of the indicated region [39].

The appearance and development of special ships – "curiae maritimae" was driven by the special relationship developed during the evolution of maritime trade. Despite its practical orientation, the Consulat did not create new legal norms, its content reflected only the maritime customs of the Mediterranean Sea that have existed since ancient times. Afterwards, this collection became the basis for the French Maritime Ordinance in 1681, as well as the French Commercial Code, and then for the legislative acts on trade in a number of European states. The great international legal significance of this collection was noted as many of its customs were confirmed by international treaties of the 13th-15th centuries [40].

In the northern seas, there were other collections, but almost all of them represent borrowings from the ones presented above (mainly also from the Oleron Law), taking into account national characteristics (supplemented by Dutch customs). The maritime trade of Germanic nations performed maritime trade quite actively, even in the 9th century. Among the partners were England (the granting of privileges to German merchants for trade in London by King Ethelred in 1000; the treaty of Frederick I with Henry II of 1157, etc.), Russia (agreements with Novgorod and Smolensk) and other northern states. A feature of German trade was that it was conducted exclusively on merchant ships provided with the necessary weapons and security.

A collection of maritime customs Les Coutumes d'Amsterdam, d'Enchuysen et de Stavern that reproduced the Rôles d'Oléron appeared in Holland from the XIV century. Despite the compilation, Jugements de Damme and Jugements d'Amsterdam were of vital importance in the development of merchant shipping in the North of Europe [41]. However, a collection of the 15th century called "Wisby Maritime Law" (Hogeste Water-Recht tho Wisby) was of great importance in this region. Almost all the states of the Baltic basin adopted these customs, as a whole they were called "lois de Wisbuy" [42].

A.N. Stoyanov mentioned the importance of the Visby law collection, as its appearance is also disputed by the Netherlands, Denmark (Copenhagen) and Germany (Lubeck). However, the Visby rules, like many other later collections, are a compilation of the Oleron, Amsterdam and a number of other statutes [43]. Wisby law became widespread, as in the XI-XII centuries the city of Wisby became a large trade center. In 1158 the city of Lubeck founded a trading company in the city of Wisby - "hanza" - "partnership", due to the equidistance from the main seaports. In this trading company each nation had its own representative agency, and they could have a whole street or quarter.

The Wisby rules contained 66 articles, 25 of them fully reproduced the rules of Oleron, while others repeated the customs of Amsterdam. All collections are dedicated to private navigation. The Hanseatic League as a "society of German merchants" was formed when a number of port cities and trade centers of German lands (Bremen, Lubeck, Riga, Dortmund, Munster, etc.) concluded a trade agreement with Smolensk prince Mstislav Davydovich in 1229. An agreement between Smolensk, Riga, Wisby and other German cities were called "Smolensk trade truth." German and Gotland merchants had trade agreements with Novgorod back in the 10th century [44].

After 1241, when the city of Lubeck became a leader, as the natural head of the trading community it began to conclude trade agreements on behalf of "all merchants of the Roman Empire". In 1349, the court of Lübeck was proclaimed as an appeals instance for all trade cities of the union. It also included Novgorod. Maritime trade in the northern seas was almost monopolized. Since 1280 Lubeck and Visby marine forces ensured the protection of trade in the Baltic [45]. During its existence, Hansa has developed collections of commercial law called recessions.

Delegates meetings were held in Lubeck annually. Trade development and protection were the main issues. Resolutions were signed before the departure of the delegates. The first collection of recesses, the so-called "Code of the Hansa" - "Collection of resolutions (recessions) of the Hanseatic cities" (*Jus Anseaticum maritimum*) was issued in 1591 and revised in 1614 [46]. Court decisions were made on the basis of the recessions, and were commented on by lawyers. These rules were systematically edited and satisfied the realities of the sea trade life. However, the code contained only certain statutes provisions of the cities included in the Hansa, that were based on Roman law.

At the end of the XVI century, one of the last private collections of maritime customs - *Guidon de la mer* appeared in France. Its status is somewhat different from that of previous collections, as it's officially supplemented by decrees and ordinances of the French kings. There was an idea that "the period of customary law in the history of the maritime law ends with this particular monument" [47]. There is a version that it was compiled in France, in Normandy, in the city of Rouen, by an unknown merchant.

At the same time, it is worth to note the originality of this collection, it did not duplicate the well-known law codes as it mainly regulated the issues of insurance and the issuance of *lettres de marge* [48]. As noted by E.L. Limonov, in the XVI century, *Guidon de la mer* first mentioned the bill of lading as a document where the captain had to indicate the quantity and quality of the cargo, while the collection clearly distinguished the charter and the bill of lading [49]. The provisions of the collection were almost completely included in the ordinance of 1681. The decline of *lex mercatoria* is associated precisely with the strengthening of feudal power and the development of both national and international law [50].

IV. CONCLUSIONS

Prototypes of many modern sub-institutions of international trade law appeared during the researched period. Despite irreconcilable contradictions, during the Middle Ages there was an urgent need for international regulation of maritime trade. However, the rivalry between trade competitors strengthened the practice of legal piracy. In addition, only by the XV century administrative legislation has been developed in the states, as it had a significant impact on sea trade. During this period, the problem of subjection to the foreign laws in the sphere of trade was especially acute, as there was no uniform practice.

So, first the Venetian, later the Hanseatic merchants were given the right to obey exclusively their own laws. However, while some traders had such privileges, others were obliged to obey foreign laws and foreign courts. And during the period of the territorial principle dominance, even the representatives of powerful merchant guilds were forced to abandon the privileges of the national right in order to preserve trade relations with a number of states. Closer to the XVI century the principle of mutuality was developed in Europe. Francis II issued patents allowing Swedish merchants to be tried by their own courts in any conflict. He made it in France in the middle of the XVI century.

Regarding the legal basis of international trade, the following can be noted: firstly, maritime trade law was a mixture of statutory, customary and case law; secondly, a characteristic feature of the commercial law of cities, states and unions of this historical period was the wide practice of the norms borrowing, and due to the difficulty of determining the creation date of this or that collection of customs in the early Middle Ages, it is rather difficult to establish the original source; thirdly, despite the loss of its former significance, Roman law had a fundamental influence on the formation of international commercial customs; fourthly, the formation and development of the rules of international trade was significantly influenced by the own customs of each port, where the ship called along the route.

The customary unified commercial maritime law that developed in the Middle Ages became the basis of the national legislations of the European states of the 17th and subsequent centuries, while continuing its own action. It's impossible to agree with the opinion of those who deny the existence of *lex mercatoria* on the territory of Europe, starting from the XI century. This article is a part of a series of articles devoted to the evolution of international commercial customs (*lex mercatoria*), which had a significant impact on the formation of the doctrine of private

international (conflict of laws) law. The findings of the study prove the existence of non-national international trade customs (*lex mercatoria*). Many institutions of commercial, international, maritime and civil law have developed due to their continuous operation.

These research can be used in the further study of the application of international commercial customs, disclosure of the history of the private international law doctrine, the formation of a holistic conceptual view of the problem of the application of legal customs in the modern world, will be of interest to specialists in the field of jurisprudence and economics, as well as to a wide range of readers interested in history of Europe.

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Features of the Development of the World Oil Market in Conditions of Coronavirus Pandemic

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Abstract—This article considers the features of the world oil market development in modern conditions. The world oil markets significantly affected by uneconomic factors in particular pricing processes, primarily political ones. Economists predicted the beginning of the global economic crisis in 2020. The coronavirus pandemic has also been added to the main and traditional causes of the economic crisis, such as cyclicity of economy, declining of economic growth rates and falling of financial market indicators, which has affected all spheres of society. The impact of coronavirus on the world oil market is determined by the correlation-regression analysis: the price of oil has acquired a high negative dependence upon the number of newly infected with coronavirus; the dependence of price of Brent oil on the number of new infected COVID-19 is semilogarithmic. This article defines the significant impact of the coronavirus pandemic on the world oil market, which is expressed in a decrease in demand, a reduction in production rates and will primarily affect oil-producing countries that are forced to transform their economies in these conditions.

Keywords—energy resources, world oil market, oil price, coronavirus pandemic, correlation-regression analysis

I. INTRODUCTION

Many economists predicted the onset of the global economic crisis just in 2020. Record values of indices indicated that the economy is overheating and the impending stage of recession both on the world stock exchange (Dow Jones Index, S&P 500) and on the Russian financial market (RTS and MICEX Indices). But no one could have imagined that this recession would arrive under the wing of a real "black Swan", so named coronavirus pandemic COVID-19 that broke out in the Chinese city of Wuhan and then spread around the world.

Quarantine measures, massively introduced in many countries, have suspended business processes in many areas, from tourism and entertainment to wholesale of certain types of products. According to the April forecasts of the IMF, the world economy will miss 3% of GDP or 2.6 trillion US dollars in 2020 due to the outbreak of COVID-19 [4]. The oil and gas industry will also face big losses. The price of a barrel of Brent dropped by 67% over the three quarantine months, from 60 \$ to 20 \$. Of course, the fall in price is largely due to the oversupply that prevailed even before the crisis began. However, the impact of coronavirus on oil prices cannot be denied either.

II. METHODOLOGY

As part of this study, it was decided to test the impact of coronavirus on the global oil market using correlation and regression analysis. The economic and statistical research method was chosen due to the fact that it can be used to unambiguously determine the presence or absence of a relationship between various parameters.

Taking into account the fact that quarantine measures due to the need to contain the spread of infection objectively lead to a decrease in demand for energy resources, all other things being equal, the price of oil should go down. Let's put forward the following hypothesis: there is a noticeable inverse relationship between the rate of spread of the coronavirus and the price of oil. Average (moderate) in this study is considered a correlation from 0,5 to 0,7 on the Chaddock scale.

To conduct a qualitative analysis, statistics were collected for more than three months (Table 1). The starting point for the analysis was January 20, since it was on this day that the first cases of infection not outside China (South Korea, USA) became known. In addition, it was on January 20, 2020 that China officially confirmed that the virus is transmitted from person to person even before the onset of symptoms of the disease during the incubation period.

TABLE III. INITIAL DATA FOR THE CORRELATION AND REGRESSION ANALYSIS

Data	Brent 1 oil price, USD/ barrel	Number of new cases of coronavirus infection ² , units
	<i>y</i>	<i>x</i>
21.01.2020	64,59	151
22.01.2020	63,21	133
23.01.2020	62,04	265
24.01.2020	59,89	468
25.01.2020	59,89	703
26.01.2020	58,69	786
27.01.2020	58,58	1 778
28.01.2020	58,81	1 482
29.01.2020	58,91	1 755
30.01.2020	57,33	1 994
31.01.2020	56,62	2 134
01.02.2020	56,62	2 609
02.02.2020	55,66	2 277
03.02.2020	54,45	3 111
04.02.2020	53,96	3 992
05.02.2020	55,28	3 717
06.02.2020	54,93	3 210
07.02.2020	54,47	3 076
08.02.2020	54,47	3 223
09.02.2020	53,96	3 421

Data	Brent 1 oil price, USD/ barrel	Number of new cases of coronavirus infection ² , units
	<i>y</i>	<i>x</i>
10.02.2020	53,27	2 214
11.02.2020	54,01	2 050
12.02.2020	55,79	15 135
13.02.2020	56,34	4 220
14.02.2020	57,32	2 728
15.02.2020	57,32	2 146
16.02.2020	57,12	2 185
17.02.2020	57,67	2 029
18.02.2020	57,75	1 878
19.02.2020	58,72	532
20.02.2020	58,80	532
21.02.2020	57,94	1 072
22.02.2020	57,94	1 359
23.02.2020	56,33	357
24.02.2020	55,77	784
25.02.2020	54,26	645
26.02.2020	52,81	964
27.02.2020	51,73	1 407
28.02.2020	49,67	1 368
29.02.2020	49,67	2 414
01.03.2020	49,41	1 802
02.03.2020	51,90	1 927
03.03.2020	51,86	1 837
04.03.2020	51,13	2 950
05.03.2020	49,99	2 672
06.03.2020	45,27	3 851
07.03.2020	45,27	4 254
08.03.2020	35,93	3 886
09.03.2020	35,79	4 170
10.03.2020	37,44	5 204
11.03.2020	35,67	7 133
12.03.2020	33,22	9 526
13.03.2020	35,44	5 617

Data	Brent 1 oil price, USD/ barrel	Number of new cases of coronavirus infection ² , units
	<i>y</i>	<i>x</i>
14.03.2020	35,44	12 562
15.03.2020	34,58	9 648
16.03.2020	31,41	18 220
17.03.2020	30,45	12 820
18.03.2020	28,76	23 746
19.03.2020	30,43	27 908
20.03.2020	29,00	29 673
21.03.2020	29,00	31 703
22.03.2020	28,16	35 692
23.03.2020	29,82	36 086
24.03.2020	29,82	42 584
25.03.2020	29,98	50 285
26.03.2020	29,22	60 433
27.03.2020	27,95	53 507
28.03.2020	27,95	82 085
29.03.2020	26,85	53 953
30.03.2020	26,42	62 650
31.03.2020	26,35	73 877
01.04.2020	24,74	77 146
02.04.2020	29,94	79 511
03.04.2020	34,11	83 569
04.04.2020	34,11	101 922
05.04.2020	31,70	67 957
06.04.2020	33,05	75 790
07.04.2020	31,87	82 353
08.04.2020	32,84	83 994
09.04.2020	31,48	90 805
10.04.2020	31,48	98 264
11.04.2020	31,48	79 652
12.04.2020	34,08	74 043
13.04.2020	31,74	71 272
14.04.2020	29,60	70 918
15.04.2020	27,69	90 281

Data	Brent 1 oil price, USD/ barrel	Number of new cases of coronavirus infection ² , units
	<i>y</i>	<i>x</i>
16.04.2020	27,82	76 216
17.04.2020	28,08	87 065
18.04.2020	28,08	81 123
19.04.2020	27,73	58 144
20.04.2020	25,57	92 112
21.04.2020	19,33	74 306
22.04.2020	20,37	79 961
23.04.2020	21,33	85 005
24.04.2020	21,44	111 036
25.04.2020	21,44	88 094

Source: “Dynamics of the price of Brent crude oil for 2020”, Calculator reference portal, 2000-2020, URL: https://www.calc.ru/dinamika-Brent.html?date=2020_13_2, Coronavirus website (COVID -19), 2020, URL: <https://coronavirus-monitor.ru/statistika/>

The first part of this study is regression analysis. The parameter *y*- the dependent or explained variable – in the regression model was the price of Brent crude, expressed in US dollars. The daily number of new cases of corona virus infection was chosen as the explanatory variable *x*. It was decided to start the study with linear regression modeling ($y = a + bx$). The value of the *y* parameter at the reporting point was 65. The number of people infected with COVID-19, in turn, by January 20 was 217 people. The results of the regression analysis carried out using MS Excel are shown in figure 1.

<i>Regression statistics</i>	
Multiple R	0,814797862
R-square	0,663895556
Normal square R-	0,660319977
Std.mistake	7,92180509
Observation	96

<i>Analysis of variance</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>F</i>
Regression	1	11652,03192	11652,03192	185,674969	5,56E-24
The remainder	94	5898,969614	62,75499589		
Total	95	17551,00153			

	<i>Coeff.</i>	<i>Art.mistake</i>	<i>t-stat.</i>	<i>P-.....</i>
Y-intersection	51,75438529	1,064020725	48,64039213	1,9342E-68
Variable X 1	-0,00030997	2,27476E-05	-13,6262603	5,5616E-24

<i>Bottom 95%</i>	<i>Upper 95%</i>	<i>Bottom 95,0%</i>	<i>Upper 95,0%</i>
49,6417472	53,86702338	49,6417472	53,86702338
-0,000355131	-0,00026478	0,000355131	-0,0002648

Fig. 2. Output of the results of the regression model

As can be seen from Figure 1, the coefficient of determination R² of the given model is 0.664, or 66.4%. This R-squared value indicates that the calculated parameters of linear regression

explain the relationship between the number of new infections and the price of oil by 66.4%. The indicator above 60% speaks about the “good” quality of the model, however, it would be wrong to consider it “good” – for this R2 should be more than 0.8.

As for another indicator that serves as a litmus test for the regression model – the y-intersection coefficient – in our case it is 51.75. Interpreting this result to a given model, we conclude that in the absence of new cases of corona virus infection, the price of Brent crude should rise to \$ 51.75/ barrel in the medium term. This value is rather hypothetical, since the price of oil depends on many other factors not included in the linear regression model. However, the value of the coefficient clearly indicates that the oil price will not return to the previous quotations after the end of the pandemic.

Finally, the coefficient of the variable x, equal to- 0.0003, represents the weight of the variable x on y. In our case, the number of new cases of corona virus infection affects the price of a barrel of Brent crude with a weight of -0.0003, which indicates a small degree of influence. The negative sign of the coefficient is more important in this model, since it demonstrates the unambiguous inverse effect of the parameter x on y: the newer infections, the lower the price.

Let us move on to correlation analysis. This economic and statistical method helps to find out the presence or absence of a relationship between the sample indicators. In our study, correlation will find out whether it is possible to predict the value of another parameter based on the value of one variable. The results of the correlation analysis carried out using MS Excel are shown in Figure 2.

Column 1	Column 2
Column1	1

Fig. 3. Conclusion of the results of correlation analysis

The correlation coefficient, ranging from -1 to 1, in this model is -0.8148. This value on the Chad dock scale indicates “-“ sign, in turn, demonstrates the inverse relationship. Such a high value of the correlation coefficient proves the statistical significance of the influence of the number of new cases of corona virus infection on the price of a barrel of Brent oil. The proven dependence allows us to turn to the combined correlation-regression analysis, implemented using a scatterplot and plotting a trend line in MS Excel (figure 3).

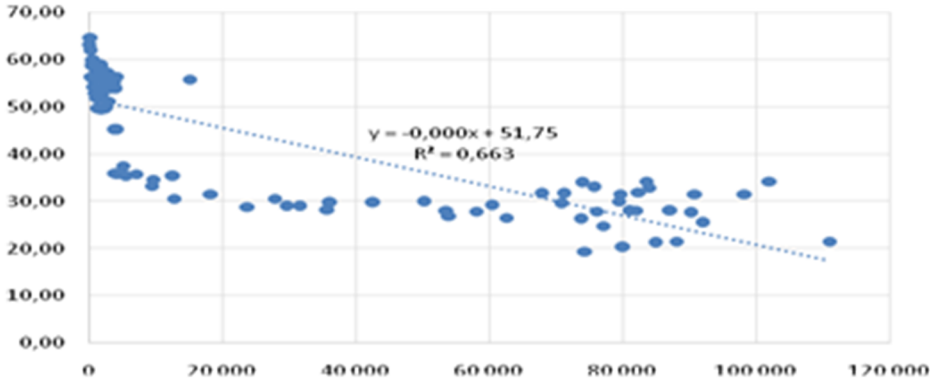


Fig. 3. Linear Regression Model

Looking at Figure 3, it becomes clear why the coefficient of determination of the regression model was at a level less than 0.8. Linear regression does not fully reflect the relationship between the indicators in the given model, and this is due to the fact that the dynamics of the number of new cases of corona virus infection in world is exponential.

By selection graphically, looking at the R-square value, we find that the logarithmic regression model ($y=b \cdot \ln(x)+a$) most accurately reflects the relationships between the number of new cases of corona virus infection and the oil price. The results of the correlation and regression analysis are shown in Figure 4.

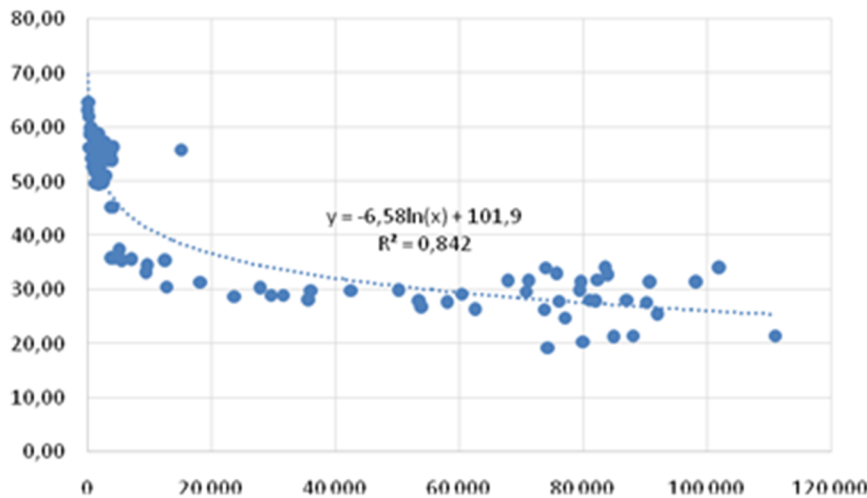


Fig. 4. Logarithmic Regression Model

Figure 4 shows that the logarithmic function most closely follows the location of the elements of the regression model. In addition, the value of the coefficient of determination of the logarithmic model is the highest, which means that it is this model that reflects the relationship between the number of new cases of corona virus infection and the price of oil. The quality of the described model is 84.3%.

The explanatory variable coefficient in this model cannot be determined directly by looking at the equation. However, through several logarithmic transformations, it is possible to establish that with an increase in x by 1%, y grows by $-6.587/100$ units. Note that the above model is the least common semi-logarithmic model, since the logarithm is only available for x .

III. RESULTS AND DISCUSSION

Correlation-regression analysis allows us to draw the following conclusions about the peculiarities of the development of the world oil market during the corona virus pandemic:

- the price of oil has acquired a high negative dependence on the number of newly infected with corona virus infection;
- even in the context of the recovery of financial markets after the pandemic, the oil price in the medium term will not rise above \$ 50/ barrel;
- the dependence of the price of Brent oil on the number of newly infected COVID – 19 is semi-logarithmic;
- the weakening of demand for energy resources, caused by quarantine measures and supported by the surplus of supply formed even before the crisis, even if the OPEC + market is regulated, will collapse oil quotes for a long time.

IV. CONCLUSIONS

The results of the analysis of the impact of the corona virus pandemic on the world oil market and the decisions of OPEC + adopted in 2020 indicate a major transformation of the world oil market. If 5 years ago, economists warned of an impending energy crisis, now in 2020 the world is facing an unprecedented consumption crisis. The geopolitical games of the exporting countries have led to an excess of supply in the oil market. The corona virus pandemic has forced to reduce oil consumption in the transport industry – the main buyer of energy resources – by 80%. Under these conditions, the main goal of the oil producing countries is to prevent the full filling of oil storage facilities in the world.

The negative impact of the spreading corona virus pandemic on the oil market is becoming threatening. The next season of disclosure of corporate reporting will demonstrate to shareholders significant losses of oil producing companies. As a result, many investors will leave the oil industry and most small and medium-sized oil producers go bankrupt. The resulting surplus of supply will force countries to resort to conservation of wells, which will be accompanied by significant costs. All this will lead to a colossal recession in the world economy.

Even taking into account the planned value of \$ 40/ barrel, Russia lost more than 2 trillion dollars of export in March-April. Considering that the demand in the oil market has dropped by 30 %, the oil price will continue to fall. A possible second wave of the spread of the corona virus under these circumstances could reduce the aggregate demand for oil to 20 mbd (million barrels per day), while in the fourth quarter of 2019 this figure was 100 mbd. Thus, the second wave of infection, if it occurs, will lead to a deep recession in the Russian oil-dependent economy.

The current situation significantly reduces the role of oil in the geopolitical arena, gradually turning it into an ordinary exchange commodity. Even with a rapid showdown in the spread of corona virus infection, oil prices can actually drop to zero. Rapid loading of oil storage facilities can lead to a forced shutdown of oil production in a number of countries. In view of the almost complete lack of the ability to directly regulate the market, it is likely that OPEC will outlive itself and cease to operate long before the end of 2022, before which the last OPEC+ agreement was concluded. The transformation of the world oil market, thus, will serve as the basis for the transformation of oil-dependent economies, including Russia, towards the development of their own production facilities and the knowledge industry.

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Assessment of the International Cross-Countries Investment Flows: Empirical Evidence from Russia and China

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Abstract—The present paper differentiates the bilateral investment flows into the cross-countries FDI flows and the mutual bilateral FDI flows. The latter presumes deep and significant investment linkages between the pair of countries. The study introduces the indicators and criteria of the mutual bilateral FDI flows which provides detailed picture of the bilateral investment relationship. The results suggest that the bilateral Russian-Chinese FDI flows were not mutual for the period 2014-2019. The study reveals the inadequacy of official bilateral FDI flows statistics and advocates the usage of ultimate recipient country FDI statistics for the examination of the bilateral investment relationship. That together with the usage of introduced indicators of the mutual FDI flows will provide a more accurate and precise snapshot of the bilateral investment relationship of any pair of countries. The introduced indicators provide the tool for such evaluations but dependent FDI flows ultimate investor data are required for the additional insights into the investment cooperation policymaking.

Keywords— foreign direct investment (FDI), mutual FDI, bilateral FDI flows, FDI statistics, Russia, China

I. INTRODUCTION

A. Introduction

The object of the present paper is to examine the cross-countries Russian-Chinese FDI (foreign direct investment) flows and to reveal whether they are mutual. For that purpose, the study introduces the criteria of the mutual bilateral FDI flows.

The advantage of using these criteria is fourfold. First, the analyses of cross-countries relationship in absolute values will reveal the size of bilateral FDI flows. Second, the usage of these criteria will identify the intensity of the investment relationship between two countries, indicate whether they are willing to invest into each other's economy instead of investing into the third countries. Third, the criteria will allow to assess whether the countries are important to each other as the investment partners. Fourth, they will reveal the tendency of investment relationship development.

We separate external and internal investment attractiveness of the country. By external investment attractiveness we mean the attractiveness of the country as the destination of FDI to the foreign investors. I.e. investment environment in the host country is so favorable that the foreign investors choose this country as the destination of their FDI. By internal investment

attractiveness of the country we mean the attractiveness of the domestic investment projects to the internal investors. The higher is the internal investment attractiveness of the country, the less is the possibility of the FDI outflow. And in turn, the higher is the external investment attractiveness of the country, the larger is the FDI inflow to the country. For that reason, each country is interested in the enhancement of both internal and external investment attractiveness.

Contemporary Russian researches [21, 26, 29, 30] use the definitions “cross-countries” bilateral investment and “mutual” bilateral investment as synonyms. In our previous research [23] we suggested using these two definitions as separate ones. In particular, by cross-countries investment we understand such oppositely directed bilateral FDI flows when each of two partner countries is simultaneously a home and a host country. By mutual international investment, namely mutual FDI, we understand such bilateral FDI flows which are sufficiently large and intensive and which indicate deep investment cooperation between two countries in question. The final goal of effective investment cooperation between two countries is the transformation of any cross-countries investment into mutual FDI flows.

FDI outflow can have a positive and a negative effect upon the home country’s economy. The capital flight through offshores has a negative effect. By the positive effect of FDI outflow we mean export of capital in such spheres as metal manufacture, electric utility industry, telecommunications etc. which allows the producers to conquer the new foreign markets, to get the access to resources. Hence such FDI outflow will influence positively the economic development of the home country. Nevertheless, significant FDI outflow can influence negatively the economic development of the country in case when the internal investment isn’t sufficient. If that is the case the measures should be taken to enhance internal investment attractiveness of the country.

Cross-countries bilateral investment analysis requires examining of both external and internal investment attractiveness of the host country. In case of high values of these two indicators the country will have advantages in bilateral investment processes as it will attract significant FDI inflows from the home country while FDI outflows won’t be significant. At the same time this situation will characterize cross-countries bilateral FDI flows, not mutual bilateral FDI flows. Such discriminating investment relationship indicate the lack of the deep investment cooperation between two countries each of which doesn’t consider this relationship significant and important.

B. Theoretical Background and Empirical Studies

Notwithstanding the abundance of literature on bilateral FDI they focus mainly on several major directions: the linkages between FDI and foreign trade [19, 27, 31]; the effects of bilateral investment treaties on country’s FDI [12; 14]; the factors which determine FDI inflows into host country [1, 9, 11, 13, 18]; the determinants of FDI outflows [7]; FDI data problems [2, 5, 6, 9, 10, 16].

Although many researchers analyze bilateral FDI flows they examine FDI data upon vast number of countries. E.g., Xiong and Sun (2019) examined export and FDI relationship with over 140 countries from 2001 to 2006 and argued that export and FDI were complementary with FDI flows promoting export especially in case of developed-developing country pairs. Other researchers [19, 27] examined the influence of inward and outward direct investment flows from/to various trade partners on the certain country’s - Malaysia’s [27] or Canada’s [19] - bilateral export trade. Both studies indicated that inward and outward FDI flows were complementary to bilateral export trade although in certain cases export might have been harmed by FDI outflows [19].

Likewise, Jung and Kim (2020) estimated the impact of concluding bilateral investment treaties (BITs) on FDI outflows from particular country (South Korea) into all the treaty partners for the period 2001-2012. South Korea-developing countries pairs demonstrated significant effect of BITs upon South Korea FDI outflows while the effect on South Korea-developed countries groups wasn’t statistically significant [12].

Kox and Rojas-Romagosa (2020) analyzed FDI data for over 200 countries for the years 2001-2012 and revealed that preferential trade agreements (PTAs) and BITs had a positive and

significant effect on FDI inflows and inward stocks. Also they raised an important issue of FDI data problem [14]: “Most data sources on FDI only provide inflows or outflows of one country from/to the rest of the world”. Up till 2015 there existed UNCTAD’s Bilateral FDI Statistics which provided the information for over 200 countries for the years 2001-2012 for FDI inflows, outflows, instock and outstock. Since 2013 bilateral FDI data on country-country base is lacking. And that, as Fertő and Sass (2020) stressed, hindered empirical research on many aspects of FDI. Also Fertő and Sass (2020) advocated that new data on FDI stocks broken down according to the nationality of the ultimate owner company were preferable for the examining of the determinants of bilateral FDI. Main disadvantage of these data is their availability for the limited number of countries.

Damgaard & Elkjaer (2017) and Damgaard et al. (2019) revealed incoherence between FDI inflow and outflow data in traditional bilateral statistics of any pair of countries which they explained as existing due to effect of moving from the intermediary countries (often tax havens or offshore financial centers) to the ultimate host country. The studies presumed that the elimination of such phantom FDI flows from bilateral FDI statistics might decrease the volumes of global ultimate bilateral FDI flows by 30-40 percent. The calculations based on the data of OECD countries suggested also that round-tripping with the country providing ultimate FDI to itself accounted on average for 5 percent of FDI. The study of Damgaard & Elkjaer (2017) provided the analytical tool for the assessment of the phantom FDI flows and for the estimation of the real bilateral FDI linkages based on the home country-ultimate host country relationship. While the calculations of Damgaard & Elkjaer (2017) were based on the extrapolation of the distribution of the bilateral FDI and of ultimate investors of the twelve OECD countries to all countries of the world, Casella (2019) who also advocated the inadequacy of official bilateral FDI statistics suggested to examine the distribution of ultimate recipient countries in bilateral FDI stock with the help of the absorbing Markov chain.

A bulk of articles is devoted to the determinants of FDI inflows. The findings indicate that the main determinants of FDI inflows are: distance, relative country size and trade costs – for the Czech Republic, Hungary and Poland [9]; the market size of host and home countries, distance, common language, common border, inflation rate, real interest rate, telecommunication, degree of openness, index of globalization and index of economic freedom of host countries - for China, South Korea, India and Singapore [18]; market size, trade openness, preferential trade agreements and financial development - for 16 Arab economies [1]; economic stability, market size, currency value, size and depth of capital market - for BRICS countries [13]; market size, distance, common language, a political risk index and a financial openness index in the host country, free trade agreements between host and home countries, corporate tax etc. - for Asian economies [11].

Dreger et al. (2017) examined the factors for Chinese FDI outflows in the European Union. The study finds that market size and bilateral trade are the main determinants of Chinese investment in the EU.

According to Zhang (2005) a bilateral FDI relationship is characterized by FDI size and FDI intensity. The study indicated that political relations, distance, the overseas Chinese, political system, bilateral trade relations (export intensity indexes, BITs) were catalyst of the intensity of FDI inflows into China. She found the variables such as market size, bilateral trade relations (export and import values), trade barriers, the overseas Chinese, distance, developmental level and dissimilarity as the determinants of the size of FDI inflows into China from 45 countries during the period 1996-1999.

Li et al. (2018) used bilateral FDI flows data between 206 countries from 2003 to 2012 to construct the global FDI flows network for each of 10 years and to delineate the FDI flows features and dynamics. In their research they used such network measures as flow volumes and connections.

Among the researchers who use the case of China for examining bilateral FDI flows we can name: Dreger et al. (2017) – FDI outflows from China; Zhang (2005) – FDI inflows in China and FDI intensity index; Mishra and Jena (2019), Kishor and Singh (2015), Hattari and Rajan (2008)

– FDI inflows in certain countries including China; Sizykh (2019a) – FDI outflows from China to Russia and their determinants; Sizykh (2019b) – the dynamics and tendencies of FDI outflows from China.

According to Sizykh (2019a) the Chinese FDI outflows into Russian Federation are determined by: market size, bilateral trade relations and the global competitiveness of Russia.

Petri (1994), Dunning (1997), Zhang (2005), Li et al. (2018), Damgaard & Elkjaer (2017), Damgaard et al. (2019), Casella (2019) provided empirical tools for measuring bilateral FDI relations.

While many empirical studies have been conducted on the determinants of FDI inflows and outflows (including bilateral FDI), the linkage between bilateral FDI and bilateral trade, the influence of BIT's on FDI inflows, to our knowledge there is no empirical research (except for our previous study [23] on Chinese-Russian cross-countries bilateral FDI flows with the emphasis on determination of their mutual nature.

In this regard, this paper empirically examines whether Chinese-Russian cross-countries FDI flows are mutual. For that reason, we construct four indicators of the mutual bilateral FDI flows and criteria which allow to reveal whether cross-countries bilateral FDI flows are mutual and to indicate the particular type of bilateral FDI flows.

II. METHODOLOGY

A. Data Sources

The data used for the estimations involve two economies – China and Russia.

All the data used in this study are publicly published ones.

The paper examines Chinese-Russian cross-countries bilateral FDI flows over the period from 2014 to 2019. The FDI data are based on the Central Bank of Russia (Direct investments in the Russian Federation: Flows by instruments and Partner Country; Direct investments of the Russian Federation Abroad: Flows by instruments and Partner Country), National Statistical Bureau of China (China Statistical Yearbook) and UNCTAD (World Investment Report) publications and the World Bank database in millions of US dollars. file.

B. Measurements

This study introduces four indicators (Fig. 1) to examine the mutual character of cross-countries FDI flows.

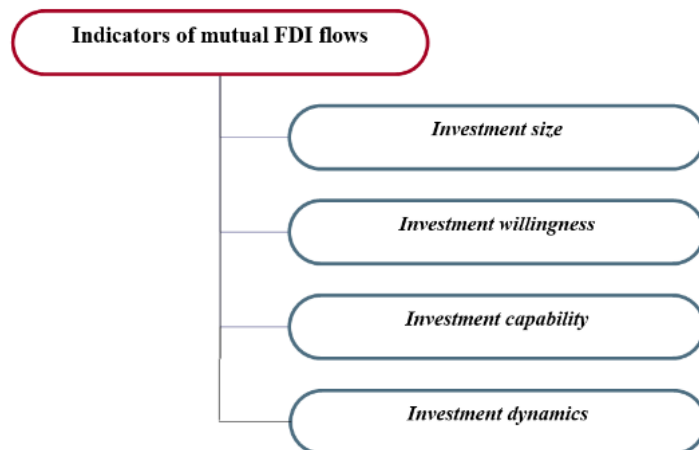


Fig. 1. Indicators of the mutual bilateral FDI flows

These indicators are the following:

1. *Investment Size (IS)* that is evaluated as the absolute value of FDI flow from the home country i to the host country j (1):

$$IS_{ij} = FDI_{ij} \quad (1)$$

where IS_{ij} is the size of investment from home country i into host country j ;

FDI_{ij} is FDI flow from home country i into host country j .

2. *Investment Willingness (IW)* that is evaluated as intensity (gravity) index of investment relationship [8, 22] or FDI intensity index [32] and is calculated as the ratio of the share of host country j of the total FDI outflow from the home country i to the share of host country j of total world FDI outflow with the exception of home country i (2):

$$IW_{ij} = \frac{FDI_{ij}/FDI_{iw}}{FDI_{wj}/(FDI_w - FDI_{wi})} \quad (2)$$

where IW_{ij} is the willingness of the home country i to invest into the host country j ;

FDI_{iw} is total FDI outflow from the home country i ;

FDI_{wj} is total FDI inflow into the host country j ;

FDI_{wi} is total FDI inflow into the country i ;
 FDI_w is total world FDI outflow.

Investment willingness indicates whether the home country i is more or less eager to invest in the host country j in comparison with investing into the other host countries.

3. *Investment Capability (IC)* that is evaluated as the share of the home country i in total FDI inflow into the host country j (3):

$$IC_{ij} = \frac{FDI_{ij}}{FDI_{wj}} * 100\% \quad (3)$$

where IC_{ij} is the capability of home country i to invest into the host country j .

Investment capability indicates the relative importance of the home country i in the host country's j FDI inflows.

4. *Investment Dynamics (ID)* that is evaluated as the FDI growth rate (4):

$$ID_{ij} = \frac{FDI_{ijt} - FDI_{ijt-1}}{FDI_{ijt-1}} * 100\% \quad (4)$$

where ID_{ij} is the dynamics of the growth of FDI flow from the home country i into the host country j ;

t represents time period.

Investment dynamics indicates the tendency in the bilateral investment cooperation development.

As annual FDI data may change substantially, the present paper uses six- and five-year average (depending on the availability of official statistics) for each of the four above-mentioned indicators to reveal the general tendencies in bilateral investment cooperation.

The criteria of the mutual bilateral FDI flows are presented in Table I.

TABLE I. THE CRITERIA OF THE MUTUAL BILATERAL FDI FLOWS

Indicators of the mutual bilateral FDI flows	Criteria of the mutual bilateral FDI flows
Investment Size	$IS_{ij} \geq 1$ mln. USD
Investment Willingness	$IW_{ij} \geq 1$
Investment Capability	$IC_{ij} \geq 1\%$
Investment Dynamics	$ID_{ij} \geq 0\%$

Based on the listed in Table I criteria the study differentiates several types of FDI flows of any pair of countries (Table II).

TABLE II. THE TYPES OF BILATERAL FDI FLOWS

The types of bilateral FDI flows	Criteria of the types of FDI flows
<i>cross-countries bilateral FDI flows:</i>	
insignificant and/or chaotic bilateral investment cooperation	$IS_{ij} \leq 0,1$ mln. USD $IW_{ij} < 0,1$ $IC_{ij} < 0,1\%$ $ID_{ij} < 0\%$ or $ID_{ij} \geq 0\%$
potentially mutual bilateral FDI flows	$0,1$ mln. USD $< IS_{ij} \leq 10$ mln. USD $0,1 \leq IW_{ij} < 1$ $0,1\% \leq IC_{ij} < 1\%$ $ID_{ij} \geq 0\%$
<i>mutual bilateral FDI flows:</i>	
mutual bilateral FDI flows with shrinking bilateral investment cooperation	$IS_{ij} \geq 1$ mln. USD $IW_{ij} \geq 1$ $IC_{ij} \geq 1\%$ $ID_{ij} < 0\%$
steady mutual bilateral FDI flows	1 mln. USD $< IS_{ij} \leq 10$ mln. USD $IW_{ij} \geq 1$ $IC_{ij} \geq 1\%$ $ID_{ij} \geq 0\%$
mutual bilateral FDI flows with enhancing bilateral investment cooperation	1 mln. USD $< IS_{ij} \leq 100$ mln. USD $IW_{ij} \geq 1$ $IC_{ij} \geq 1\%$ $ID_{ij} \geq 100\%$
mutual FDI flows of two partners for both of which their bilateral investment cooperation is very significant and prolific	$IS_{ij} > 100$ mln. USD $IW_{ij} \geq 2$ $IC_{ij} \geq 2\%$ $ID_{ij} \geq 0\%$

III. RESULTS AND DISCUSSION

The results of the estimations are presented in Tables III and IV.

TABLE III. CROSS-COUNTRIES FDI FLOWS INDICATORS: BILATERAL FDI FLOWS BETWEEN RUSSIA AND CHINA: 2014-2019 (DATA OF CENTRAL BANK OF RUSSIA)

Indicators of the mutual bilateral FDI flows	2014-2019 average
IS_{RFC} , mln. USD	30.46
IW_{RFC}	0.01
IC_{RFC} , per cent	0.02
ID_{RFC} , per cent	107.03
IS_{CRF} , mln. USD	420.73
IW_{CRF}	0.39
IC_{CRF} , per cent	2.84
ID_{CRF} , per cent	168.92

^awhere RF, C – the Russian Federation and China respectively

^b data of the Balance of Payments of the Russian Federation (FDI inflows minus FDI outflows)

Original Data Source: [3; 4; 20]

TABLE IV. CROSS-COUNTRIES FDI FLOWS INDICATORS: BILATERAL FDI FLOWS BETWEEN RUSSIA AND CHINA: 2014-2018 (DATA OF THE NATIONAL BUREAU OF STATISTICS OF CHINA)

Indicators	2014-2018 average
IS_{RFC} , mln. USD	41.61
IW_{RFC}	0.02
IC_{RFC} , per cent	0.03
ID_{RFC} , per cent	109.5
IS_{CRF} , mln. USD	1438.23
IW_{CRF}	0.99
IC_{CRF} , per cent	5.48
ID_{CRF} , per cent	44.28

Original Data Source: [3; 4; 20]

Tables III and IV show the difference between the indicators of cross-countries FDI flows from China to the Russian Federation and from the Russian Federation to China. First, the values of the indicator “investment size” for Russia and for China are very inconsistent - the inflow of Chinese FDI in the Russian economy surpasses the outflow of the Russian FDI to China up to 35 times according to the data of National Bureau of Statistics of China. That means that Russian economy possesses relatively higher investment attractiveness to Chinese investors than Chinese economy to the investors from Russia. Second, although the average value of the indicator “investment dynamics” is positive and relatively high (44.28%-168.92%) there is no definite tendency in the bilateral investment cooperation development as both flows decrease and increase in their values from year to year chaotically. These data stress the unstable character of bilateral Russian-Chinese investment relationship. Third, the values of the indicator “investment capability” emphasizes the relative importance of China in FDI inflows to the Russian Federation and very low capability of Russia to invest into China (the share of the Russian Federation in total inflows to China is less than 0.06% for the whole period 2014-2019). Nevertheless, the value of ICCRF is not as high as to make Russian economy dependent on the inflow of Chinese FDI. Forth, although the data of National Bureau of China reveal that Chinese investors are willing to invest into Russian economy, the value of IWRFC indicates that Russian investors are more eager to invest in other countries than in China.

The results of the estimations reveal that bilateral investment flows between China and the Russian Federation are not mutual. Although the values of the indicators “investment size” and “investment dynamics” for both countries meet criteria of the mutual bilateral FDI flows, the values of the other two indicators - “investment willingness” and “investment capability” – for Russia are not high enough to meet even the criteria of the potentially mutual bilateral FDI flows. For that reason, in spite of relatively high values of ICCRF and IWCRF bilateral FDI flows between the Russian Federation and China cannot be described as “mutual” but as “cross-countries ones with insignificant and chaotic bilateral investment cooperation”.

For deepening of this bilateral investment relationship the precise and full-range measures should be taken. But even the preparation of such list of measures require preliminary analysis of the current bilateral investment cooperation which in its turn requires precise and full data which make it possible to evaluate the level of bilateral investment relationship. That raises the important issue of the adequate bilateral FDI flows statistics. The present study (Tables III and IV) illustrates the incoherence of bilateral FDI flows data in different countries (in our case China and the Russian Federation). The only publication of the international organizations on the issue of bilateral investment flows is the report of UNCTAD “Bilateral FDI statistics 2014”. The up-

to-date data provided by the international organizations (e.g. the World Bank, UNCTAD etc.) don't contain consistent country-pairs information about the cross-countries bilateral investment flows. That's why the analysis of bilateral FDI flows requires addressing to the national statistics of each of the analyzed countries.

One can find full cross-countries investment flows data in the balances of payments issued by national central banks. But balance of payment may not contain the detailed information upon FDI flows by industries and countries. For that reason, in Table III we had to use the data of the balance of payments of the Russian Federation which are based on asset/liability principle and in Table IV – the data of the National Bureau of statistics of China which are based on the absolute value of the FDI inflows and FDI outflows.

Although international organizations, such as UNCTAD, IMF and OECD try to standardize FDI statistics all their data concerning FDI volumes and dynamics are very rough. E.g. in case with Russia up till 2012 UNCTAD used FDI data provided by the Central Bank of the Russian Federation in spring while the final data were published in summer. The discrepancy with the final data which were used by e.g. the IMF was up to 15-20% [15].

Also according to UNCTAD (2019) there is significant discrepancy between bilateral FDI data held by direct investors (traditional FDI statistics) and by ultimate investors (new FDI statistics) which arouses due to the large share of tax havens in traditional bilateral FDI data. That makes contra productive the usage of traditional bilateral FDI statistics as it doesn't reveal the real picture of cross-countries FDI relationship. Nevertheless, by 2017 only 13 developed countries prepared FDI data by ultimate investors [2].

The above-mentioned inadequacy of traditional bilateral FDI statistics effects negatively the examination of cross-countries investment relationship as in our case the calculated indicators of investment willingness and investment capability may be inaccurate due to the false data of total FDI inflows and outflows of China and the Russian Federation.

All above-mentioned problems of bilateral FDI flow data accuracy hinder the estimation of cross-countries bilateral FDI flows which in turn hinder the formulation of adequate policy implications for enhancing external and internal investment attractiveness of the country.

IV. CONCLUSIONS

The estimation of the FDI linkages allows to reveal the level of economic integration and cooperation between countries. This study introduces the indicators and the criteria of the mutual character of the bilateral cross-countries FDI flows. The usage of these indicators allows to reveal whether the bilateral cross-countries investment relationship is significant, intensive and stable, i.e. mutual, or insignificant and/or chaotic, or discriminative (one-sided). This information can be the empirical basis for the bilateral investment cooperation policymaking.

The assessment of the mutual FDI flows indicators revealed that the bilateral investment cooperation of China and the Russian Federation for the period 2014-2019 wasn't mutual but insignificant and chaotic.

At the same time, we must stress the inadequacy of the official bilateral FDI statistics which challenges the evaluation of cross-countries bilateral FDI flows. The availability and consequent usage in the calculations of the ultimate recipient countries instead of intermediaries in the bilateral FDI flows data might have shown different results as the values of the total FDI outflows of China and the Russian Federation would be different - without round-tripping – and as the values of bilateral FDI inflows to China and to the Russian Federation as to the ultimate recipient countries would be also different.

Hence the evaluation of the introduced indicators and criteria of the mutual character of the bilateral cross-countries FDI flows would be recommended to be conducted on the empirical evidence of the countries which provide or for which it is possible to calculate the ultimate recipient country FDI flow statistics. That will enhance the effectiveness of usage of the introduced tool of assessment of bilateral cross-countries FDI relationship and of determination of their mutual character.

National investment policies oriented on the enhancement of the external investment attractiveness of the country depend on the precise picture of current state of investment linkages between the given country and its partners. The introduced indicators provide the tool for such evaluations but dependent FDI flows ultimate investor data are required for the additional insights into the investment cooperation policymaking.

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On Features of Russian-Chinese Economic Relations in the Integration Field of Eurasia

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Abstract—The reorientation of the Russian economy to new markets for domestic products and the strengthening of trade and economic relations with a number of countries in Asia and Latin America have created conditions in recent years for the development of long-term foreign economic relations with them. First of all, this concerns China, one of the largest Russia's partner in Asia. We can say confidently that China is the most important and priority partner in the context of our country's foreign trade development in the current conditions of global economic development. Russian economy will get additional incentives for its development considering perspective initiative of China aimed at improving, existing and creating new trade routes, transport and economic corridors, which was initially called the "Economic belt of the Silk Road", and now this concept is called "one belt, one road". There is no doubt that the development of Russian-Chinese relations for our country in the current conditions is of priority in the context of the implementation of foreign economic policy. Moreover, for China, given the ongoing economic and political confrontation with the United States, the deepening of foreign economic ties with our country are becoming more promising. This is evidenced by the fact that over the past three years the development of cooperation between Russia and China has become more and more intensive: the turnover of foreign trade and economic, political and other types of cooperation has grown exponentially.

Keywords—foreign activities, foreign commerce, the Russian-Chinese economic relationships, Economic belt of the Silk Road

I. INTRODUCTION

The development of a strategic approach to bilateral economic cooperation with China is the most relevant in the modern system of coordinates of Russia's foreign economic activity. There have been different stages in the history of relations between Russia and China, but their current state gives the hope for an even greater mutually beneficial effect in the strategic perspective. The

history of relations between the countries dates back to the XIII century, but formally, the two States began to contact only in the XVII century. Their connection has always been a very important factor in the development of these two major powers, and the state of relations between two countries has influenced the entire Asia-Pacific region, and often the whole world.

The study of the formation, transformation and development of Russian-Chinese relations is relevant in the context of foreign economic relations and projects which are conditioned by the growing influence of China (Chinese People's Republic) in Russia over the past four years, the cooling of relations between Russia and the West after the events of 2014 and the Russian "return to the East" [4].

It's possible to see now more often in the media a stable phrase that "Russia has made a turn to the East" now. "This statement appeared because of the ambiguous political conflicts. The difficult situation on the world scene, strained after the events of 2014-2015, and the following sanctions against our country was forced to change the priorities for international cooperation towards new centers of the world, namely China, India and other BRICS and the EAEC member countries. The Russian-Chinese relations have reached a unique level of comprehensive strategic cooperation and partnership in their history and, without a doubt, have good prospects for development» [11].

As practice shows in the development of foreign economic relations, at the moment the most intensively established relationships and bilateral arrangements between Russia and China, as evidenced of foreign trade and economic, political and other types of cooperation, such as the agreement on the Eurasian Economic Community, the construction of the EurAsEc and the concept of "OPOP".

We cannot disagree with the opinion of a number of experts that: "partners from the West are trying hard to impede Russia's high-quality shift to the technological borders, near which are the country's economy functions, pushing it to the raw material nature of the economy. The Russian economy has entered a phase of strategic partnership with the countries of the Asia-Pacific region (APR), the main of them is "Chinese People's Republic" and thereby achieves the goal of innovation development []. One of the most important factors of the "turn Russia to the East" today is the sanctions, the negative attitude to the domestic economy, to Russia as a whole, from the "developed Western countries". Here, in fact, we can remember one of the laws of life: "one door closes, another opens." At the same time, it should be noted that Russia is trying to maintain mutually beneficial relations, including economic ones, with a number of countries that are trying to show independence and sovereignty in these questions.

A lot of attention has been paid to the problems of developing Russian-Chinese economic relations in the strategic perspective and developing an effective mechanism for foreign economic cooperation between Russia and China. In our opinion, a special place among them is occupied by research on Russian-Chinese relations and their role in increasing Russia's foreign trade turnover. Among them are the following works: Andriyanova L.S., Andriyanova A.A. [2], Grishin O.E., Trofimova A.V. [4], Ivanova S.A. [6], Zhao J., Ezhov V., Vasiliev D. [18], Blanchard B. [3], Halpin A., Ummelas O. [5].

The following works of these authors : Karaganov S.A., Makarov I.A. [7], Pronina A.YU., Svetlova A.V., Ivanova N.I. [11], Selyukov M. [12, 13], Van SH., Van' C. [16] are devoted to the consideration of issues related to the future development of the Russian economy in the context of the integration of the EEC and the "Economic belt of the Silk Road".

II. METHODOLOGY

The development of Russian-Chinese relations is a priority for our country in the current conditions in the context of implementing foreign economic policy. Moreover, for China, given the ongoing economic and political confrontation with the United States, the strengthening of foreign economic relationships with our country is becoming more and more perspective. This is evidenced of the fact that the development of cooperation between Russia and China has become increasingly intensive over the past three years: foreign trade's turn, economic, political and other

types of cooperation has significantly increased.

This is due to the geographical proximity of the two countries, as well as the strong economic partnerships formed over a long period of time and approach in the political field. However, it is important to understand how these foreign economic relations will be developed in the "post-pandemic" period, what will be the reasons for further intensification of trade and economic relations between two countries, and which areas and sectors of Russia's and Chinese economies will be the most important in the the short and long term view within the framework of foreign economic cooperation.

As a result, the methodological basis for the study of the prospects and problems of the development of Russian-Chinese economic relations are the basic provisions of the systematic and comprehensive approaches in the integration field of Eurasia. This allowed us to study and analyze the external and internal factors of the development of trade and economic cooperation between Russia and China, as well as the elements and connections that most significantly affect the development of joint mutually beneficial projects.

An important role in the research played the methods of factor and complex analysis, marketing analysis and supervision. Special attention was paid to a comprehensive assessment of the current trade and economic relations with the Chinese People's Republic (CPR). Empirical data processing was conducted using mathematical statistics methods. These methods were used in various combinations at different stages of the study, depending on the goals and objectives.

III. RESULTS AND DISCUSSION

Today, according to the statement of Russian President V.V. Putin, "Russian-Chinese relations have probably reached the highest level in the history and continue progressive to develop. The partnership between Russia and China is based on the deep mutual respect and trust, the double-sided basic interests, and on the interest in the prosperity of our countries» [17].

The determining factors of Russian-Chinese relations are mutual cooperation and trade partnership between Russia and China, the complementarity of two economies in the spheres of energy resources, high technology economic sectors, heavy equipment and mining industry on one side in Russia, and on the other light industry, the availability of cheap labour force, a significant foreign exchange reserves in China.

Turning to special statistical figures of Russian-Chinese economic cooperation, we can say with confidence that China is the most important and priority partner in the context of foreign trade development of our country.

Mutual cooperation and trade partnership between Russia and China the complementarity of the two economies in the energy intensive sectors of the economy, heavy equipment and mining industry – on the part of Russia and light industry, the availability of cheap labour, a significant foreign exchange reserves – with China, are the determining factors of Russian-Chinese relations. Turning to specific statistical figures of Russian-Chinese economic cooperation, we can say the following. Today, we can say with confidence that China is the most important and priority partner in the context of foreign trade development of our country.

The result of trade and economic relations with China is the first place of the latter in the turnover of Russia as a whole (86975 million dollars. or 14.9%), and in the context of exports (38919 million dollars. or 10.9%) and imports (48056 million dollars. or 21.1%) since 2017. Moreover, China is the leader in Russia's non-oil export (\$11322 million), which is the most important factor in the further modernization of the domestic economy.

Russia's trade turnover with China also has positive dynamic, in particular, it increased by 3.4% in 2019 as compared to 2018 and amounted to us \$ 110.75 billion.

At the end of 2019, Russia ranked 11th in the ranking of China's 20 main trading partners (10th place excluding Hong Kong). The volume of foreign trade with China, Russia was ahead of the United States (541,2 billion. -14,6%), Japan (315 billion. -3,9%), Hong Kong (288 billion. -7,2%), Republic of Korea (284,5 billion. -9,2%), Taiwan (228,1 billion. +0,8%), Germany (184,9 billion. +0,6%), Australia (169,6 billion. +10,8%), Vietnam (\$162 billion., +9,6%),

Malaysia (124 billion. +14,2%), Brazil (reach 115.3 billion. +3.7 per cent). Russia was followed by: India (\$92.8 billion, -2.8%), Thailand (\$91.7 billion, +4.8%), Singapore (\$89.9 billion, +8.7%), the United Kingdom (\$86.3 billion, +7.3%), the Netherlands (\$85.1 billion, 0%), Indonesia (\$79.7 billion, +3.1%), France (\$65.5 billion, +4.2%), Canada (\$65 billion, +2.4%), the Philippines (\$61 billion, +9.5%), Italy (\$54.9 billion, +1.2%).

In the reporting year – 2019, exports to Russia increased by 3.6% and reached the figure of 49.7 billion dollars. Russia has delivered goods to China worth 61.05 billion dollars. The total figure of exports and imports of goods exceeded 10 billion dollars between Russia and China only in December (figure 2.2). It should be noted that in previous years, there was a positive trend: Russia's exports to China in 2018 amounted to 56065 million dollars, an increase of 44.05% (17143 million dollars) compared to 2017. Russia's imports from China in 2018 amounted to 52218 million dollars, an increase of 8.7% (4176 million dollars) compared to 2017.

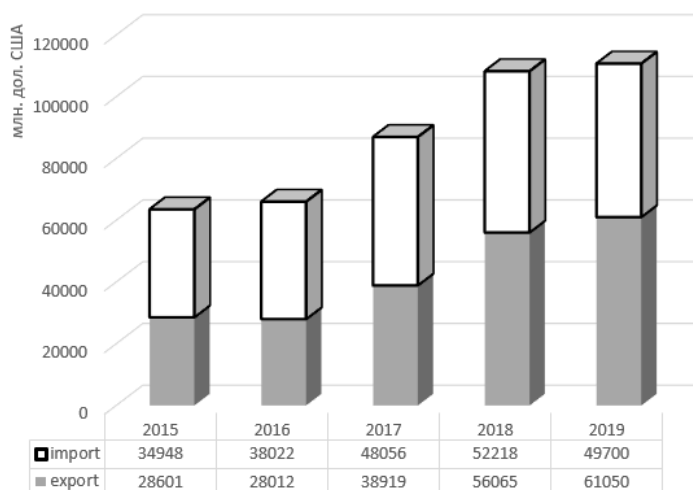


Fig. 1. Dynamics of indicators of foreign trade turnover between Russia and China in 2015-2019

According to Rosstat, China accounted for 10.9% of Russia's total exports in 2017, 12.5% in 2018, and 13.4% in 2019, respectively. According to the share in Russian exports during the entire period of the study, China occupies the first place. In total imports – 21.2%, 21.9% and 22.2%, respectively, which made China the first partner. Unfortunately, considering the share of Russia in the total exports and imports of China, we should note a less impressive result. If we talk about the place and share of Russia in China's foreign trade turnover, today it is a position in the second ten countries, both in terms of exports and imports. This fact once again makes us think about the importance of the Chinese market for us and the Russian market for China.

Thus, mutually beneficial economic cooperation with China is important for the development of the Russian economy. "It is assumed that Russia will help Beijing develop the field of nuclear power industry, aircraft construction industry, outer space and China will assist Moscow in the development of power engineering, shipbuilding, railways, etc. If we consider the structure of exports of Russia and China, we can draw a conclusion to the disfavor of Russia – as a result of this policy, Russia can become a "Junior partner" of China. In this regard, equal economic relations should be created and Russia's raw material role in the relation to China should not be allowed to outweigh» (Andriyanova, L.S., Andriyanova, A.A., 2019). The Russian side should pay close attention in this situation to the development of the Far East regions, to the building of advanced development areas, to the promotion of import substitution, to the creation of its own industry and the introduction of the Russian economy to a new level. Under the pressing conditions of Western sanctions on Russia, China occupies a leading position in the list of Russia's strategic partners. China, in turn, as a result of a planned change in the concept of socio-economic development of the country, in the person of Russia has a political and an important trading partner.

We can already identify a number of problems and "bottlenecks" in bilateral economic

cooperation between countries, despite a sufficient number of factors, suppositions and arguments for the further development of Russian-Chinese relations in the economic field. The difficulties that exist in a projects realization between Russia and China require, first of all, the bilateral approach to their solution and finding a consensus. Thus, "the existing certain difficulties of Chinese policy forces Russia to adapt to new elements of Chinese policy, in connection with the tasks set by the new Chinese leadership led by Xi Jinping, where along with innovative domestic policy, a large role is assigned to foreign policy (Vladimir Putin-Kitaj – eto klyuchevoj partner Rossii, 2019). A number of experts highlight the following possible problems of Russian-Chinese international relations at the same time: "The Russia's unequal perception of China; the zigzag development of bilateral relations; the lack of mutual trust in the connection with Chinese policy towards the United States" (Andriyanova, L. S., Andriyanova, A. A., 2019).

These contradictions will increase with the growth of China's economic, military and innovative power (Vladimir Putin-Kitaj – eto klyuchevoj partner Rossii, 2019). Russia should reconsider its attitude to China's position in both domestic and foreign policy and try to adapt to existing realities in modern conditions. If Russia have chosen China as its basic tactical partner, it should accept China not only as a consumer of raw materials, but also as a clever partner in the modernization process of the Russian economy.

IV. CONCLUSIONS

Economic relations between Russia and China require further development in the context of the ongoing large-scale global recession provoked by the COVID-19 pandemic and characterized by its unique in comparison with previous crises. Moreover, according to a number of experts, Russia will emerge from the crisis later than the developed countries. In particular, "according to the IMF forecast, Russian GDP in 2020 will decrease by 5.5%, and in 2021 the country's economy will win back only 3.5%. In the baseline scenario, the final recovery will be in 2022.

In General, suppositions and factors for the further development of relations and the deepening of trade and economic cooperation between Russia and China have been developing more and more recently. Political factors are increasing in addition to the classic factors: geographical, territorial proximity, and, consequently, the common border, which allows us to develop new forms of cooperation and business (cross-border trade, cross-border economic zones and clusters, interbank calculation in national currency on border territories, etc.). Also the influence of trends are increasing in the development of the modern world economy on the deepening of bilateral economic relations between countries. However, it is important to remember that in today's reality, Russia needs China more than China needs Russia. As a result, Russia should reconsider its attitude to China's position in both domestic and foreign policy and try to adapt to existing realities in modern conditions.

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Development of Trade and Economic Relations of Russia with the Countries of the European Union: Problems and Prospects

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Abstract—The geographical proximity of Russia and the countries of the European Union contributed to the development of trade and economic bilateral relations, which have a significant impact on all spheres of interests of the participating parties. Currently, Russia and the EU are key trading partners, as evidenced by the high value of exports and imports. The European Union is the largest investment partner in Russia. However, relations between Russia and the European Union can hardly be called “stable”. Throughout the history of the development of trade and economic relations between Russia and the European Union, certain disagreements have systematically arisen between the parties, which is primarily due to the relatively different views of the parties on the methods of introducing foreign policy. The most serious aggravation in trade and economic relations between Russia and the EU occurred in 2014. As a result of the political crisis in Ukraine, the European Union decided to reconsider bilateral relations with Russia and introduced a number of political and economic restrictions that had a significant impact on the state of trade and economic relations between the parties. The relevance of the research topic is due to the fact that the protracted political and economic tension between the European Union and Russia has a negative impact on the current state of trade and economic relations between the parties.

Keywords—foreign economic activity, foreign trade, EU, trade and economic cooperation.

I. INTRODUCTION

On April 18, 1951 the first prerequisites were laid for the formation of a trade, economic and political space within the European Union. At that moment the Paris Treaty was signed which established the European Coal and Steel Community. Soon after this, European integration began to gain momentum, creating new integration alliances, which soon led to the logical formation,

in 1992, of the European Union. The creation of the European Union became an important factor in the development of further integration in European countries, since the agreement on the European Union laid the foundations for the creation of an economic and monetary union, and the “euro” as a single currency.

Currently, the EU is the world's largest trading power. The EU economy is the common economy of the 27 member states of the Union. The EU's economic policy is aimed at creating jobs and accelerating growth through the smarter use of financial resources, removing barriers to investment, and providing visibility and technical assistance for investment projects.

In recent years economic growth in the EU countries has been observed, before the situation with the coronavirus pandemic COVID-19. As evidenced by the statistics: the reduction of the unemployed population and low inflation. However, it should also be noted that in some EU member states, the consequences of the 2008 World Economic Crisis are still being observed. That affects the level of employment, as well as high amounts of debt obligations. Thus, the largest volume of public debt in the EU countries during the study period was observed in Italy, France and Germany, while the countries with the highest unemployment rate were Greece, Spain and Italy.

The most serious aggravation in trade and economic relations between Russia and the EU occurred in 2014. As a result of the political crisis that took place in Ukraine, the European Union decided to reconsider bilateral relations with Russia and introduced a number of political and economic restrictions that had a significant impact on the state of trade and economic relations between the parties. In particular, as a result of the application of mutual economic sanctions, the “Agreement on Partnership and Cooperation” ceased to be in full force.

However, despite this, “in the foreign trade of Russia, the share of the EU countries remains significant even in the conditions of mutual application of sanctions. Foreign trade is still one of the key incentives for improving production efficiency and developing economic relations between Russia and the EU. One of the most promising areas in trade and economic relations between Russia and the European Union is the energy sector” [9]. As of 2019, Russia is among the top 5 partners of the European Union in international trade in goods. Russia ranks is the 4th in terms of imports of goods to the EU (7%), and the 5th in terms of exports of goods from the EU (4%). As for Russia, in 2019, according to the Federal Customs Service, in the structure foreign trade of the country, the European Union occupied the main place, as the country's largest economic partner. Thus, as of 2019, the EU accounted for 41,7% of Russian goods turnover in 2019 [5].

The relevance of the research topic is the protracted political and economic tension between the European Union and Russia has a negative impact on the current state of trade and economic relations between the parties. The study will allow us to assess the current state of trade and economic cooperation between the parties, to investigate the problems that hinder the normalization of relations and to develop appropriate recommendations.

Quite a lot of attention is devoted to study problems and prospects of the development of foreign economic relations between Russia and the EU countries. In our opinion, a special place among them take studies in Russian-European trade and economic cooperation. These include the work of Amadeo K. [1], Bordachev, T. [2], Kimmage M. [7], Linkevich E.F., Portoyan P.P., Zaboryanskaya A.A. [9], Marocchi T. [8], Neumann J. [10], Fischer S. [4]/

The works of Dobrynina L.Yu., Gubareva A.V. [3] are devoted to the consideration of issues related to the prospects for the development of foreign non-economic relations of Russia with foreign partners, Skriba A.S. [13], Selyukov M. [11, 12].

II. METHODOLOGY

The current state of economic development in the Russian Federation is evidence of the gradual adaptation of the Russian economy to the sanctions restrictions introduced in 2014. Over the past few years, the country has seen a downward trend in unemployment. In addition, the monetary policy pursued by Russia had a direct impact on reducing the inflation rate in the country.

Speaking about the foreign economic potential of Russia it should be noted that the key trading partners are still the EU member states, China, Turkey, the USA and Korea. Fuel and energy products take the largest part of the commodity structure in Russian exports. The machinery and equipment is the main part by commodity structure of imports.

It should be noted that changes in the dynamics of oil prices, the import substitution policy pursued by Russia, as well as the EU policy measures restricting trade, as part of the policy of non-recognition of the annexation of Crimea and Sevastopol to the Russian Federation in 2014 had a serious impact on reduction in trade between Russia and the EU.

The methodological basis for studying the problems and prospects for the development of trade and economic relations between Russia and the EU countries are the main provisions of the systemic and integrated approaches. This allows us to study and analyze the external and internal factors in the development of foreign trade activities of the state. Elements and connections that most significantly affect the socio-economic development of the country as a whole.

The methods of factorial and comparative analysis, marketing analysis and observation play an important role in the research process. Comprehensive assessment of the emerging trade and economic relations with the EU member states is under the particular attention. Empirical data processing is carried out using the methods of mathematical statistics. We use the listed methods in various combinations at different stages of the study, depending on the goals and objectives.

III. RESULTS AND DISCUSSION

Let consider the peculiarities of the emerging trade and economic relations between Russia and the EU countries over the past five years (fig. 1). The largest volume of imports to the EU from Russia was observed in 2018 and amounted to 160,9 billion euros. It have increased by compared with 2017 by \$ 22,6 billion, which is primarily due to an increase in demand for Russian hydrocarbons and high prices for energy resources in Russia.



Fig. 1. Indicators of foreign trade in goods between EU and Russia in 2015-2019 (million euros)

The low volumes of value imports in 2016 are associated with the not very favorable economic situation in Russia, namely: the devaluation of the ruble and the reduction in production in the country, as well as in connection with the current food embargo imposed by Russia against the EU countries. Thus, the volume of value imports in 2016 amounted to 113,9 billion dollars, having decreased compared to 2015 by 16,4 billion dollars. As for the EU exports to Russia, the largest volume of value exports amounted to 87,8 billion dollars, in the reporting year, having increased in comparison with the previous year by 5,5%.

For a more detailed analysis of trade and economic relations between Russia and the EU, let us consider export and import trade flows broken down by sections of the international standard trade classification.

In 2019, in the structure of the European Union's exports to Russia, the largest share falls on

cars and vehicles, as well as chemicals and various industrial products. Thus, the value of exports of cars and vehicles amounted to 38,1 million euros, chemicals – 19,9 million euros, other industrial goods 20,6 million euros. The smallest share in the structure of the European Union's exports to Russia is occupied by energy and raw materials; for the year under study, the value of raw materials exports amounted to 2 million euros, energy – 0,6 million euros.

After analyzing the structure of EU imports from Russia, we can conclude that the energy and industrial goods take the leading place in the structure of imports. In the reporting year, the value of energy amounted to 98,1 million euros, other industrial goods – 16,3 million euros. The leading place of energy in the structure of import is primarily due to the high demand for Russian gas in Europe.

Raw materials take the smallest share in the structure of imports between EU and Russia - 4.7 million euros, cars and vehicles – 2,4 million euros, as well as food and drinks – 1,6 million euros.

At the same time, among the EU countries, the largest importers of goods from Russia are Germany, the Netherlands and Italy. Imports of goods from Russia to Germany amounted to 27,886 billion euros or 19,5%, to the Netherlands 21,415 billion euros or 14,9%, to Italy 14,324 billion euros, or 9,99%.

Accordingly, in 2019, among the EU countries, Germany, Italy and the Netherlands are the largest exporters of goods to Russia. The export of goods to Russia from Germany amounted to 26,658 billion euros or 30,3%, to Italy 7,918 billion euros, or 9%, to the Netherlands 7,103 billion euros or 8,2%. Leading positions of Germany and Italy as the largest exporters of goods to Russia are due to the high demand for cars and vehicles.

Along with international trade in goods, the international trade in services has been of particular importance both for the world economy and for bilateral countries relations. The dynamics of the main indicators of foreign trade in services between Russia and the EU for the period 2017-2019 is in figure 2.



Fig. 2. Indicators of foreign trade in services between European Union and Russia, 2017-2019 (million euros)

Thus, in the EU's foreign trade in services with Russia, the value of exports significantly outweighs the value of imports, which indicates a deficit in Russia's trade balance. In 2019 the value of exports of services to Russia amounted to 26,2 billion. The value of imports of Russian services to the European Union amounted to 14,2 billion euros, an increase of 0,1 billion euros compared to 2018, while in general, over the past three years, there has been a gradual decrease in the value of exports services to Russia, probably due to low demand.

It is also worth noting that today the EU is the largest investment partner in Russia. According to the Central Bank of Russia, the total volume of foreign direct investment (FDI) in Russia from the European Union approached 235,2 billion euros in 2018. However, the share of EU investment in total FDI in Russia fell from 73% in 2014 to 64,7% in 2018 [14].

Based on the foregoing, we can conclude that at present, there is a gradual improvement in

bilateral trade and economic relations between Russia and the European Union, as evidenced by the indicators of foreign trade between the countries. The status of the trade turnover between the parties is influenced by the following factors:

- anti-Russian sanctions introduced by the EU;
- the food embargo imposed by Russia against the European Union and a number of other countries as a response to the anti-Russian sanctions;
- the status of the Russian ruble;
- the level of oil prices.

IV. CONCLUSION

The result of the study of the peculiarities of trade and economic relations between Russia and the EU allows us to identify the main problems that influence the further development of trade and economic cooperation between the parties, namely:

1) Sanctions measures introduced by the European Union and a number of other countries against Russia, due to the political crisis that has arisen on the territory of Ukraine

2) The implementation of the state policy of import substitution in Russia, as well as litigation with the European Union in the WTO are some of the main reasons that influenced the reduction in trade between the parties.

3) the fears of the European Union regarding the expansion of the sphere of its influence by Russia, due to the increase in gas supplies and the implementation of gas pipeline projects, hinders the expansion of partnership and the development of cooperation between the parties in the energy sector.

In order to resolve the difficult political and economic situation between the parties, we recommend considering the idea of increasing the flexibility of the sanctions regime imposed on Russia, as well as the resumption of the Russia-EU summits, which will bring relative stability to the relations of the parties. To resolve trade disputes, the parties should conclude bilateral trade agreements based on the principles of a market economy and come to a peaceful settlement of existing trade disputes. To regulate relations in the gas sector, we recommend minimizing the degree of US interference in bilateral relations between Russia and the European Union in the energy sector, as well as resuming the Russia-EU energy dialogue.

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Foreign Economic Relations Between China and Countries of Central Asia: Trends and Development Prospects

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Abstract—China's economic presence in Central Asian countries is becoming more systematic and complex. The countries of Central Asia, which officially include such States as Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan, and Turkmenistan, are the closest neighbors of the people's Republic of China. A special feature of economic interaction between Central Asian countries and China was the coordination of internal programs of economic development of these States with the interests and strategy of Beijing. The Central Asian countries have taken the initiative in signing relevant cooperation agreements, which contributes to the in-depth development of this cooperation in three main areas: trade, investment profitability, contract activities for projects and construction of parks. This article reveals the trends and prospects for the development of foreign economic relations between China and Central Asian countries. The main areas of cooperation between the countries are described. The role and position of each country in foreign economic cooperation are defined. The dynamics of the main indicators of China's foreign trade with Central Asian countries for 2013-2018 is analyzed. The shares of individual Central Asian countries in China's exports are highlighted, as well as the growth of China's share in the exports of Central Asian countries associated with a significant increase in raw material supplies. Factors and prospects of development of expansion of economic relations of the countries in the future are revealed. The study notes the transition of economic and trade cooperation from energy to multi-disciplinary, from raw materials to investment and production potential.

Keywords – foreign economic relations, foreign policy, foreign trade, foreign direct investment, contracts and foreign projects

I. INTRODUCTION

China's place in international relations is one of the most popular topics in international discourse. Over the past few years, China's role in global and regional politics has grown significantly.

One of the priority issues on the agenda in China is the development of western regions. Various political and geopolitical reasons contribute to this. The western regions of China are most closely connected with the Central Asian region.

The Central Asian direction of Chinese geopolitics has its own specific features. Central Asia was a region with which China was linked for quite a long time by numerous threads of both

economic and military-political nature. China's economic participation in Central Asia becomes more systematic and complex every year. China's interests include security, politics, economic and cultural development, and more. It is obvious that Beijing is interested in creating mechanisms for constructive interaction with local states.

Over the past few years, China and the Central Asian countries have achieved fruitful cooperation. Judging by Chinese sources, the PRC's intentions to the region are as follows:

- fight against terrorism, separatism and extremism;
- ensuring security in border areas;
- maintaining stability in the entire region;
- assistance to regional economic development;
- prevention of monopoly control over the countries of Central Asia by states hostile to China, as well as formation of military alliances in the region with an anti-Chinese orientation;
- creating conditions for access to energy resources of the region.

It should be noted that cooperation between China and the Central Asian countries in the economic sphere is on the rise and is being built in the format of a strategic partnership. At the same time, the quality of cooperation between China and the countries of Central Asia is constantly being optimized.

II. RESULTS AND DISCUSSION

The Central Asian countries have taken the lead in signing the relevant cooperation agreements, which contributes to the deepening development of cooperation between China and the Central Asian countries. The achievements of capacity cooperation are mainly reflected in three aspects of trade and investment, project contracts and park construction.

Foreign trade is one of the central and most intensively developing areas of cooperation.

Due to differences in natural wealth and different stages of economic development, cooperation between China and Central Asian countries is mainly a kind of effort to seek additional development of natural resources and additional economic structures to overcome their respective disadvantages and constraints, resulting in mutual benefit.

Changes of the main indicators of China's foreign trade with five Central Asian countries in 2013-2018 is presented in Table 1.

TABLE I. CHANGES OF THE VOLUME OF TRADE BETWEEN CHINA AND FIVE CENTRAL ASIAN COUNTRIES IN 2013-2018, MLN USD

Country	2013	2014	2015	2016	2017	2018	Total
Kazakhstan	285.96	224.52	142.91	130.37	180.01	198.56	1162.33
<i>in % of the previous year</i>	-	78.5	63.7	91.2	138.1	110.3	585.4
Uzbekistan	45.52	42.76	34.96	36.4	42.24	62.01	264.55
<i>in % of the previous year</i>	-	93.9	81.8	104.1	116.0	146.8	426.6
Kyrgyzstan	51.38	52.98	43.41	57.11	54.48	56.01	315.37
<i>in % of the previous year</i>	-	103.1	81.9	131.6	95.4	102.8	563.1
Tajikistan	19.58	25.16	18.47	17.41	13.71	15.03	109.36
<i>in % of the previous year</i>	-	128.5	73.4	94.3	78.7	109.6	727.6
Turkmenistan	100.31	104.7	86.43	59.02	69.43	84.36	504.25
<i>in % of the previous year</i>	-	104.4	82.6	68.3	117.6	121.5	597.7

Calculated based on the materials: [9]

The volume of trade between China and Kazakhstan in 2018 amounted to \$19.856 billion, an increase of 10.4%.

In 2018, bilateral trade between China and Kyrgyzstan amounted to \$5.601 billion, an increase of 2.8% over the same period last year. The main goods that China exports to Kyrgyzstan are footwear, clothing, chemical fiber, food, etc. The main goods that China imports from Kyrgyzstan are ores, concentrates, precious metals, honey and fruits.

In 2018, bilateral trade between China and Tajikistan amounted to \$1.503 billion, an increase of 9.63% over the same period last year. China's main exports to Tajikistan are machinery and equipment, textiles, electrical machinery, construction materials, footwear, vehicles and parts. The main commodities China imports from the tower are mineral products, cotton, raw leather and leather.

In many respects, Central Asian economies retain their raw material character. At the same time, the changes of prices for the main export goods of the Central Asian states - oil, gas and metals - remain unstable. Against the backdrop of an unfavorable external environment, governments face difficulties in budget execution, and sensitive devaluations of national currencies have been carried out.

The share of Central Asian countries in total exports of China in 2013-2018 decreased and is less than 0.5% (Table 2).

TABLE II. SHARES OF INDIVIDUAL CENTRAL ASIAN COUNTRIES IN CHINA'S EXPORTS, IN %

	2013	2014	2015	2016	2017	2018
Kazakhstan	0.41	0.37	0.26	0.24	0.27	0.25
Kyrgyzstan	0.06	0.05	0.04	0.06	0.06	0.06
Tajikistan	0.04	0.05	0.04	0.04	0.02	0.02
Turkmenistan	0.06	0.05	0.04	0.02	0.02	0.01
Uzbekistan	0.1	0.1	0.09	0.1	0.1	0.12
Central Asian region	0.67	0.61	0.47	0.45	0.48	0.47

Calculated based on the materials: [9]

The results of the analysis do not allow us to assert that China in its foreign trade strategy attaches disproportionate importance to the Central Asian countries [7]. Apparently, the growth of Chinese exports to these countries is a consequence of the overall growth of Chinese exports, as well as partly a consequence of the PRC's financial assistance to the Central Asian countries, intended for the development of transport and pipeline infrastructure between them and China.

The structure of each country's imports from China is less diverse than in the case of imports from Russia. The share of manufactured goods in imports is overwhelming - 90% and more, while the share of primary goods is small.

The structure of imports of industrial goods themselves is also different. For example, in Kazakhstan and Turkmenistan, the share of machinery and equipment (including vehicles) has significantly increased in recent years, reaching 30.9% and 49.4%, respectively, while the other three countries had this indicator in 2018 significantly lower - 16.8% in Kyrgyzstan, 17.8% in Tajikistan and 27.7% in Uzbekistan. At the same time, the share of machinery and equipment in imports from China for Kyrgyzstan and Uzbekistan, on the contrary, decreased.

The Chinese economy was developing rapidly in the past few years, the consumption of all types of raw materials and goods in the country increased, and as a result, China's share in exports of many Central Asian countries also grew up. The increase in China's share in Central Asian exports should be primarily associated with a significant increase in the supply of raw materials from these countries to the PRC, and primarily from Turkmenistan. So, in 2009-2010 China's share

in this country's exports increased from 1.0% to 36.3%, and then gradually increased, having reached 70.7% in 2017 (Table 3).

TABLE III. SHARE OF THE PRC IN THE EXPORT OF CERTAIN CENTRAL ASIAN COUNTRIES, IN %

	2013	2014	2015	2016	2017	2018
Kazakhstan	17.0	12.3	11.9	11.5	12	10.3
Kyrgyzstan	3.2	2.7	3.8	6.8	5.8	6.2
Tajikistan	19.2	11.9	11.6	9.6	10.3	11.2
Turkmenistan	60.8	62.8	62.6	59.6	70.7	65.3
Uzbekistan	24.0	24.7	19.6	20.1	16.5	14.5
Central Asian region	23.8	21.4	20.3	18.8	18.8	17.3

Calculated based on the materials: [9]

It should be noted that raw materials dominate in the structure of exports of Central Asian countries to China - over 3/4 of total exports. In trade with China, Central Asia almost completely acts as a supplier of raw materials. However, for the countries of the region, the benefit of relations with China also lies in the fact that the latter opened Xinjiang Province quite a long time ago for the transit of goods of these states in the direction of Pakistan's Gwadar port [1]. This allowed them to diversify their export destinations through the countries of South Asia and the Persian Gulf.

For its part, by providing financial support for the construction of transport and pipeline infrastructure in Central Asian countries, China thereby facilitated the development of mutual trade and expanded opportunities for these countries to diversify their exports.

Nevertheless, in the exports of specific Central Asian countries, the shares of individual commodity groups differ significantly. Thus, in recent years, over 80% of export goods in Turkmenistan have been from the fuel and energy complex (mainly gas), while in Kyrgyzstan and Tajikistan, ores of various metals dominate - 49.5 and 60.5%, respectively.

However, such a high degree of dependence of Central Asian economies on commodity exports carries significant risks and problems associated with the volatility of world commodity prices. Their reduction can have a very negative impact on the economy of exporting countries, which makes it highly dependent on external factors.

As a possibility of influencing the economic policy of the Central Asian countries, it is worth mentioning the second direction, namely, investment activity.

China's direct investment in the Central Asian economy is significant. It should be noted that China is rapidly increasing its investment presence in Central Asia. This primarily concerns the oil and gas and mining industries. Along with its interest in energy, China also pays attention to areas such as telecommunications and transport infrastructure. Beijing uses a wide range of instruments, channels and financing schemes to implement its regional projects [8].

It should be noted that an increase in the inflow of foreign direct investment significantly expands possibilities of national economies in increasing their competitiveness. The value of foreign investors is not so much in attracting foreign currency, but in the fact that they bring along with financial resources new technologies and experience in organizing production and business. Most of funds are allocated on a bilateral basis (direct investments, loans, soft loans, grants), while other financial resources are allocated through international financial institutions and organizations (ADB, SCO, AIIB).

All Central Asian countries compete with each other for investors who are attracted primarily by a good business climate and the size of the market for the sale of manufactured products. Thus, the Central Asian countries have recently pursued more open market policies, which have further improved the investment and operating environment of China-funded enterprises. For example,

Kazakhstan and Uzbekistan have more favorable tax policies for foreign investment in non-resource areas such as agriculture and textiles.

China's capacity building cooperation in Central Asia was initially focused on state-owned enterprises, and now private enterprises are also relatively active. In 2018, Chinese businesses invested \$15.64 billion in direct non-financial investments in 56 countries along the Belt and Road, up 8.9% year-on-year, having reached 13% of the total amount over the same period. They mainly invested in the countries of Central Asia, ASEAN, Africa and other regions.

In 2018, China's direct investment flows to Kazakhstan, Uzbekistan and Kyrgyzstan totaled \$1.489 billion, \$71.76 million and \$330,000.

In recent years, 55 large projects have been included in the list of cooperation between China and Kazakhstan, totaling more than \$27.4 billion. As of 2018, China has invested over \$43 million in Kazakhstan, and Kazakhstan has become the largest Chinese investment destination along the Belt and Road. Chinese investments in Kazakhstan mainly include oil and gas exploration, production, transportation and warehousing, industry, construction materials, agricultural processing and other industries. The main products that China exports to Kazakhstan are mechanical and electrical products, metals and their products, and chemical products. The main goods imported by China from Kazakhstan are metals and their products, mineral products, chemical products, flour, vegetable oil, meat and honey.

According to the agreement, China is ready to invest in the development of the agrochemical cluster of Kazakhstan and a number of projects in the free economic zone of the Atyrau region. In addition, the Chinese Hydrochina Corporation and the Samruk-Energo Holding signed a memorandum on the construction of a small hydroelectric power plant and a project for the construction of a wind power plant in the Almaty region.

The accumulated investments of China in Uzbekistan exceed \$8 billion.

Chinese investments in Kyrgyzstan mainly include energy, rubber and plastic products, mining of non-metallic minerals, geological exploration and mining.

Chinese investments in Tajikistan are mainly concentrated in processing of metals, non-ferrous metals and building materials.

Concluding contracts with foreign projects to facilitate connectivity in Central Asian countries is the third area of cooperation between these countries.

The scope of project contracts includes both traditional industrial and civil engineering projects as well as large-scale interconnected infrastructure projects and large livelihood projects such as energy, water conservation and wastewater treatment.

The construction of overseas cooperation zones for the development of industrialization and international cooperation in the field of production facilities in Central Asia is mainly carried out in the form of infrastructure construction, trade investment and industrial cooperation, including industrial cooperation is mainly based on the creation of various foreign economic and trade cooperation parks.

Since 2013, many key projects for interconnected infrastructure have been implemented in Central Asia. Several overseas cooperation zones and industrial parks have become an important platform for Chinese enterprises to “enter” Central Asia (Table 4).

TABLE IV. CHANGES OF CHINA'S CONTRACT PROJECTS WITH FIVE CENTRAL ASIAN COUNTRIES, 2013-2017, USD MILLION

Country	2013	2014	2015	2016	2017	Total
Kazakhstan	29.17	23.58	23.47	27.58	22.38	126.18
Uzbekistan	7.06	4.98	6.12	4.91	5.03	28.1
Kyrgyzstan	7.12	5.87	5.49	5.57	4.79	28.48
Tajikistan	4.45	4.09	6.44	7.08	1.9	23.96
Turkmenistan	20.98	12.4	6.89	3.19	2.53	45.99

Calculated based on the materials: [9]

In 2018, Chinese enterprises signed 7,721 contracts with foreign contractors in countries along the Belt and Road for a contract value of \$125.78 billion, accounting for 52% of the newly signed contract value for projects with foreign contracts in China over the same period, down 12.8% over the same period last year. The total in 2017 was \$89.33 billion, accounting for 52.8% of the total for the same period, an increase of 4.4% year-on-year. Among them, in 2017, the volume of China's engineering contracts in Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan amounted to \$2.238 billion, \$503 million, \$479 million, \$190 million and \$253 million, respectively.

As of the end of September 2018, China had 113 Overseas Cooperation Zones under construction and initial scale in 46 countries along the route, with a total investment of \$36.63 billion, 4,663 settled businesses and \$3.08 billion in the host country's taxes. Among them, \$20.13 billion were invested in 20 accredited foreign cooperation zones, placed in 873 enterprises and taxes and fees were paid in the amount of \$2.12 billion in the host country. As of the end of 2018, China has invested a total of \$36.48 billion in 82 overseas economic and trade cooperation zones that are being built in 24 countries along the Belt and Road, with more than 4,000 factories headquartered in the country, and paying \$2.4 billion in taxes and fees from the host country.

In general, the construction of various types of industrial parks and agricultural parks and other cooperation zones abroad has been steadily progressing, making the construction of the park clear advantages of industry aggregation and relatively concentrated preferential policies that promote economies of scale, effectively reduce corporate costs and improve overall. The international competitiveness of Chinese companies and the ability to resist foreign operations were also enhanced, as well as the development of industrialization in Central Asian countries.

As part of the Belt and Road cooperation, China and Central Asian countries have completed a number of important transport infrastructure projects, and to promote energy trade between Central Asia and China, China has built a relatively complete network of energy pipelines in Central Asia, including natural gas pipelines and oil pipelines. The main gas pipeline, including Turkmenistan and Uzbekistan, borders through Uzbekistan and Kazakhstan with Alashankou in Xinjiang, to China, from China - gas pipelines A, B, Central Asia, two lines, with their total length of about 1 million kilometers, annual gas throughput of about 300,100 million cubic meters of natural gas mainly comes from Turkmenistan, and line C, which also runs from the border between Turkmenistan and Uzbekistan, but enters China from the port of Khorgos in Xinjiang, has a design annual gas throughput of 25 billion cubic meters, and mainly transfers natural gas from Uzbekistan. These three pipelines have started normal gas transportation.

Another priority area of cooperation for China is energy security. China invests heavily in the energy sector, which includes minerals, oil, gas, oil exploration and prospecting, pipelines, roads, routes, etc. In the context of accelerated economic development, the PRC had to deal with energy security issues, so Central Asia turned out to be a promising route for diversifying fuel imports. China's economic interests in Central Asia were not limited to energy: it was necessary to develop the western regions, primarily Xinjiang, which borders the states of the region. For Beijing, seeking to diversify its sources of resources, the importance of Central Asia as a resource reserve is growing.

Within the framework of the international cooperation "Belt and Road", the importance of the countries of Central Asia for China is mainly reflected in the export of energy. Currently, China imports about 60% of China's natural gas imports from Central Asia each year, and China's imports from Kazakhstan have reached a total of about 100 million tons. Turkmenistan and Uzbekistan are also the largest export markets.

III. CONCLUSIONS

Trade and economic relations between China and the five Central Asian countries are expected to grow in the future for the following reasons:

Firstly, Kazakhstan will continue to maintain friendly relations with the West, China and Russia and avoid overdependence on a particular country or bloc by diversifying trade and

investment. Kazakhstan will continue to actively participate in China's Belt and Road Initiative to promote regional connectivity and infrastructure, although China's growing economic presence continues to face public discourse. It is predicted that in 2020, against the background of a weakening of the global kinetic dynamics of growth and a slight decline in oil prices, GDP growth in Kazakhstan will slow down to 3.4%.

Secondly, official Turkmenistan has always adhered to a policy of neutrality, and at present, the land is largely dependent on China, which is the only consumer of gas, therefore, diversification of gas export markets in the future will be an important goal of the economy and foreign policy of the government.

Thirdly, Uzbekistan is expected to pursue a more balanced and active foreign policy in the future to avoid overdependence on the country and at the same time improve relations with neighboring countries.

Fourthly, Tajikistan's external dependence on China is gradually growing due to government borrowing and investment in infrastructure, while Chinese banks take up a significant portion of Tajikistan's sovereign debt. China's private sector investment in Tajikistan's metalworking, aluminum and cement plants will also play an important role in the country's economy.

Fifthly, Sino-Kyrgyz relations have improved significantly in recent years, and China is expected to continue to expand its economic presence in Kyrgyzstan in the future and become a major source of infrastructure investment and concessional lending.

Thus, economic and trade cooperation has expanded from energy to diversified, from raw materials to investment and production potential. Finance, information, technology and other areas of cooperation has become a new bright spot.

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The Role of Personnel Audit in International Business

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Abstract—International business is not possible without an effective management system. Despite the influence of the global trend towards digitalization, the main role in the implementation of the business strategy is assigned to the staff. This article considers the main approaches to personnel management and defines the modern concept of management, which has a humanistic character. At the same time, we analyzed the rating indicators of international consulting companies based on employee satisfaction criteria. In this article are also revealed the features of the activity of international consulting companies specializing in the field of personnel management, which are based on the concept of «human management» and apply the technologies of personnel auditing, Individual-oriented, such as leadership development and talent identification. As a result of the study, the authors revealed that the use of personnel audit technologies will help to offset the negative impact of mobility (constant adaptation of personnel and cultural integration) through the implementation of corporate standards and policies, implementing a single business strategy.

Keywords—international business, consulting company, globalization, integration, personnel audit, concept, rating.

I. INTRODUCTION

Today, human resource management is so relevant in international business that people and their potential are the highest value in the era of global transformations. It's customary to use personnel audit in the world economy that is one of the technologies of human resource management, which allows to identify and evaluate the human resources potential of an organization, as well as solve problems that arise in the field of labor relations.

The concept of «audit» was also applied in European countries to personnel, the definition of which changed along with the transformation of its essence in the context of changes in the General framework of personnel policy and management of the organization as a whole.. Therefore, in order to substantiate the above we will review the research and directions that confirm the impact of theoretical approaches on the strengthening of the role of personnel audit.

Many scientific writings and works have been researched by foreign and Russian scientists on theoretical and practical issues of human potential management. For example, the scientist-economist F.W. Taylor introduced the concepts of «differentiative payment» and «labor stimulation»; the American scientist Emerson made a significant contribution to the theoretical basis of management, whose work is dedicated to personnel management and formulated the principles of efficient labor organization. Also do not remain without attention the research of the scientist H. in the field of

personnel management psychology, which received the name «psychotechnic». H. Fayol is one of the Classical School Personnel Management's Representative studied the issues of remuneration and motivation of personnel, development of corporate. The well-known scientist E. Mayo and his colleagues, conducting research in the field of efficiency and increasing labor productivity, came to the conclusion that not only by increasing wages, there is an increase in labor productivity, but also by "solving problems of social relationships in the labor process» [2].

Special attention should be paid to the work of the representative of humanistic psychology, the leading specialist in the field of motivation - A. Maslow, who developed the theory of «hierarchy of needs».

Victor Harold Vroom, in his research, determined the relationship between labor input, output and remuneration, highlighting the role of employee motivation.

Situational and process-based approaches to personnel management were being developed by the end of the 20th century, but the humanistic approach, in which the individual was seen as a key value in the strategic development of the organization, was becoming the dominant one. A representative of the humanistic approach, the scientist G. Becker won the Nobel prize in 1992 for his research on human behavior.

Among the leading Russian scientists who have devoted research in the field of human resources management are N.A. Vitke (a follower of the theory of George Elton Mayo), F.R. Dunaevskiy, whose work is devoted to the selection and promotion of personnel. The works of sociologists A. N. Zdravomyslov, M. A. Gurevich and others are devoted to motivation issues. Among the modern Russian scientists who have studied elements of personnel audit technology, motivation and labor economics are A.Y. Kibanov, N.I. Archipova, I.B. Durakova, U.A. Nazarova and others [1].

In this way, we can define the goals and objectives of the study. The goal is to define the role of personnel audit in international business.

Research objectives:

- to study the theoretical aspects of concepts in the field of personnel management;
- to analyze and evaluate the activities of major international consulting companies;
- to analyze and identify the features of international consulting companies activities specializing in the field of personnel management

II. METHODOLOGY

This article includes following research methods: search, accumulation and processing of scientific information, its analysis and synthesis, methods of economic and mathematical modeling, etc., which will solve the tasks and achieve the research goal.

So, after analyzing the scientific works and their directions, we will highlight the evolution of concepts in the field of personnel management (Fig. 1):

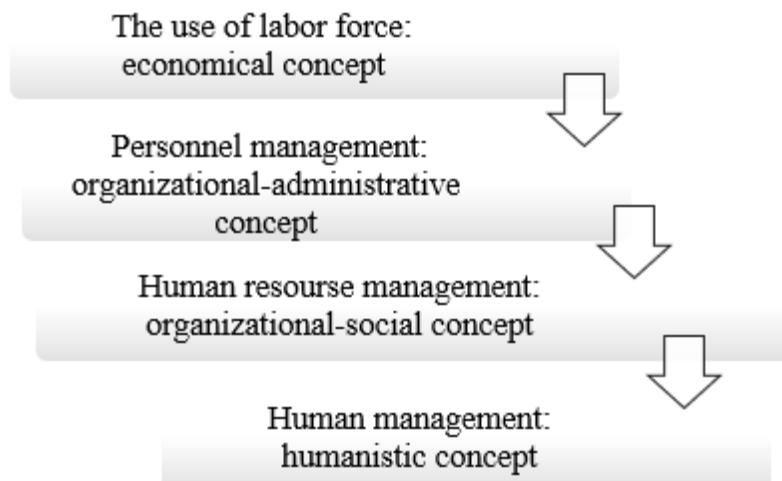


Fig. 1. Evolution of personnel management concepts

Thus, the data in the figure reflect the directions of the personnel management concept that are active at a certain stage of the international labor market. Today, a humanistic concept is applied, which, unlike previous concepts, has the character of a personalized system of human management, that is, a shift from the collectivization of personnel management to individualization and personification.

We have analyzed and supplemented the main components of the audit of personnel within the framework of the personnel management concepts, as defined by E.V. Tsvetkova, which are presented in table 1.

TABLE I. AUDIT ELEMENTS IN PERSONNEL MANAGEMENT CONCEPTS

Personnel management concept	Personnel audit element
Human Resources Performance Assessment	Evaluation of HR administration
Personnel management	Evaluation of personnel management policy Assessment of personnel motivation system Evaluation of the personnel selection and recruitment system
Human resources management	Evaluation of human resources management strategy Evaluation of personnel learning and development
Human Management	Evaluation of Organizational Culture Job evaluation Evaluation of personnel recruitment Personnel assessment Talent assessment

Source: Supplemented and systematized by the author based on [7]

Thus, the modern concept of "human management", within the framework of a humanistic approach, identifies the main elements of personnel audit in the form of:

- assessment of organizational culture as a leading component, since it is the main tool for developing and stimulating staff;
- assessment of the labor profile, which provides information necessary for recruiting, professional development, training, and also highlights specific competencies and skills that a specialist should possess;
- personnel assessment, which identifies, analyzes and evaluates effective methods and approaches used in the organization to systematically collect data on the performance of an employee or group of individuals;
- talent assessment, which allows you to identify effective integrated approaches and methods used in the organization and aimed at attracting, motivating, and promoting talented employees who are a key value in the strategic development of the organization.

It should be noted that the humanistic concept sets a certain vector for the development of personnel audit and undoubtedly strengthens its role in international business.

III. RESULTS AND DISCUSSION

International consulting business has been growing since 2003. At the time this sphere was represented by international consulting companies «Big Four», operating in more than 80 countries: Ernst and Young, KPMG, Deloitte, PWC - their activity consists of two main directions: audit and consulting. Today, international consulting business is characterized by

fairly rapid growth and expansion of the range of services, which is multipronged [5].

Table 2 represents the rating of international consulting companies for 2019. The following international consulting companies are ranked in the top 10 of the world's prestige and hold the first three places: McKinsey & Company, The Boston Consulting Group, Inc., Bain & Company.

TABLE II. COMPANY RATING BY CRITERIA

Company	Company Rating						General rating position
	<i>on employee satisfaction</i>	<i>with benefits and preferences</i>	<i>in corporate culture</i>	<i>on personnel compensation</i>	<i>Interactions with supervisors</i>	<i>time-to-work and personal relationships</i>	
McKinsey & Company	9,296 (1)	9,837 (2)	9,540 (5)	9,326 (5)	9,608 (3)	8,981 (5)	(3,5)
The Boston Consulting Group, Inc.	9,218 (2)	9,859 (1)	9,708 (4)	9,391 (3)	9,656 (2)	9,154 (3)	(2,5)
Bain & Company	9,192 (3)	9,619 (3)	9,826 (1)	9,494 (2)	9,582 (4)	9,019 (4)	(2,8)
Putnam Associates	7,649 (4)	9,532 (4)	9,718 (2)	9,654 (1)	9,532 (5)	9,333 (2)	(3)
Insight Sourcing Group	7,379 (5)	9,017 (5)	9,712 (3)	9,390 (4)	9,695 (1)	9,638 (1)	(3,2)

Source: [17]

According to the data presented in table 2, each consulting company occupies a leading position by a certain criterion. For example, McKinsey & Company ranks first in the rating for employee satisfaction, but it has the lowest overall rating position at 3.5. The Boston Consulting Group has a different situation: the company holds a leading position in the rating for benefits and advantages, and the overall rating position is 2.8 and it's the highest for all criteria. The international consulting company Bain & Company is the leading company in terms of corporate culture development; Insight Sourcing Group has the best dynamics in interaction with managers and team members; the Insight Sourcing Group does everything possible to allow its employees to balance both work and personal life.

In the international consulting business, HR management is considered as a set of activities related to the selection, recruitment, evaluation and audit of personnel, training and development, motivation and stimulation of personnel, identification of talents, and increasing productivity in order to ensure the success of international business and strategies. A distinctive feature of HR management in international business is the organization of appropriate and necessary immigration conditions for future and current expatriate employees by organizations operating in the country and / or abroad [13].

Let's look at the directions and features of the activities of international consulting companies that carry out their activities in the field of evaluation, certification, audit and recruitment, and have their representative offices in the Russian Federation. Note that the activities of the companies in table 3 are more focused on consulting in the field of human resource management, while the activities of the companies presented in table 2 are focused on consulting in the field of business strategies and economic research.

**TABLE III. FEATURES OF INTERNATIONAL CONSULTING COMPANIES
ACTIVITIES SPECIALIZING IN THE FIELD OF PERSONNEL MANAGEMENT**

International Company	Directions and Features
Ward Howell	the talent management Institute was created to increase the capitalization and competitiveness of campaigns by identifying talent at all stages of management [16]
Excelion Partners International	<p>Excelion Partners International's activity is dedicated to:</p> <ul style="list-style-type: none"> - Organizational design: application of scientific methods to establish organizational structure and business strategy; - Evaluation and development: usage of evaluation methods and indicators for review and personnel auditing in order to develop their skills and abilities; - Research and selection of management personnel: study of business and corporate culture to find, select and evaluate management personnel with competencies that will have a long-term impact on the development of the campaign [10]
Heidrick & Struggles International	The Infinity Framework has developed its own model for evaluating and auditing personnel, supported by a set of tools such as Leadership Signature and Leadership Accelerator Questionnaire (LAQ). A special feature of the international company Heidrick & Struggles International is its focus on identifying leadership qualities. This company increase labor productivity by evaluating and developing staff, increasing team and organizational effectiveness [12]
Stanton Chase	The activities of the International Personnel Company are to carry out the assessment and personnel audit in order to identify talents in management chain, in order to achieve strategic business results [15]
GlobalCareer	The basic specialization of the international company Globalcareer is selection of IT-specialists. The Luxoft Training testing center was created, which developed the author's methodology for evaluating Hard Skills. They provide outsourcing of recruitment processes depending on the specifics and requests of the business. In the process of recruitment and personnel audit, a mandatory assessment of business skills, motivation, strengths and weaknesses of candidates is carried out using a combination of various methods: profile personality analysis, Thomas test, 360 assessment and others [8]
First	International consulting company First specializes on the search and selection of middle management personnel, qualified specialists and prospective managers in different market segments [11]
Egon Zehnder International	<p>The International Consulting Company is built on a system of beliefs about cooperation and generosity, identifying the leadership competencies of personnel and creating a culture of innovation that increases productivity.</p> <p>Egon Zehnder International has patented a capacity model that helps to identify a variety of talents with the necessary attributes needed to advance to leadership roles of greater scale and complexity.</p> <p>A feature of personnel selection and audit is the ability to compare different talents and create individual strategic implementation programs [9]</p>

The analysis of the international consulting companies activities confirms the increasing role of the humanistic approach in the personnel management that we have identified. At the same time, as shows practice, the basis for the implementation of the humanistic concept of "human Management" is based on the definition of individual qualities, such as leadership development

and talent identification. International consulting companies have traditionally used the following main sources of information in conducting personnel audit:

- The statutes that apply both on the territory of the country where the organization is registered, and at the international level;
- Indicators of organization economic efficiency and performance of the labor activity in general, as well as of its the indicators of its structural divisions, international branches, information is also used for individual groups of employees;
- Official statistical reports of the organization, personnel records management documents;
- Various results of personnel surveys and questionnaires; results of previous inspections and research, etc.

In international business, the management of international standards is a prerequisite for carrying out business activities.

International business makes its own adjustments to the practice of personnel management, while the goal of personnel management in international business is to ensure the sustainability of coordination and control of international branches, as well as adaptation to local conditions with the application of international standards. For example, when conducting complex HR management activities, including personnel audits, the influence of international companies is carried out through the following principles: localization of management, international coordination, development of global leadership, etc.

IV. CONCLUSIONS

In the course of the study, we examined evolutionary approaches in the personnel management, which led to the conclusion that, in the time of a global change, there has been a shift from collective management to individualization, moreover human-centered approaches have appeared which based on the development of the individual and the identification of his talents. This approach was called humanistic or concept of human management.

At the same time, we have conducted a comparative analysis of the performance of leading international consulting companies and have determined their rating according to criteria. In this case, the team of authors concluded that international companies, regardless of their revenue performance, are ranking according to business criteria. Based on the main functions of international consulting companies, activities can be classified in the following:

- General management;
- Consulting in the field of administration and document flow;
- Financial consulting;
- Personnel management;
- Marketing;
- International production management;
- Industry-specific consulting.

The activity of international consulting companies specializing in personnel management has also been analyzed, the peculiarities of their activities have been defined, which are based on the concept of «human management» and apply the technologies of personnel auditing, Individual-oriented, such as leadership development and talent identification.

Of course, many management technologies are used in international business, the combination of which leads to economic efficiency and profitability. An important role is also played by the staff of an international company, where people of different cultures, businesses, and countries come together as part of one team, and there is a so-called staff mobility. Therefore, the use of personnel audit technologies will help to offset the negative impact of mobility (constant

adaptation of personnel and cultural integration) through the implementation of corporate standards and policies, implementing a single business strategy.

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SECTION 3. Digital technologies in the management of socio-economic systems

Peculiarities of Intellectual Development of Human Capital at the Regional Level in the Context of Digital Transformation

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Abstract—At the current stage of development, the digital economy encourages the use of innovative technologies to be used for training, create various webinars, conduct video conferences, implement online learning platforms and practice distance learning. The article examines the intellectual development of the region's human capital, since the activation of the human resource is recognized as an important factor in the effective digital transformation of the economy. The authors analyze the main competencies of the region's working-age population and reveal the life cycle of education for the region's working-age population. In addition, the trends affecting the development of human capital in the context of digital transformation are identified and characterized. The results of the study have shown the level of digital literacy is influenced by an individual's professional activity. Digital literacy is analyzed in percentage points by type of employment and, based on the analysis, new requirements for the working-age population of the regions in the development of digital transformation are proposed. In conclusion, authors propose measures that can contribute to high growth rates for the development of the economy of the regions and the country in general.

Keywords—intellectual development, human capital, human resources, digital technologies, digital economy, regional development.

I. INTRODUCTION

The formation of a digital economy has become a global trend of socio-economic development during the last few years. The potential of the digital economy is largely associated with the development of the region's human capital, in particular with the development of the human capital component. The role of human capital is defined in various concepts and manifests itself through social and financial institutes. It delineates human resource management and human capital management, which makes it possible to analyze not only social parameters, but also to study the influence of factors on the innovative, digital economy and the knowledge economy as the next stage of social and economic development.

Trends in the development of the region's population in the context of digital transformation are linked to economic globalization, accelerating scientific and technological progress, comprehensive informatization of activities, innovations, which result in ensuring the required level of competition. The manifestation of all these conditions leads to the emergence of new characteristics of working-age population of the region, which relate to the ability of the person to develop primarily intellectually, to think creatively, to generate new ideas, and actively introduce innovations into labor activity. Conditions arise that inevitably lead to the transformation of the so-called knowledge economy.

II. METHODOLOGY

Methods related to theoretical research used in this article include abstraction, synthesis, analysis, and generalization. Based on the method of abstraction and synthesis, a study of the research problem was carried out, and a detailed description of the human capital as an object revealed the characteristics of trends that affect the development of human capital in the context of digital transformation. The method of analysis and generalization allowed to identify the levels of literacy of the population, graphically present the data, and draw conclusions.

III. RESULTS AND DISCUSSION

The digital economy brings regions to a new level of development. The peculiarities of digital development of regional economies are considered in the writings of foreign and Russian scientists and researchers. Thus, the author defines the digital economy as the automated management of the economy based on advanced information technologies; a new economic order based on efficient information management of the production system, which the modern world needs to achieve successful economic growth [8]. According to the author [13], the digital economy is a system of economic, social and cultural relations based on digital technologies.

The digital economy includes a variety of economic activities in which the use of digital information and knowledge is a key production factor, modern information networks become an important field of activity, and the effective use of information and computer technologies acts as an important driving force for improving the efficiency and optimizing the structure of the economy [8]. There is a perception that the digital economy is “an economy based on the production of goods and services by high-tech business structures and the distribution of these products through e-commerce” [3].

The concept of digital economy also refers to a set of economic and social activities provided by information and communication technologies, such as the Internet, mobile and sensor networks (including the implementation of communications), financial transactions, education, entertainment and other business activities based on the use of computers, smart phones and other devices [9].

The digital economy can be classified as an activity that uses digital data sets. The digital economy forms the information space and leads to the creation of a new information infrastructure related to the use of information and telecommunication technologies in the region. It also creates a new technological base in the social and economic spheres. That is, the digitalization process transforms regional economic industries into an innovative organizational form based on information technology. In these circumstances, the need for a systematic approach to the development of the intellectual component of human capital is growing, since all plans for the implementation of the stages of the digital economy are not possible without the participation of the region's working-age population with certain intellectual skills and competencies. Human

resources are a key area in the development of the digital economy and an important factor in the effectiveness of its implementation.

Three major trends, geopolitical, demographic and technological, affect human capital development in digital transformation.

TABLE I. DESCRIPTION OF TRENDS AFFECTING THE DEVELOPMENT OF HUMAN CAPITAL IN THE CONTEXT OF DIGITAL TRANSFORMATION

Trend	Trend characteristic
Geopolitical trend	Related to the fact that in 2025 Russia will enter the less centralized global market. This will affect its competitiveness. We note that globalization and access to the international market will remain key factor in economic development. This will lead to a slowdown in economic growth and an increase in inequality, resulting in an acceleration of socio-cultural regionalization (slowdown in world economic growth, changing patterns of globalization, growing fragmentation among countries).
Demographic trend	Related to the fact that there will be a rapid growth of competition for the right to work in low-skilled jobs in the digital economy. At the same time, there will be an increase in the workload of highly qualified employees. By 2025, there will be a change in the nature of personnel competition, as the aging population will leave the labor market and a young population, or the so-called “digital generation, will enter the market.
Technological trend	Related to the introduction of so-called «universal connection» to information networks.

The region’s working-age population is increasingly facing uncertainty, a rapidly changing and outdated context. Vertical hierarchies become useless, horizontal relationships become more complex, and commercialization of ideas and development becomes more important. The area of responsibility is expanding for each participant in the labor market. The personnel that make up the core of human capital must have a certain set of intellectual competencies and a sufficient level of digital literacy. Nevertheless, the level of digital literacy of the population of the Russian Federation is not yet sufficiently high, despite the challenges posed by regions whose solution is linked to the development of infrastructure and the involvement of Russians in information processes, as well as with the growth and expansion of the population’s digital competence. Thus, according to the results of the study [15], the level of digital literacy is influenced by the professional activity of the individual. Working students showed the highest values of the Digital Literacy Index compared with other categories of the population (64 percentage points). Non-working pensioners are the ones who are the least oriented in the digital environment, with a Digital Literacy Index of 51 percentage points (Figure 1).

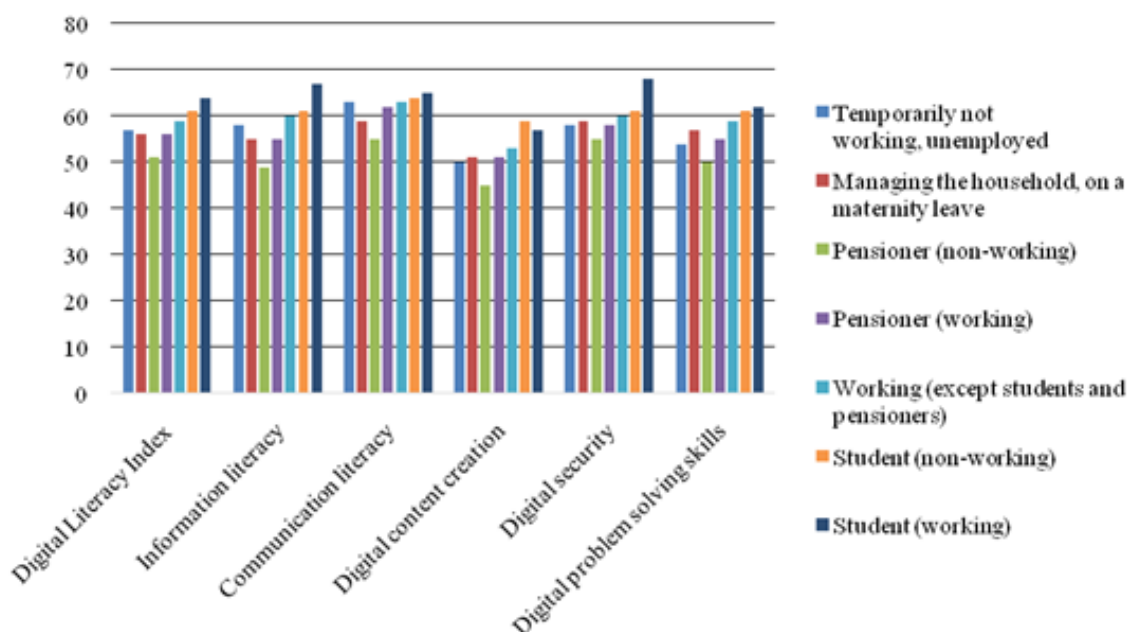


Fig. 1. Digital Literacy Index, in percentage points, by type of employment

Digital literacy in Russia is also largely determined by the region of residence. The residents of the Southern and North Caucasian Federal Districts have the lowest rates of digital literacy. On the contrary, residents of the Northwestern Federal District demonstrate higher rates of various aspects of digital literacy than in the country as a whole.

The level of digital literacy in Moscow and Saint-Petersburg is higher than the national average (62 versus 58 percentage points), while in villages and urban-type settlements it is lower (55 percentage points), as shown in the table.

TABLE II. DIGITAL LITERACY INDEX, IN PERCENTAGE POINTS, BY TYPE OF EMPLOYMENT

Index	Moscow and St. Petersburg	Cities with millions of residents	Cities, except cities with millions of residents and urban-type settlements	Urban-type settlements and villages
Digital Literacy Index	62	59	58	55

Thus, the digital environment affects the development of the regional human capital, and it creates conditions for the high-quality formation of human capital. The digital environment is linked to the educational environment, since in the digital economy there is a shift in emphasis from physical to intellectual work, leading to a situation of a constant increase in the educational level of the working-age population of the region. We agree with the opinion of O.S. Sukharev [16], that the educational process should be an almost non-stop process. This is very important in a digital society. In the context of digital transformation, human capital is characterized by new qualities, which are based on knowledge, skills, and abilities. New values associated with the development of intellectual abilities and creative skills are becoming characteristic of human capital; human capital carries moral and ethical assets and values. That is, in the era of the digital economy, conceptual knowledge comes to the fore [12].

We agree with the opinion of the authors [14], that the development the digital economy may be hindered by the lack of manpower associated with the transformation of the knowledge economy. Since in the context of digital transformation, the needs of the labor market are being reoriented, the population should have a new list of labor competencies to function effectively in the knowledge economy. By the knowledge economy, we mean the economy, which, as the author notes [1], is aimed at creating a system for the formation and dissemination of knowledge in various forms. However, the creation of certain jobs is not enough. In the context of digital transformation, it is necessary to solve the problems associated with the intellectualization of the labor of human resources. It is the potential of personnel, which carries the necessary set of competencies necessary for functioning in the conditions of digital transformation, leads to an increase in indicators such as labor productivity and competitiveness of the region. The population of the region should have such skills and abilities as:

- creative thinking skills;
- cross-functionality skills;
- ability to work remotely, freelance;
- ability of continuous self-learning, which is an urgent need related to the constant modernization of technologies;
- skills of collecting and working with a large amount of information (Big Data);
- positive thinking and goodwill ability, ability to set and achieve goals (Soft skills);
- knowledge of several foreign languages;
- ability to retrain, continuously, throughout life;

- willingness to change profession at certain intervals;
- willingness to cross-cultural travel associated with globalization.

The main task of the knowledge economy is to develop and use a range of high-tech products in a specific area or industry. These competences should be sufficiently universal for the working population of the region, and the universality lies in the fact that they should be applicable in the educational system, during the performance of labor functions, and in the course of personnel training related to additional vocational education and corporate training (Figure 2).

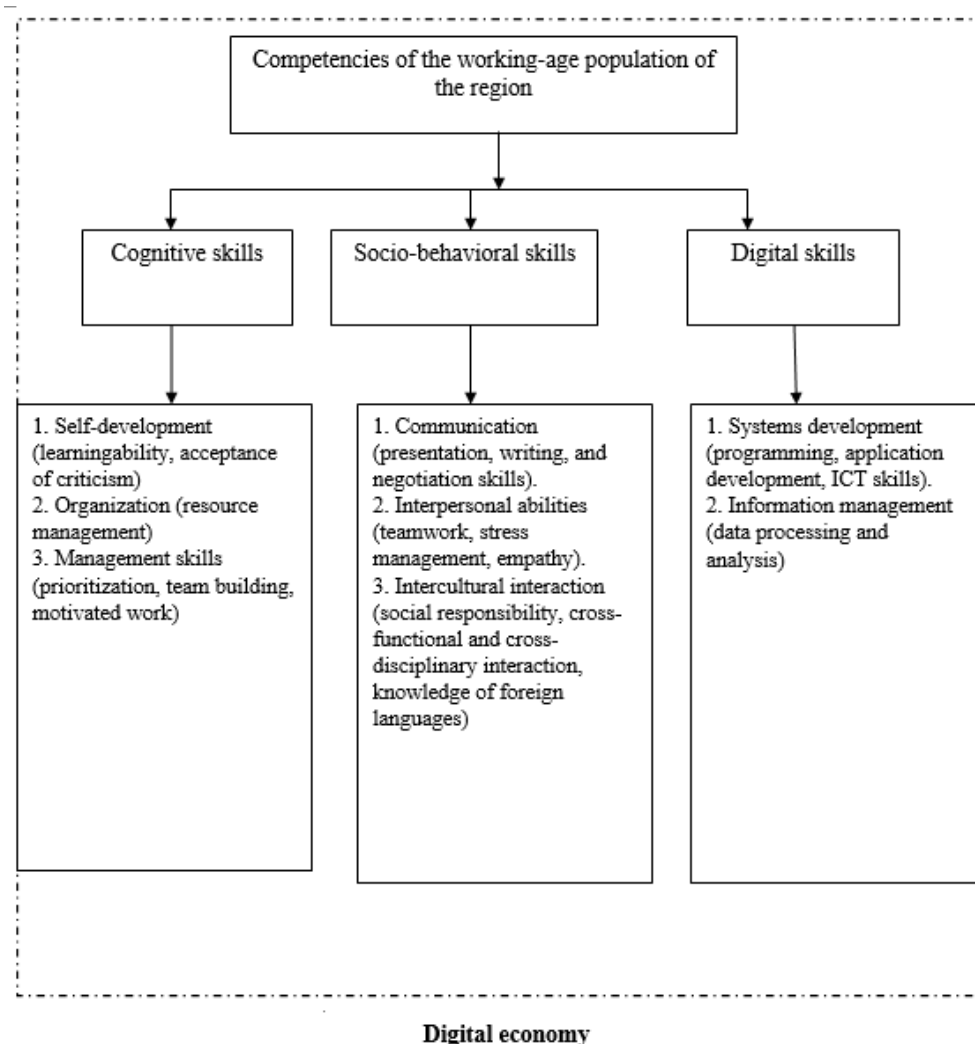


Fig. 2. List of basic competencies of the region's working population in the context of digital transformation

Thus, in order to be effective in the context of digital transformation, a person do not need to acquire knowledge once, once developed skills are not enough, new knowledge should be acquired constantly, regularly. Meanwhile, the learning process can be implemented through:

- training in an educational institution;
- gaining professional experience in the process of performing labor functions;
- self-education using Internet technologies.

At the same time, according to foreign experts, training for Russians ends after graduation and no more than 25-30 years later (which is quite difficult to approve, since correspondence courses are in great demand, many people receive a second higher education, the average cost of employers' training in Russia is 10 times less than in Europe, and educational programs cover only 15% of the

active population and 1% of pensioners, while in developed countries these figures are 40% and 5%, respectively [10]).

As indicated above, in order to keep pace with the rapid development of the knowledge economy and remain relevant in the labor market, a person must learn throughout their life and adapt to constant, rapid and unexpected changes.

The main requirements of employers in the digital economy, are that graduates of higher education institutions will be ready to face new challenges and to implement the acquired competencies in completely new conditions. Therefore, in countries with a higher digital development index than in the Russian Federation, the issue of new content and new characteristics of the education system has been raised in recent years, with a change in emphasis from acquiring disciplinary knowledge to developing “universal skills of the 21st century”, which will correspond to the skills of the working population of the region.

For Russia, this is still a somewhat problematic area of activity. Today, there is no systemic solution in the country for updating skills throughout life. Education for most people ends with graduation from a higher educational institution, no later than 25-30 years. The life cycle curve for the education of the actual population in the region is shown in Figure 3.

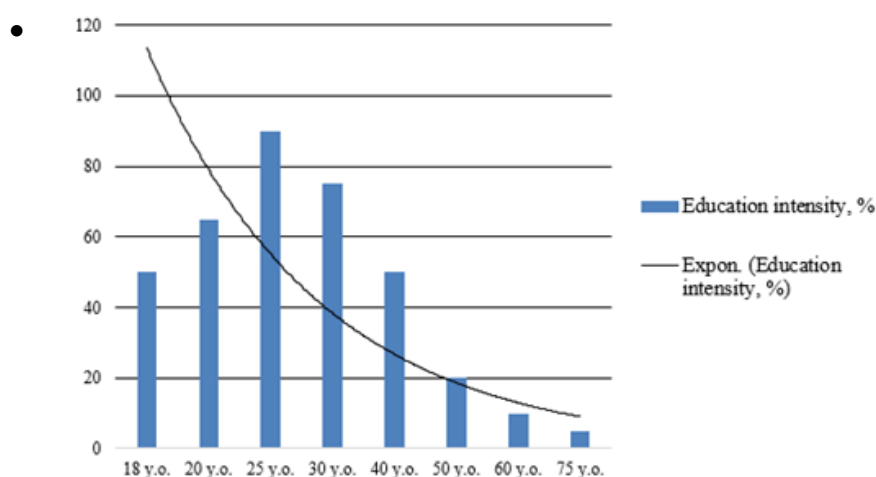


Fig. 3. Life cycle of the region's working population education

On-the-job training is also quite formal; it is often represented either by formal advanced training, which does not lead to real skills development and renewal, or by filling gaps in the education system. Thus, there is an urgent need to change and modernize the education system. Changes in the education system, motivation and labor market involve the introduction of innovative elements that will ensure individualization, personalization, accessibility and efficiency of education for everyone. The peculiarity of training and advanced training of new personnel should be the implementation of individual development paths and the allocation of personal profiles of citizens' competencies.

We agree with the opinion of the authors, who have expressed the view that profound changes in the model of higher education are inevitable as a condition for the efficient functioning of society [Barber M., Donnelly K., & Rizvi S., 2013]. Regardless of the profession they receive, modern graduates must have the digital skills that students acquire during their training by learning about innovative ways of communicating information.

Among the new forms and methods of education are: remote and virtual laboratories, network forms of cooperation between universities and the external environment, electronic libraries of universities, repository of scientific data, educational models and applications, CDIO-based learning, STEM-education model [5].

Nowadays, the use of gamization, a learning based on the game, is widespread. Gamification as a way of learning is spreading not only in higher and vocational education, but also in secondary and primary schools. The development of interactive methods of teaching students, based on

solving a certain kind of problems in the created virtual reality, increases the motivation for learning, decision-making, and the application of the acquired knowledge in practice.

E-learning is considered to be a new phase in the computerization of education in most developed countries [15].

The modern educational process implies a decrease in the time of interaction between a student and a teacher, an increase in the proportion of independent work. As part of increasing the level of assimilation of educational material by students, it is necessary to pay attention to the quality of the proposed educational and methodological materials, the form of information presentation, as well as the level of information literacy of the teacher who develops e-learning manuals for learners.

A modern student is a representative of the “digital generation”, “an indigenous inhabitant of the digital society” - digital native [11]. At the same time, the level of digital education of the teacher should not only not be inferior to the level of the student, but surpass it in the context of mastering the technologies of presenting educational material in order to increase the level of student's interest in the educational process.

According to the author, “traditional education deals with “ready-made” theory and practice, while non-traditional education considers students as a source of information and new knowledge, when students themselves pose questions and seek answers to them. In this case “the development of the brain, but not its fixation” occurs. In such a social context, the role of digital technologies, which allow expanding the capabilities of learners, developing their leadership qualities, making it possible to learn more about the student them self, personalize learning, and manage this process with feedback, is important” [11].

Thus, education as a public domain during the digital era enhances the scientific intensity and innovativeness of economic processes in the country, and the quality of the knowledge acquired by students depends directly on the level of the teacher's qualifications. Big data technology is used in the development of the National Teacher Development System. This is one of the priority projects of the Ministry of Education of the Russian Federation, which is developing a systematic model for the continuous development of professional skills, updating the content of curricula, and improving the model of certification of teachers. It is planned not only to raise the level of teachers, but also to create flexible competencies, because they need to teach children to work effectively in a team, to create their own projects, to solve multidisciplinary tasks, and to work in a convergent environment [2].

Continuing education should stop being peripheral, it should be the backbone of the entire education system. In the interests of the digital economy and in order to effectively use human potential, as a result of the implementation of directions for the development of personnel and education, the widest possible circle of citizens should be provided with the opportunity to engage in production activities, taking into account their qualifications and mobility, including fully using remote technologies. But in addition to improving the quality of human capital through various educational programs, it is necessary to increase the demand for this capital from the Russian economy. In this context, a systematic and coordinated movement is required in a wide range of areas that affect the growth, development and demand for human capital in Russia. For a successful transition to the digital economy, it is necessary to establish close integration between employing companies and educational organizations in order to bring training programs in line with the real needs of the labor market. In this regard, existing educational organizations can become essential links in the education system and significantly expand their current functions.

IV. CONCLUSION

The digital economy imposes new demands on the working population of the regions. These requirements are primarily related to the need for the population to acquire digital skills and competences that enable them to perform work functions in the knowledge economy. The main system of measures aimed at creating a more productive mass of the working population through the system of education in digital transformation is:

1. Creation of an advanced offer of personnel with target competences by the educational system.
2. Shifting the focus of educational programs from the development of subject knowledge and memorization of information to the development of personal and metasubject competencies.
3. Stimulating the inflow of talents into education.

For effective work in the digital economy, higher education institutions need to move away from the usual operating model, not only by modernizing and improving existing forms of educational activity, but also by significantly expanding the scope of activities by introducing fundamentally new forms of education. First of all, it is necessary to provide the possibility of training people of all ages, to develop appropriate training programs for this purpose. Since the digital economy stimulates the use of innovative technologies, it is necessary to use digital technologies for teaching, create various webinars, conduct video conferencing, implement online learning platforms and practice distance learning. These technologies not only meet the requirements of the digital economy, but also significantly increase the efficiency of training, help focus on obtaining the necessary skills, lead to a high-quality implementation of the competence-based approach to training, increase the level of digital literacy of all categories of the working population of the region. The implementation of these measures can lead regions and, consequently, the entire Russian Federation not only to the world average, but also to higher growth rates, guaranteeing by 2025 that the Russian Federation would be part of the group of countries with a developed knowledge economy.

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Potential Threats of Using Digital Money to Legalize Shadow Income

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Abstract—The article discusses the changes in legislation of the Russian Federation related to the regulation of the crypto-currency market. Irreversibility of performed operations (transactions), absence of centralized data storage on servers and, as a result, much lower data vulnerability, ability to sign and manage smart contracts directly between the parties without intermediaries, convenience of round-the-clock service of the system, low cost of transactions and shortened production (business) chain through elimination of intermediaries - all these factors are the grounds for increasing popularity of digital assets. Digital currencies do not act as a supplement to the existing financial infrastructure, they create a new one – transparent, reliable and seamless (independent from intermediaries). This is how the creator of Blockchain and Bitcoin envisioned the future of new digital technologies. As the crypto-currency consumer market expands, so does the number of legalization factors associated with its use. Despite the fact that shadow economy benefits from safety of cryptocurrency transactions in the dark web, the blockchain technology is still aimed at ordinary people and protecting their personal data from leaking to third parties.

Keywords—digital assets, digital money, cryptocurrency, token, crypto crimes, AML / CFT

I. INTRODUCTION

The emergence of new monetary instruments is dictated by the current need to overcome the crisis of overproduction of money in the world. Especially in this respect succeeded the U.S. with the issuance of the American dollar. The official statistics as of May 2020 show that the volume of money supply M0 in the U.S. accounted for 5 001 978 million dollars. The U.S. Federal Reserve continuously issues cash, which provokes an increase in the money supply and, as a result, a high inflation rate. Yet, given the tremendous demand for the dollar in the global economy, inflationary processes are balanced out by the withdrawal of cash outside the country.

According to Katasonov V.Y., Russian citizens own from 40 to 80 billion U.S. dollars in cash.

The safest approach to monetary reform in the U.S. to prevent default could be terminating the circulation of the national fiat currency which can be achieved by transitioning to a digital dollar. For example, China has intensified the promotion of digital yuan in the last few months of 2020, with its subsequent exchange for the fiat yuan. There are some progressive countries where the cryptocurrency regulation is treated as an innovation strategy, and where all interested parties work together to develop rules of the game. Their number today, however, is insignificant. On the

European side, these countries are Switzerland, Germany, Malta, Slovenia, Gibraltar, Estonia, Belarus and Georgia. The Asian market is represented by Hong Kong, Japan, Singapore and Bermuda Islands. The prominent representative of the Middle East is forward Dubai, positioning itself as the world's Blockchain capital.

These governments take steps to establish control over digital business in order to prevent its migration into shadow economy, thus preventing the loss of a significant budget revenue portion.

II. METHODOLOGY

According to expert assessments, as of early September 2020, the capitalization of all cryptocurrencies amounted to 315.24 billion dollars. Of these, Bitcoin (\$195 billion), Ethereum (\$43 billion) and Ripple (\$25 billion) have the largest volume [6].

Presently, the popularity of digital assets as an object of comprehensive scientific research is due to a set of economic and technical qualities of distributed ledger technology (DLT): irreversibility of performed operations (transactions), absence of centralized data storage on servers and, as a result, much lower data vulnerability, ability to sign and manage smart contracts directly between the parties without intermediaries, convenience of round-the-clock service of the system, low cost of transactions and shortened production (business) chain through elimination of intermediaries, as well as other factors [11].

In our judgement, the main reason why the crypto market has reached such scale globally and has been developing rapidly is its decentralized nature, which brings together participants from all over the world - governments, the banking sector, private companies, investors and traders.

The higher participants' interest in coin, the higher its cost and total capitalization. One should also understand the difference between coins and tokens, which are not the same. The first is a digital currency (cryptocurrency) based on its own platform, within which it circulates independently, operates on its own blockchain and is a native currency. This type of coins does not require another platform (for example, Bitcoin, Ethereum). The second type is a cryptocurrency based on an existing block or protocol. Commonly, it is an asset (token shares - a kind of securities, coupons, which are used for investment, have the highest potential in the market and are the equivalent of a certain amount of goods or services, and are regulated within stock markets) or utility (is a program not designed for investors, used for transactions, exchange and does not fall under the laws governing the circulation of money). Tokens are easier to produce. Modern tokens are based on Ethereum blockchain [7].

In the crypto world it is very difficult to assess genuine projects from the fraudulent ones. Only time can show which is which.

Cryptocurrency is often associated with fraud for a number of reasons: primarily because of anonymity of transactions, high speed of transfers whilst bypassing financial institutions, regulated by law, and, of course, absence to date of any taxation mechanism. At the state level and in terms of security in general, the crypto market is a platform for tax evasion, money laundering and sponsorship of terrorism.

In the context of turnover and creation of cryptocurrencies, the question of their legal regulation at the national and international levels arises. There are many obstacles that need to be overcome in the future. The evident one is that many people are not even aware of its existence.

In 2016, there were reports that the Russian Ministry of Finance has prepared a new bill to ban the cryptographic currency. The bill already criminalized the issue and circulation of digital money. The introduction of this bill has been repeatedly postponed. At the end of April 2016, the deputy director of Rosfinmonitoring suggested that the cryptocurrency should be considered not from the side of prohibition, but from the side of regulation, since the tool is developing worldwide. And in May, Deputy Finance Minister Alexei Moiseev acknowledged the imperfection of the bill and called the new deadlines for its submission to the State Duma: until the end of 2016. In October 2016 Alexei Moiseev also said that the Russian Ministry of Finance has decided to "wait and see how the situation will develop at the international level", and with this in mind make a decision.

As a result, work on the proposed law was suspended. On June 9, 2017 Deputy Finance Minister Alexei Moiseev expressed that cryptocurrency in Russia may be qualified as "other property", i.e. given a more or less legal status. He added that customers will be identified when conducting transactions with domestic digital currency. He also stressed that when conducting transactions with cryptocurrency, it is necessary to introduce customer identification and ensure protection of customers' rights. Thus, it was discussed to design a complete analogue of Bitcoin. The domestic cryptocurrency will not be anonymous and will be issued from a single center that can be easily controlled [9].

III. RESULTS AND DISCUSSION

As of today, Russia partially regulates the issues of cryptocurrency in the Federal Law "On the National Payment System" from 2011 and Article 140 of the Civil Code of the Russian Federation [11].

The Federal Law of 31.07.2020 N 259-FL "On Digital Financial Assets, Digital Currency and on Amendments to Certain Legislative Acts of the Russian Federation" introduces the concept of "digital currency", establishes the right of the Bank of Russia to determine the cases of issuance and use of digital operating units, as well as to establish the procedure for their issuance and use.

Accordingly to Article 1 of the above law, digital currency is a set of electronic data (a digital code or designation) contained in an information system which is offered and /or can be accepted as a means of payment that is not a monetary unit of the Russian Federation, a monetary unit of a foreign state and /or an international monetary or account unit and /or as an investment and in respect of which there is no person obliged to each owner of such electronic data, except for operations) except for the operator and/or hosts of the information system, which are obliged only to ensure compliance of the procedure for release of such electronic data and performance in respect thereof of actions for making (changing) records in such information system with its rules.

Crypto-currencies and tokens are grouped together under the term "digital asset", which means "property in electronic form created using cryptographic means". In that connection, property rights to it are certified in the "registry of digital transactions". Meanwhile, the law does not provide clear frame and definition of the registry. Also, the entries in the registry shall be made by a so-called "validator", a "legal entity or individual who is a member of the registry of digital transactions and carries out activities to validate digital records".

The Federal Law from March 18, 2019, N 34-FL "On Amending Parts One, Two and Article 1124 of Part Three of the Civil Code of the Russian Federation" ("On Digital Rights") is quite short and, in fact, is a set of amendments to the Civil Code, introducing new concepts, namely, "digital rights" and "digital money".

The document incorporates into the legislation the necessary legal relations that arise in the process of cryptographic currency circulation. Acquisition of tokens will also be difficult since the law stipulates a limit on the maximum amount set for purchase by "unqualified investors". It will be possible to exchange tokens for fiat money only through the "digital financial assets exchange operator". To do this, the investor will have to be identified in accordance with the "anti-money laundering" law and open an electronic wallet with the operator.

The law does not contain the definition of "cryptocurrency" and only prescribes the circulation of tokens and the procedure for exchanging them into fiat money.

In our opinion, the lack of legal regulation of the relationships on usage of cryptocurrency as a means of payment significantly impedes the process of digitalization of the economy as a whole. Rosfinmonitoring draws attention to the fact that due to the complete decentralization of the process of issuance and circulation of cryptocurrencies, there is no possibility of its regulation, including by the state, and the actual position of crypto-currencies outside the legal field does not provide an opportunity to implement legal mechanisms to ensure the fulfillment of obligations by the parties to the transaction [7].

There have been no recorded cases of cyber currencies utilization in the course of economic crimes on the territory of the Russian Federation. At the same time, cryptocurrencies may be involved at various stages of drug trafficking, including payments for drugs by drug users, legalization of generated criminal income and distribution of funds among OCG (organized criminal groups) leaders, as well as compensation to drug dealers/droppers and drug lab workers.

In 2017, it was discovered that the Bitcoin was in circulation in the financial structure of drug trafficking in 23 Russian regions. The anonymous nature of cryptographic payments promotes the popularity of this method in the commission of crimes and also complicates the investigation process.

Accordingly to Dudin M.N. and Lyasnikov N.V., the state impact on the relations formed in the sphere of circulation of cryptocurrency should be within certain areas of influence, which may include the following:

- area of regulating circulation of crypto-currency on exchanges and its use within payment systems;
- area of responsibility for preservation of crypto-currency (first of all, by means of technical protection of information);
- area of application of crypto-currency for joint investments;
- area of application of crypto-currency in civil law relations [9].

The popularity of the new financial instrument in the criminal environment is explained by the fact that so far no legal criteria have been developed for the cryptographic currency and the limits of its secure circulation have not been established. To a large extent, this is due to misunderstanding on the part of domestic and international experts of the importance of research on cryptocurrency within the framework of a risk-oriented approach, when economic advantages and the criminal potential of cryptographic instruments are simultaneously correlated [5].

In the opinion of several authors (S.V. Ivantsov, E.L. Sidorenko, B.A. Spasennikov, Y.M. Berezkin, and Y.A. Sukhodolov), in the light of the above, it is timely and practically significant to conduct a criminological analysis of crypto-crime as a relatively independent object of scientific cognition and, at the same time, as a subsystem of the criminological model of Internet crime. Crypto-crime is proposed to be understood as a set of acts with uniform system properties committed against a virtual currency or with its use.

Since this phenomenon is at the stage of its institutionalization, the use of this term is conditional. There are three main segments of crypto-crime: - illegal sale of psychoactive substances (narcotic drugs, psychotropic substances, etc.), other prohibited goods, content or services; - laundering of criminal proceeds using new digital currency; - theft of cryptographic currency and other crimes against property. At present, a wide range of illegal goods and services can be purchased for cryptocurrency. Virtual money is used in the pornography industry, in the illicit trafficking of personal data, in the trade of counterfeit documents, illegal drugs, and even in ordering contract killing. Still, the most widespread segment of crypto crime remains the illicit trafficking of narcotic drugs and psychotropic substances (80% of the total market for illegal goods) [10].

An important issue of criminal use of cryptocurrencies is the laundering of criminal proceeds, as the Bank of Russia pointed to the danger of a new segment of criminal business in its newsletter "On the use of "virtual currencies" in transactions, in particular, Bitcoin" dated January 27, 2014.

The warning about the usage of virtual currency in legal economic activity was repeated in the information message of the Federal Service for Financial Monitoring of the Russian Federation "On the use of cryptocurrencies"[12] and the newsletter of the Bank of Russia "On the use of private "virtual currencies" (cryptocurrencies)" dated September 4, 2017. In the letter of 2017 the Bank of the Russia identified the anonymity and latent nature (of utilization by individuals and legal entities for transaction purposes) as criminological risks of cryptocurrency turnover.

As the cryptocurrency consumer market expands, so does the number of legalization factors associated with its use. While four years ago this segment of crime accounted for 5-7% of the total volume of crypto crime, in 2018 it increased by 8 times.

There is a number of factors that contribute to drastic increase in the crypto-crime rate:

1. The Internet network allows to sell psychoactive substances, pornography, etc., rather quickly and with no damage to quality, which, in turn, leads to the creation of completely new schemes and methods of money laundering;

2. Legal vacuum around the status of cryptocurrencies and systems of their financial control is a powerful incentive for the development of quasi-financial structures that ensure the safety of cash flows using the technology of blockchain or converting cryptocurrencies into fiat currency. In 2018, about a quarter of funds which came to the accounts of conversion services were from organizations engaged in illegal activities.

3. To date, there is still no unified approach being developed to defining prevention policy in this area. Among the main obstacles for governments to cooperate in detecting and combating the laundering of criminal proceeds using digital currency the FATF identified the uncontrollable scope of legalized funds, anonymous relationships between users, lack of customer identification, absence of a coordinating body for creating a consolidated criminal policy on illegal cryptographic transactions [4].

Today, neither in Russia nor in the world are criminal incomes legalized using virtual currency are being tracked. This, however, does not preclude the recognition and analysis of individual criminological trends. In particular, it is important to give attention to the full-scale development of services for the conversion of cryptocurrency and the cashing of fiat money.

As a general rule, these transactions have a P2P character (from person to person) using cryptomats. According to the Coin ATM Radar service, currently there are more than a thousand such devices installed in the world, and if we take into account the latency of data, we can talk about numbers 30 times more [3]. For a commission of 15% the service provides uninterrupted transfer and anonymity of the client.

Another way of legalization is by using "mixer programs". They offer clients to confuse transaction history or launder profits by buying goods for another person online for "dirty" money. The buyer reimburses the client's expenses, except for the amount of commission. As a result, the customer receives "net" money, and the buyer receives a discount on the goods [10].

However, special attention deserve the illegal cryptocurrency conversion services. The largest sums of money laundered in this way go through offshore zones, where financial control over cash flows is traditionally weaker. A new and popular way to legalize criminal proceeds is their laundering through gambling sites. It is through these services that nearly three-quarters of all dirty virtual money is laundered.

According to the data of Trend Micro, now criminals more frequently resort to game currencies as a way to preserve the value of the cryptographic currency. To do this, they buy the currency of the most popular virtual games. It is sold for cryptocurrency and is then exchanged into fiat currency via special conversion services [11].

Special sources often point to the high risks of using crypt currency to finance terrorism. S.V. Ivantsov, E.L. Sidorenko, etc., believe that these forecasts are somewhat exaggerated for now. The experts underestimate the traditional nature of this segment of crime and do not take into account the terrorists' unpreparedness to use new technologies in organizing criminal profits. For most terrorist organizations, the only way of tranching is to physically transport cash. However, as the use of crypt currency grows and the infrastructure of transactions develops, virtual currency will be increasingly used to finance terrorism [1].

IV. CONCLUSIONS

In conclusion, it should be emphasized that the legal regulation of the circulation of "cryptocurrency" requires a comprehensive approach, since the major trend in the development of cryptocurrency in modern conditions is the great potential of using it not only as a means of payment and exchange, but also as a security, for example, as a share or bill of exchange.

The priorities in regulating the new financial instruments include:

- ensuring security for all participants of the cyber financial market;
- integrating cryptocurrencies into the number of civil rights acts (Article 128 of the Civil Code of the Russian Federation) with simultaneous definition of the collective investment (crowdfunding) safety limits in special regulations;
- introducing obligatory identification of owners of digital assets and other persons involved in their turnover;
- establishing a transparent system for transferring virtual money into fiat currencies;
- determining legal criteria and standards to prevent the laundering of criminal proceeds, including through the use of cryptographic currency;
- instituting criminal and administrative liability for violations of cryptographic instruments circulation standards[11];
- creating an international database of individuals engaged in trafficking and use of digital financial assets [1] in the context of the used technologies and crypto-criminal entities;
- defining the model of tax administration of cryptocurrency and other digital assets, etc. [10, 14];
- requiring licensing of professional activities related to creation and circulation of new digital assets.

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Legal Regulation of Citizens' Investments in the Russian Financial Market

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Abstract—For a market economy, investing as a “process” is a multidimensional and complex phenomenon due to interaction in it of numerous parties. If we are to classify the parties by principle of supply and demand, there are two main categories: sellers and buyers, each of which is as multi-faceted as the investment process itself. The article examines the course of the investment activity formation in Russia, its growth and expansion in terms of enhancing accessibility of investment process to every citizen. The state regulation of investments shall imply direct involvement in the provision of favourable conditions for investments. The investment process is attractive to an individual when the result is shown and perceived as a profit. Therefore, the government that is interested in increasing investment should create a positive investment climate to boost citizens' engagement in the country's investment process. In recent years, there has been a growing popularity of the financial market among the public, in particular, due to the introduction of individual investment accounts (IIA). The differentiation of investors into qualified and unqualified should also facilitate the influx of players into the financial sector and diversify it. And further, investments in securities of Russian enterprises will expedite the process of economic recovery.

Keywords—*investments, securities, savings, financial market, qualified and unqualified investors, individual investment account, Russian legislation, banking, stock exchange.*

I. INTRODUCTION

What is the financial market and investments?

Scientists of the Moscow School of Finance refer to the "financial market" as a market of loan capital - "a special sphere of economic relations, where the object of the transaction is the monetary capital provided in the loan, for which demand and supply are formed ..." [1].

The St. Petersburg school of thought gives a different definition - "it is a market where the market redistribution is being realized of free monetary capital and savings between different objects of the economy through transactions with financial assets..." [2].

It should be noted that the Russian legislation does not prescribe a unified and clear definition of the financial market.

We will focus on the interpretation of the Central Bank of Russian Federation (hereinafter Bank of Russia) as the main financial market regulator. "Financial market...system of economic and legal relations involving the use of money as a means of accumulation and payment, circulation of financial instruments, as well as cultural and business environment in which financial market participants operate. The public function of the financial market is effective allocation of monetary resources and risks, and setting equitable prices for financial assets" [3]. The Bank of Russia is responsible for supervision, regulation and development in all sectors of the financial market:

banking system, insurance sector, collective investments and pension savings, securities market, microfinance. It is also in charge of the financial market infrastructure - the work of rating agencies, exchanges, depositories and other parties.

Now, let us consider the concept of "investment" from a legal viewpoint.

Russian legislation defines the following: "Investment - funds, securities, other property, including property rights, other rights with monetary value, invested in the objects of entrepreneurial and (or) other activities for the purpose of gaining profit and/or achieving other beneficial effects" [4] and "investment activity - investment and implementation of practical actions for the purpose of gaining profit and/or achieving other beneficial effects" [4].

II. RESEARCH METHODOLOGY

Having reviewed the semantics, we now proceed to the main subject. What and how we can invest in the financial market?

For a market economy, investing as a "process" is not only multidimensional but also a very complex phenomenon. Many financial market participants interact with each other in the process. If participants are classified according to the principle of supply and demand, there are two main categories: sellers and buyers, each of which is as multifaceted as the investment process itself. For visual comprehension, we suggest to refer to a schematic representation of financial market participants below (Fig.1, Tab.1).

From the scheme outlined by the Bank of Russia, it is clear that in the country's financial market investment resources can be both internal and external.

For the sake of simplified understanding, let us assume the investor's own funds as internal sources of investment and all the rest as external sources.

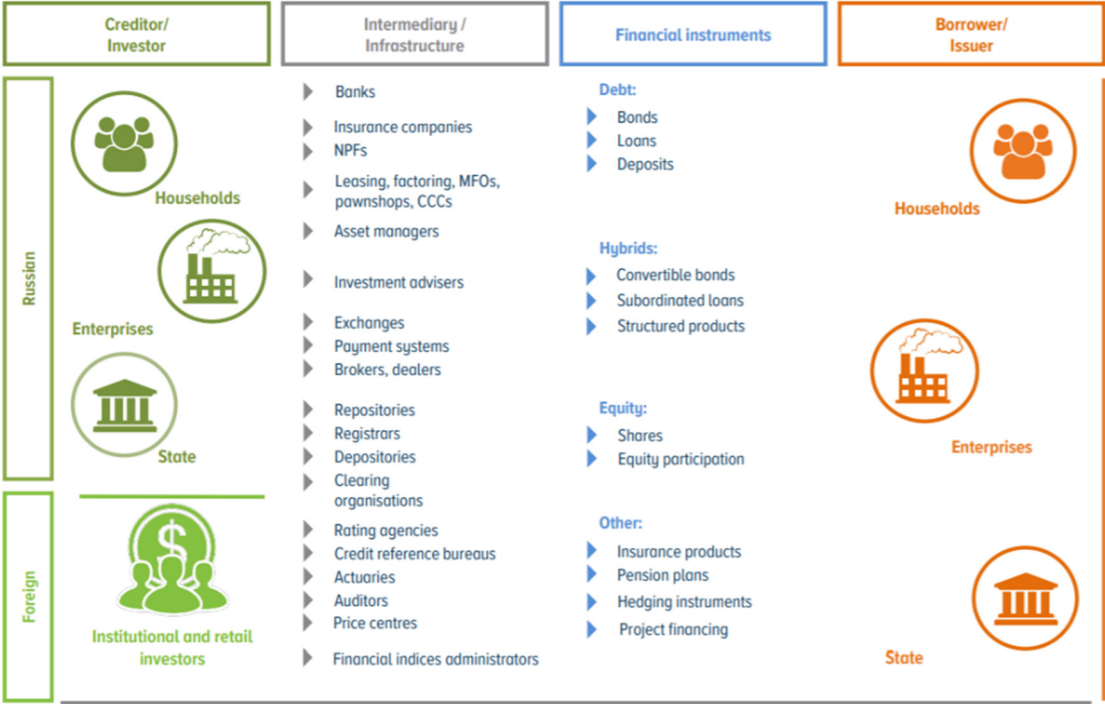


Fig. 1. Key participants of the Russian financial market [5]

Since the subject of the research is dedicated to citizens (individuals), we shall review the legislation, the laws that concern anyone who intends to engage in investment.

TABLE I. FINANCIAL MARKET PARTICIPANTS*

SELLERS (supply)	BUYERS (demand)
<i>On the credit market, which ensures the circulation of loan capital</i>	
<p>Lenders are engaged in sale of monetary assets (own and borrowed) A lender may be:</p> <ul style="list-style-type: none"> • the state, • a commercial bank, • a non-banking financial institution. 	<p>Borrowers, experiencing a lack of financial resources are ready to buy the right to their temporary use. A borrower may be:</p> <ul style="list-style-type: none"> • a legal entity, • an individual, • the state.
<i>In the securities market, which ensures the circulation of financial resources through the issuance, flotation and redemption of securities</i>	
<p>The issuers shall carry out the initial issue of securities. Issuer may be:</p> <ul style="list-style-type: none"> • legal entities (Bank of Russia, JSC, corporations, private enterprises, funds, etc.). • public authorities. 	<p>Investors, invest their free capital and savings in securities. In the Russian securities market almost all categories of market subjects from individuals to the state can act as an investor.</p>
<i>At the currency market, which ensures the circulation of currencies, payment documents, nominated in foreign currency</i>	
<p>The peculiarity of the currency market is that sellers and buyers are the same entities.</p> <ul style="list-style-type: none"> • The Central Bank (Bank of Russia) shall be a regulator of the internal foreign exchange market of the state, and shall purchase and sell, as necessary, to maintain economic and financial stability, • commercial banks concentrate the money of the population, conducting the bulk of foreign exchange operations within the country, • enterprises, companies that perform settlements in foreign currency with counterparties, • individuals who exchange currency independently in specialized institutions or employ intermediaries (brokers, dealers) 	
<i>In the insurance market, which carries out the circulation of insurance products and services</i>	
<p>Insurers carry out all types and forms of insurance by assuming for a certain fee various types of risk with the obligation to compensate for losses in case of occurrence of insured event. Insurers can be:</p> <ul style="list-style-type: none"> • insurance firms and companies, • captive insurance firms and companies, • reinsurers 	<p>Policyholders, subjects of the financial market who buy insurance products and services to minimize their financial losses in case of occurrence of an insurance event. Insurers can be:</p> <ul style="list-style-type: none"> • individuals and legal entities
<i>In the market of gold and other precious metals of platinum group, performing metal circulation, in various forms, including electronic lots</i>	
<p>Sellers (if there are excesses) and buyers (if there is a shortage of metal or for investment purposes) act as the same subjects:</p> <ul style="list-style-type: none"> • the state as a miner of mineral resources, • Central Bank, owner of stocks, • commercial banks owners of assets, • individuals and legal entities (hoarding) 	

* (compiled by the authors)

Let us start with the Civil Code of the Russian Federation (part one), chapter 7 Securities. Article 142 defines a security as "...a share, a bill of exchange, a mortgage, an investment unit of an investment fund, a bill of lading, a bond, a check and other securities..." [6]. The chapter is dedicated to the classification of securities and regulation of relations pertaining to their ownership. The securities, in which a citizen (individual) can invest, shall be considered after analyzing the legal framework.

The following Federal Law which deserves our attention is "On Securities Market", №39-FL, dated 22.04.1996. Since its enactment, many revisions and amendments have been made, especially over the past five years. Why did we identify it as the significant one? In January 2015 the law introduced a new concept - Individual Investment Account (IIA) - "... an internal account, which is designed for separate accounting of cash, securities of an individual, obligations under contracts concluded at the expense of the given customer" [7], which allowed individuals to invest with the possibility of tax deduction. A citizen is exempt from Personal Income Tax (PIT) on his income under certain conditions. We will look at them further as well. The law has prescribed gradual

replacement of securities with paperless ones. The concepts of "perpetual bonds" [7] and "preferred shares with priority in the list of the recipients of dividends" [8] have been introduced. Article 51.2., "Qualified Investors" has also undergone changes. Clause 9 recognizes an individual as a qualified investor in order to obtain an investment opportunity through an investment platform.

More than 20 years ago, in February 1999, the State Duma adopted the Law "On Protection of Rights and Legal Interests of Investors on the Securities Market". It explains the objectives of the Federal Law, Art. 1 "...to ensuring state and public protection of the rights and legitimate interests of individuals and legal entities whose investment targets are equity securities (hereinafter - investors), as well as determining the procedure for payment of compensations and other forms of reimbursement of damages to investors - individuals, caused by unlawful actions of issuers and other securities market participants (hereinafter - professional participants) in the securities market" [10].

At the end of 2001 the State Duma passed the Law "On Investment Funds" which regulates economic relations arising in the sphere of attracting money or other assets through placement of shares and signing agreements on their management for the purpose of their further investment into other economic objects. The property of the fund is managed in the interests of the investor on behalf of the manager. The Article 10 of the Law has formulated the concept of a mutual investment fund as "...a separate property complex consisting of the property transferred to the trust management company by the founder(s) of the trust management with the condition of combining this property with the property of other founders of the trust management, and from the property received in the process of such management, the share in the ownership right for which is certified by a security issued by the management company" [12]. The Article 14 gives the concept of an investment unit (share), which is "...a registered security certifying the share of its owner in the ownership right to the property constituting the mutual investment fund (trust), the right to demand from the management company proper trust management of the mutual investment fund, the right to receive monetary compensation upon termination of the contract of trust management of the mutual investment fund with all owners of investment units of that fund (termination of the mutual investment fund)" [13].

One of the laws devised and approved for citizens at the beginning of the new millennium was Federal Law No. 111-FL, which came into force almost 18 years ago in July 2002 is "On investment of funds to finance the funded part of retirement pension". The law is composed of 43 articles that identify the specifics of operations for the accumulation and investment of pension funds. The Law is designed to regulate operations in the area of formation of the funded part of the pension and its possible further investment. The law contains information on the particularities of control over the operations of formation of pension savings by the government agencies and society [14].

III. RESULTS AND DISCUSSION

In August 2019, the Federal Law No. 259-FL "On Attracting Investments through Investment Platforms and on Amendments to Certain Legislative Acts of the Russian Federation" came into force. Let us consider Article 7 of this law, which reflects the particular features of investment by individuals.

According to this article, an individual is given the opportunity to use any investment platform for investment with the provision "... not more than 600 thousand rubles" "... during one calendar year" [15]. Also according to the same article the restrictions do not apply if:

- Citizen (individual) is an IE (individual entrepreneur) or is recognized as a qualified investor by the investment platform operator. Taking into consideration the division of an individual into a IE and a mere citizen, we understand (and this is stipulated by law) that when using the investment platform, a citizen is not required to register as an individual entrepreneur.
- An individual acquires utilitarian digital rights under an investment agreement concluded with PJSC (public joint stock company).

The law also restricts the attraction of funds by one person to an amount not exceeding 1 billion rubles. There are also requirements to the investment platforms themselves, such as mandatory

inclusion in the register of the Bank of Russia - the country's regulator and the availability of equity capital in the amount of at least 5 million rubles.

Revisiting the first paragraph, it is worth remembering that the financial market is nothing but a system of relations between suppliers and buyers of financial services, which cannot fully exist without social capital (free funds of citizens). And a citizen, in turn, will go by the rule "cross the stream where it is shallowest", i.e. without trust in the tools and services, the development which all await, will not happen.

Today, the Bank of Russia is not only interested in developing such trust, but also takes an active part in it (including the implementation of the Financial Literacy Program). The legislative framework discussed above is also evolving in order to support a trust-based relationship in the financial market. From the analysis of the Central Bank's documents, we can highlight the following principal steps in this direction:

- Reduction of transaction costs incurred in the market aimed at protection against unfair conduct, the result of such actions will be a diminishing need for supervisory actions by the Bank of Russia;
- Protection of creditors' and depositors' funds, which is possible only with strengthening credibility of national currency, payment systems and technologies in the market, as well as with improving financial stability of organizations;
- Combating fraud, setting up barriers for dishonest, illegal (unauthorized) activities. The result of such efforts should be elimination of advantages of such players over bona fide market participants, for this purpose elements of corporate culture are being introduced, where the priority is the interests of the client;
- Constituting of a transparent information system necessary for understanding the process of pricing and perception of the financial product.

All of the above measures are intended for encouraging and enhancing participation of population in utilizing financial market services.

The Bank of Russia takes a proactive position in protecting consumers from possible abuses by sellers of financial services. One of the key conditions for the successful development of banking activities is the policy of continuous innovation [16].

In 2017, the regulator, together with the financial market participants, developed the concept of the investor qualification system, however, today there are a lot of disputes and discussions around it. This concept is a part of the Law "On Securities Market" where regulation of categories of investors – individuals – is introduced. At the end of July 2020, the President of Russia signed the Law on Investor Categorization (Federal Law No. 306-FL of July 31, 2020 "On Amendments to the Federal Law on the Securities Market and Certain Legislative Acts of the Russian Federation").

In accordance with the latest developments, two investor categories have been specified. However, the testing mechanism for obtaining upgraded status has not been finalized.

IV. CONCLUSIONS

According to the law, individuals recognized as qualified investors until April 1, 2022 will retain their status in respect of securities and those financial instruments for which they were recognized as such.

The law also specifies the liability of brokers for selling to unqualified investors assets not corresponding to their category. Illegal sale of such assets is brought to a minimum. The new law provides for the compensation of all expenses (commissions) to the investor and the redemption of the asset.

Non-qualified participants of the financial market are eligible to acquire:

- Moscow Exchange quotation list shares (first and second level issuers);
- ETF of Russian providers FinEx and INIFunds;

- Simple bonds of Russian companies;
- Federal loan bonds (OFZ) and municipal bonds;
- Units of stock exchange mutual funds from Russian providers (Alfa Capital - AKNX, Sberbank - SBSP);
- Certain Eurobonds of Russian companies (not subordinated);
- Currency;
- Reliable foreign bonds (including government bonds of the European Union and the UK, corporate bonds of companies established in these countries, if the performance of obligations under the bonds is provided by a legal entity registered in the Russian Federation and rated not lower than the Bank of Russia).

Unqualified investors have the right to participate in the IPO, including foreign companies, provided that the company is listed on the Moscow Exchange quotation lists.

In order for an unqualified investor to be able to acquire inaccessible for his category financial assets, it is necessary to pass testing on the instrument or investment method of interest or to obtain the status of qualified investor.

As for the testing, the new mechanism for the protection of unqualified investors will come into force from April 1, 2022. The standard test is expected to consist of two blocks. The first block will evaluate the investment experience, the second - the knowledge of a specific instrument. The procedure of testing and the list of questions will be approved by the regulator. According to the law, testing is free of charge.

Any financial market participant (bidder) that meets one of the requirements may become a qualified investor:

- Total value of assets (securities, units, deposits, cash in accounts, etc.) of the investor exceeds 6 million rubles (excluding real estate);
- The volume of transactions with securities during the year is above 6 million rubles (at least one transaction per month and at least 10 transactions per quarter);
- Profile work experience of over 2 years in an organization that participates in organized tenders;
- Higher education in economics from a specialized university that attests in the field of professional activity on the securities market;
- Completion of one of the following international qualification certifications:
 - CFA (Chartered Financial Analyst) professional examination in the field of financial asset management;
 - FRM (Financial Risk Manager) specialized certificate in the field of risk;
 - ACCA (Association of Chartered Certified Accountants) - a global community of professionals in accounting and management accounting, auditing, corporate finance. It is considered one of the most authoritative and prestigious in the world;
 - CIA (Certified Internal Auditor) document confirming the international qualification "Certified Internal Auditor", awarded by the Institute of Internal Auditors of the USA;
 - CIIA (Certified International Investment Analyst) - Certified International Investment Analyst is a well-known international professional qualification and certification program for those working in the field of finance and investment;
 - CIMA (Chartered Institute of Management Accountants) is an international association of management accounting professionals from the United Kingdom of Great Britain and Northern Ireland. It is relevant for CFOs, senior executives or managers of their own successful business.

- Minimum 3 years of working experience in a financial organization (defined in paragraph 2, Article 51.2 of the Federal Law of 22.04.1995 № 39-FL "On Securities Market");
- The total amount of assets exceeding 50 million rubles.

Professional investors have access to operations with any type of financial instruments.

The above discussed law is envisaged to balance the interests of the market with those of unqualified retail investors.

Also among the priorities of the regulator is the achievement of financial stability - "...smooth and efficient functioning of the financial market, including the process of transformation of savings into investments, its resistance to internal and external shocks" [15]. Therefore, financial stability will allow to reduce economic costs of financial risks. It will also increase the predictability of the capital value for economic entities, which in turn will ensure continuity of services and minimize possible structural imbalances. From the above, the key point for an investor (a citizen) will be the following: provided shock protection by the system itself will reduce the premium for the system risk, and the instrument will become more accessible for the consumer.

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Digital Transformation of the National Economy of the Republic of Belarus

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Abstract—The article is devoted to the research of transformation processes that are taking place today under the influence of digitalization in the Republic of Belarus. Effective economic development is impossible without the widespread introduction and widespread use of digital technologies. The introduced digital technologies contribute to the growth of digital innovations, change economic relations at the micro level, improve the activities of the government (forming an electronic and digital government), affect the competitiveness of the national economy as a whole and contribute to globalization. It is planned that thanks to development of digital technologies, in the country by 2035 to increase a possibility of Internet access by means of fiber-optic communication links not less than 85 percent of users of stationary broadband access. In the sphere of network infrastructure SDH will become a basis for development of public info communication networks. In health care electronic recipes will begin to be applied that will allow to carry out diagnostics at implementation of the digital technologies based on processing of big data and to treat patients remotely, applying intellectual systems to monitoring of health.

Keywords—digital economy, digitalization, digital technologies, internet of things, digital government.

I. INTRODUCTION

The Republic of Belarus, following global trends, has also taken a course towards digitalization since 2017. A number of national development programs and projects for digitalization and informatization of the national economy were adopted: Decree of the President of the Republic of Belarus no. 8 “On the development of the digital economy”, Resolution of the Council of Ministers of the Republic of Belarus no. 235 “On approval of the state program for the development of the digital economy and information society for 2016-2020 years”, “National Strategy for Sustainable Development of the Republic of Belarus until 2035”, Resolution of the Presidium of the Council of Ministers of the Republic of Belarus no. 26 “Strategy for the Development of Informatization in the Republic of Belarus for the Period 2016 – 2022”, Decision of the Presidium of the National Academy of Sciences of Belarus no. 17 “Strategy Science and Technology: 2018-2040”, etc.), which in the long term marked the exit of the domestic economy to a qualitatively new level of modern technological development.

The state keeps development of the Belarusian market of artificial intelligence. In 2005 the Park of High Technologies (PHT) was created that allowed to attract more than 400 residents who are engaged in artificial intelligence and training of cars. In 2018 there was an open-end fund Bulba Ventures specializing in artificial intelligence and machine learning. Introduction and development of digital technologies demanded necessary competences and created new professions, such as, ML engineer, Data scientist, DL engineer.

The innovation products developed in Belarus both the health care, and agriculture, and automotive industry have a wide scope, it. For example, Flo startup (this appendix for control of health of women) based by our compatriots for 2 years attracted 18 million dollars of investments from Flint Capital fund and Mangrove Capital fund.

Most of all digital innovations in the banking sector which integrates activity of banks and large retail chain stores (“Halva”).

The national bank focuses on realization of the idea of use of open protocols of data exchange between the information systems belonging to various owners. Since 2018 in the country the system

of interbank verification when the subject has enough to identify of himself in any bank or financial institution is implemented, and further it can use all services of bank remotely.

The modern digital technologies, the Internet and other digital innovations (the Big Data and Internet type of things) based on a computerization of our today's life led to the fact that we already speak about construction and use of smart houses and smart city. Digital technologies opened the road to new opportunities, opening and innovations which do our life much more conveniently. Rates of digital innovations grow every year. The number of end digital user's increases. Researchers of Hootsuite Global Digital considered that for the beginning of 2020 in the world the number of users the Internet exceeded a mark of 4.5 billion people that is 7 percent more than last year, and 3.8 billion people used social networks that made about 60 percent of all population [1], [2]. According to the same analysts, more than 5.19 billion people use mobile phones or in percent a ratio growth was 2.4 percent. Analysts predicted that users will spend to networks in a year more than 100 days or on average daily hours 43 minutes. Figures, of course, and so impressive that we spend $\frac{1}{4}$ part of days on the Internet, but a situation were "corrected" even more by a coronavirus pandemic when a considerable part of the population of the globe was forced to work far off from a direct workplace. And, it is necessary to assume that the carried-out statistical calculations of the International agencies in the end of the year still will surprise us with statistics on these criteria (parameters).

The fact that, working in Homeoffice, employees gain experience of which, will make use also after the end of crisis in this situation is positive. Such situation resulted in freedom in the choice of an operating mode, filtration of formalities, and the self-discipline became a payment for such approach. The digital economy earned in many manifestations, in a number of branches of economy, having modernized a number of business processes (introduction of electronic document management, introduction of the digital signature, electronic record in policlinic, etc.).

Of course, at this conjuncture there are also negative sides of remote employment. For example, breaks between work and rest were transformed. Being at home, breaks for rest became much less. In a stream of "working day" and a number of objectives we do not watch time and sometimes, we solve the arising production problems in deeply evening. Workers, one may say, dropped out of the production environment and understood that Homeoffice does not allow instantly will be adjusted for work neither emotionally, nor functionally and to build the production environment to have independently.

On some social polls and on own experience it should be noted that there is not enough communication with colleagues as nevertheless it is easier to resolve some production issues at real-life communication, but not virtual. Besides many are not ready daily, and at times and hourly to look through e-mail, to modernize, to the level of office, a house workplace.

Work of personnel with clients, teachers with students as it is rather difficult to come into emotional contact which is come at personal contact by video conference became complicated. But despite all shortcomings of distant work, in general It should be noted that a number of the companies connected with activity on the Internet did not notice considerable decline in activity, and on some positions, on the contrary, growth was observed.

II. METHODOLOGY

Main objective of this research is justification and allocation of features of digital transformation in economy of Belarus. The author analyzes the valid state of the economy and what will lead headed for creation of digital economy, especially now to time of a pandemic and digital transformation.

By consideration of this problem we relied on a number of scientific research of both domestic, and foreign authors on this perspective, the regulating and legal documentation in the field of digital transformation of national economy.

When writing article both general scientific methods, and private were used (graphic, tabular) that allowed to make theoretically stated material more illustrative.

III. RESULTS AND DISCUSSION

Digital transformation – the multidimensional process including profound changes in technical, economic, social and even in a political field of activity.

Transition to digital economy by digitalization assumes stimulation of innovations, increase in efficiency and improvement of services, at the same time promoting more inclusive and steady rise of national economy and a growth in prosperity of the population of this country. But the listed benefits are not always implemented, especially in 2020 when the governments of a number of the countries announced a quarantine and introduced restrictions as on movement of the population, and having limited the movement of goods (export import) to the world market. With respect thereto, analysts, estimating world state of the economy, predict by the end of 2020 reduction of key performance indicator – GDP.

Rather general state of the economy, it was planned that world growth in 2020 will be 4.9 percent [3] that can be tracked according to table 1.

TABLE I. FORECAST OF THE IMF OF “PROSPECT OF DEVELOPMENT OF WORLD ECONOMY”, %

Countries	2019	Forecast		IV quarter comparison with the IV quarter 2019.		
		2020	2021	2019	Forecast	
					2020	2021
World GDP	2.9	- 4.9	5.4	2.8	- 3.5	4.6
The countries with developed economy	1.7	- 8.0	4.8	1.5	- 7.2	5.1
USA	2.3	- 8.0	4.5	2.3	- 8.2	5.4
Eurozone	1.3	- 10.2	6.0	1.0	- 8.6	5.8
Germany	0.6	- 7.8	5.4	0.4	- 6.7	5.5
France	1.5	- 12.5	7.3	0.9	- 8.9	4.2
Italy	0.3	- 12.8	6.3	0.1	- 10.9	5.5
Japan	0.7	- 5.8	2.4	- 0.7	- 1.8	0.0
UK	1.4	- 10.2	6.2	1.2	- 9.0	6.9
Canada	1.7	- 8.4	4.9	1.5	- 7.5	4.6
<i>The countries with emerging market and the developing countries</i>	3.7	- 3.0	5.9	3.9	- 0.5	4.2
<i>The countries with emerging market and the developing countries of Asia</i>	5.5	- 0.8	7.4	5.0	2.4	3.9
China	6.1	1.0	8.2	6.0	4.4	4.3
<i>The countries with emerging market and the developing countries of Europe</i>	2.1	- 5.8	4.3	3.4	- 7.0	6.6
Russia	1.3	- 6.6	4.1	2.2	- 7.5	5.6

Source: [4]

However, analysts speak about recession in the world and call to the GDP loudspeaker from minus 2 percent up to 2.7 percent, at the same time the median value is defined by them at the level of 1.6 percent [5]. The institute of the international finance (IIF), according to own researches, estimated growth of world economy at the level of 0.4 percent.

In Belarus in the current year the IPM Research center expected that there will be a decrease in growth rates of real GDP to 0.6 percent because of reduction of supply rate of oil from Russia (table 2).

From the provided data it is visible that economic growth in 2019 was reduced in comparison with a previous period by 1.9 p.p. percentage-point and made 1.2 percent. But according to National statistical committee of Belarus the largest specific weight in a gain of real GDP in 2019 was provided by such type of activity as “information and communication” that in percent the ratio made 0.53 percentage-point at a share in GDP of 6.2 percent.

Growth in this sector for the considered period was 9.3 percent provided that in other economy – 0.7 percent.

TABLE II. DYNAMICS OF THE MAIN MACRO INDICATORS OF BELARUS

Indicators	2018	2019	Succession of events in February, 2020			Succession of events in December, 2020	
			2020	2021	2022	2020	2021
GDP							
Rate of a gain of GDP, %	3.1	1.2	0.6	1.5	1.1	1.0	0.8
Rupture of release, %	0.1	0.1	-0.6	-0.2	-0.3	-0.4	-0.5
CPI, 4 quarter to 4 quarter last years, %	5.6	5.0	5.3	4.5	3.9	5.1	4.4
Refunding rate, %	10.3	9.8	8.9	8.2	7.4	9.8	10.2
Average salary							
BYN / month	958.1	1090.9	1165	1225.6	1285.7	1257.8	1367.3
Gain of a nominal wage, % in comparison with the previous year	17.1	12.3	6.8	5.2	4.9	12.7	8.7
Nominal exchange rate							
Belarusian ruble/ Dollar US	2.04	2.09	2,312,36	2.42	2.1	2.2	2.4
Belarusian ruble /Euro	2.4	2.33	2.49	2.62	2.68	2.5	2.8

The fact that the country “suspended” rates of development in 2019 is confirmed by calculations of the Belarusian analysts Mironchik N. and Levikhin A. (figure 1).

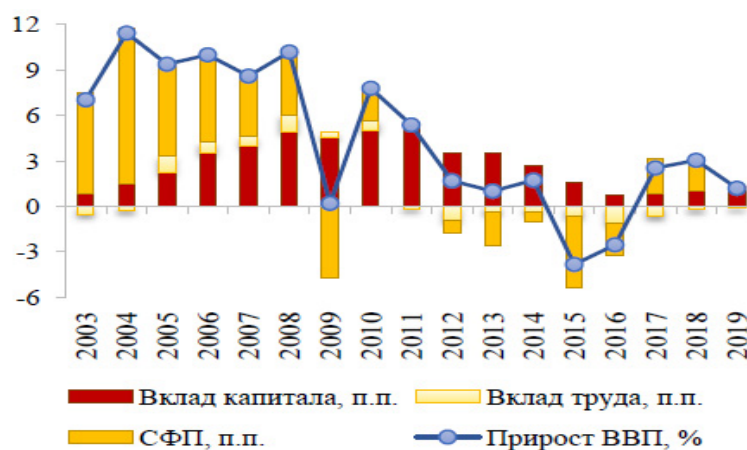


Fig. 1. Dynamics of GDP growth [7]

From the provided data in figure 1 it is visible that also the contribution of work and the capital in a gain of GDP. Capital in the country was reduced, especially it concerns the enterprises and the organizations, was financed, as occurs in the current year generally at the expense of the loan capital, but not as at the expense of own means (what confirms a settlement indicator of leverage which since 2016 steadily is more than unit). Such provision of the enterprises and organizations in national economy led to the fact that the external debt to which growth also promoted limitation of crediting of legal entities, lack of long-term savings and insufficiency of means of financial market began to collect the accelerated rates.

To correct this situation sees possible, first of all, in creation of conditions for inflow of investments, in particular, for the domestic significant enterprises. For increase in return from investment injections it is important to stimulate accumulation of intangible assets. Mironchik N. and Levikhina A. [7] claim that one of the reasons of a low performance of national economy and decrease in growth is the small stock of the intangible assets reflecting intellectual property rights, promoting forming of “knowledge base” in the country and promoting digitalization. Besides intangible assets (the software, the organizational capital, patents, etc.) stimulate digital innovations.

Digital innovations are the main driving force of digital transformation which leads to significant changes and modification of the economic relations, changes a production process, transforms interaction of people, stimulates their creative thinking; changes quality and consumption level. The benefit of digital innovations consists as in emergence of new products and digital services, in an opportunity and forming of the environment for the new markets and business models, and in increase in efficiency in public sector and forming of the digital government.

In the rating of readiness for the digital government Belarus has positive dynamics. The republic moved from the 49th place in 2016 to the 38th place in 2018 (figure 2).

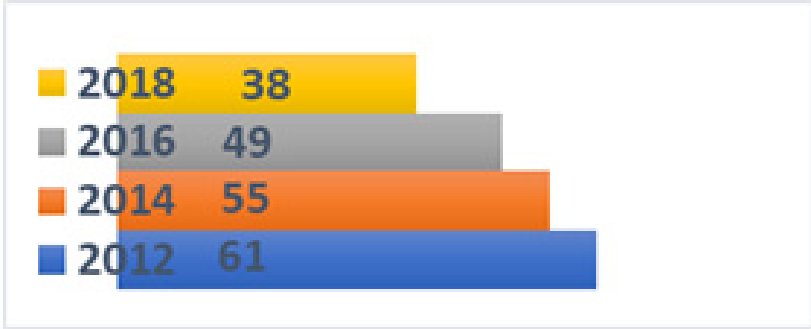


Fig. 2. Rating of readiness of Belarus for the digital government of 2012-2018 [authors researches]

Following the results of 2020 the country receded a little and took the 40th place in rating, but the index of readiness for the electronic government of Belarus in comparison with 2018 grew by 5.8 percent in 2020 [8].

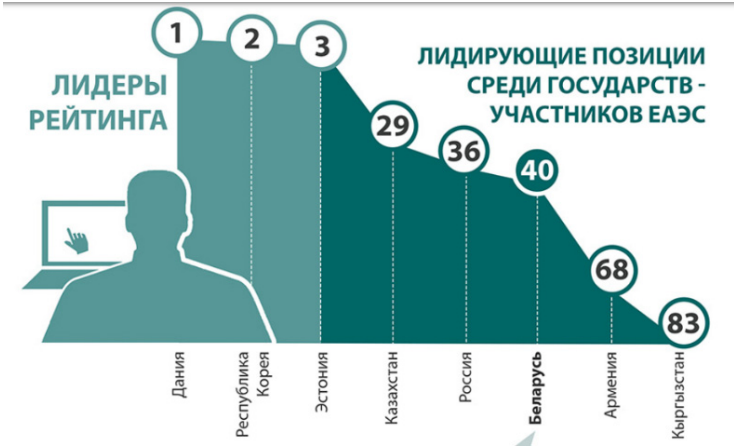


Fig. 3. Rating of readiness of Belarus for the digital government 2020 [9]

Let's note that the way of any state to the digital government lies through a stage of the electronic government.

Thus, the country passed from High-EGDI in 2016 to Very-High-EGDI in 2020. It is explained by start of the centralized project to the digital government which was mortgaged in the National strategy of sustainable social and economic development until 2030, including several initiatives connected with development of ICT in various sectors of the economy. Also the fact that the purposes “Strategies of development of informatization in Republic of Belarus for 2016 – 2022” began to be implemented in 2015 for the purpose of the ICT expansion in the service industry of the electronic government is positive. In this strategy it is noted that the share of ministerial procedures and public services which will be rendered in electronic form has to make not less than 75 percent by 2020. One more initiative – “The state program of development of digital economy and an informational society for 2016 – 2020” defines the concept of “digital transformation” of economy and is directed to effective introduction of digital tools.

Assessment of accomplishment of summary target indicators of this state program within households showed the following dynamics - figure 4.

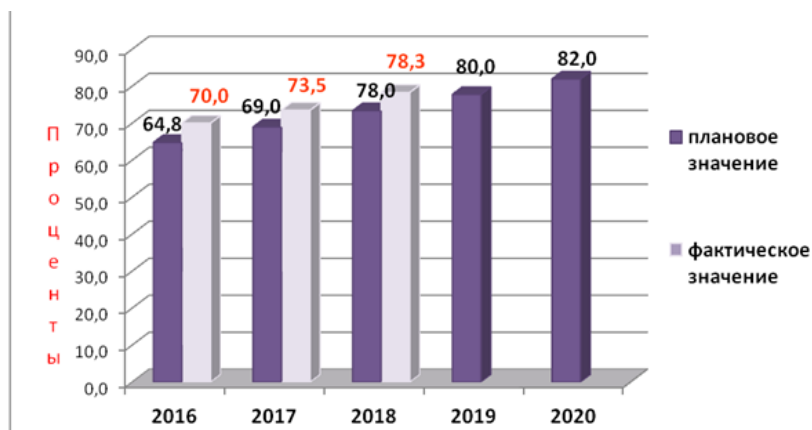


Fig. 4. A share of the households having access to Internet network, % [10]

Within the specified program of the Government the following directions of development were allocated:

1. stimulation and development of information and communication infrastructure;
2. stimulation of infrastructure of informatization;
3. digital transformation.

plan

fact

In all three directions calculations of efficiency of program implementation in 2019 were carried out.

At the initial stage of implementation of the State program extent of accomplishment of the directions was determined by formula 1:

$$E_t = \frac{\left(\frac{V_{fi}}{V_{pi}} + \left(1 - \frac{V_{fi}}{V_{pi}} \right) \times K_i \right)}{n} \quad (1)$$

where E_t is efficiency of accomplishment of direction no. 1 of the program in the analyzed reporting period;

n – quantity of target indicators in direction no. 1 of the program;

V_{fi} – the fact of accomplishment i -go of a target indicator of direction no. 1 of the program in the analyzed reporting period;

V_{pi} – the plan of i -go of a target indicator of direction no. 1 of the program in the analyzed reporting period;

K_i – the coefficient considering extent of influence of all risk factors on achievement of planned value of a target indicator.

For direction no. 1 the settlement indicator “Development of information and communication infrastructure” was equal to 1:

$$E_{2019-1} = \frac{\frac{34,2}{34,2} + \left(1 - \frac{34,2}{34,2} \right) + \frac{89,8}{88,0}}{2} = 1$$

For direction no. 2 the indicator “Implementation of technologies of the electronic government and development of infrastructure of informatization” made 0.98:

$$E_{2019-2} = \frac{\left(\frac{27,9}{50,0} + \left(1 - \frac{27,9}{50,0}\right) \cdot 0,91\right) + \frac{70,0}{60,0} + \left(1 - \frac{70,0}{60,0}\right)}{2} = 0,98$$

$$K_1 = \frac{1559000 - 151000}{1559000,0} = 0,91$$

For direction no. 3 the indicator “Transformation of business processes by means of ICT in all spheres of society” was 0.88 and paid off as follows:

$$E_{2019-3} = \frac{\left(\frac{59,0}{55,0} + \left(1 - \frac{59,0}{59,0}\right) + \frac{95,3}{90,0} + \left(1 - \frac{95,3}{90,0}\right) + \frac{3,0}{7,0} + \left(1 - \frac{3,0}{7,0}\right) \cdot 0,09 + \frac{99,98}{96,0} + \left(1 - \frac{99,98}{96,0}\right)\right)}{4} = 0,88$$

$$K_1 = \frac{3719959,36 - 3403054,69}{3719959,36} = 0,09;$$

At the second stage efficiency evaluation of accomplishment of the directions on a formula is carried out:

$$E_{pp} = \frac{\sum_{j=1}^m E_{t_j}}{m}, \quad (2)$$

where Epp is efficiency of accomplishment of the directions of the program in reporting year;

m – quantity of tasks in the direction;

E_{t_j} – efficiency of accomplishment of j-y of a problem of the directions of the program in reporting year.

As a result of the analysis were obtained the following data (table 3):

TABLE III. IMPLEMENTATION OF THE STATE PROGRAM

Directions	Name of the directions	Indicator	Value
no. 1	Information and communication infrastructure	E1	1.0
no. 2	Informatization infrastructure	E2	0.98
no. 3	Digital transformation	E3	0.88

Source: [10]

At the third stage the efficiency of program execution in general for 2019, proceeding from efficiency of accomplishment of the directions and summary target indicators was determined by formula (3):

$$E_p = \frac{\sum_{l=1}^k E_{p_l} + \sum_{h=1}^d \frac{C_{f_h}}{C_{p_h}}}{k+d}, \quad (3)$$

where Ep is efficiency of program execution;

k – quantity of the directions of the Program;

d – quantity of summary target indicators of the Program;

E_{pp1} – efficiency of accomplishment of the directions of the Program in the reporting analyzed period;

C_{fh} – the actual value of a summary target indicator of the Program in the analyzed reporting period;

C_{ph} – planned value of a summary target indicator of the Program in the analyzed reporting period.

The indicator of ER of efficiency of program execution calculated by a formula (3) yielded the following results [10]:

$$E_{2019} = \frac{1 + 0,98 + 0,88 + \left(\frac{80,0}{80,0} + \frac{82,8}{81,0} + \frac{21,3}{20,0}\right)}{3 + 3} = 0,99$$

In general, the performance indicator of program implementation to aspire to unit that allows to speak about success of its accomplishment and efficiency of the government in 2019.

Labor market will become the further direction of digital transformation in the nearest future. A number of experts in the field claim that automation and robotics will significantly affect work arrangements and human capital managements in the near future. It will be necessary to create qualitatively new jobs with high-performance work and skills of the maximum use of the last technology achievements.

IV. CONCLUSIONS

Summarizing the aforesaid, it is necessary to emphasize that Belarus, has potential in the field of digital technologies, potential in the field of forming of the digital government, however so far the economy works below the digital opportunities. The measures and tools provided by national concepts and state programs lay the foundation of the digital transformation directed to creation of full-fledged digital economy. For example, in the Resolution of Council of Ministers of Belarus no. 438 “About the list of state programs of scientific research for 2021-2025” (28.07.2020, 5/48239) the following purposes are allocated:

- to reach indicators within digital transformation at the level of the world countries in the field of economy, the social sphere and a state administration, robotics and artificial intelligence, use of digital technologies in space researches;
- cross-branch and digital transformation of the branches of economy, digital transformation of commodity markets, services, capital and labor power, development of digital infrastructure and ensuring security of digital processes; transfer of the rendered services and ministerial procedures to an electronic form;
- applied use of scientific results and digital technologies for creation of hi-tech and competitive products, decrease in import, material and power consumption of production, optimum use of natural resources, increase in level of health service and health of the nation, reliability assurance and reliability of digital information, increase in efficiency of public administration and the social sphere;
- creation and development of the digital information ecosystem constructed based on the digital platforms of the branches of economy and “the smart cities” interacting among themselves in the automated mode [11].

Introducing digital technologies and carrying out the planned purposes, the government and business can not only stimulate and accelerate digitalization in economy of Belarus, but also increase indicators of economic growth in the country that in turn, will stimulate inflow of the foreign investments and improving competitiveness in the world market. It is also worth noting that it is necessary to forget about the fact that implementation of digital technologies is inevitable also digital transformation to stop any more. If to delay with this process, then the country will be in outsiders for a long time and to carry out a role of catching up.

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Assessment of the Competitiveness of the Economy of Azerbaijan in the System of Modern World Economic Systems Communications

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Abstract—In the modern world economy, we are witnessing qualitative changes related to globalization, the gap in the levels of development of individual countries and regions, the transition of the world from a unipolar model to a multipolar one, and increased competition between the world's States for sales markets. Thus, the market in a broad sense is becoming one of the main values in our time, and therefore, the political and economic power of a country is determined by the degree of its competitiveness. The object of research is the national economy in terms of its competitiveness, including the development of national competitive advantages, as well as competitiveness in a globalizing world. Special attention is paid to the economy of Azerbaijan, its current state and problems by assessments of various expert agencies. Author pays particular attention to examination of World Competitiveness Index and conducts comparative analysis of Azerbaijan and CIS countries. When calculating this year's rating for Azerbaijan, the fall in energy prices and the devaluation of the national currency were taken into account.

Keywords—national economy, competitiveness, comparative characteristic, improving indicators, Azerbaijan

I. INTRODUCTION

The competitiveness of the national economy is a concept with several meanings. Most often, when using this term, the following wording is meant: the Competitiveness of the national economy reflects the ability of the state to achieve high rates of economic growth, as well as the stability of economic growth in the long term. It also reflects how high the country's productivity of means of production is. In the context of globalization, it is equally important to understand competitiveness as the ability of firms and companies in a given country to build their strategy and compete in international markets. Ensuring the competitiveness of the national economy is the most acute problem, reflecting not only the economic security of the country, but also its national security.

The competitiveness of the national economy is a comparative characteristic that contains a complex assessment of the main condition of features from the economy relative to external parameters, and its competitiveness of the national economy is shown at an international competition. changes are characterized by such parameters as the growth rate of GNP, labor productivity growth level, wages, share foreign investment in the total amount of investment in the country, based on education, basic science, research and development as a percentage of GNP, divided into the country's exports, raw materials and labor consumption industries, capital-intensive industries, high-tech industries, divided in world exports, etc. [2].

The fundamental conceptual understanding of the competitiveness of the national economy is based on the ability of domestic companies to produce goods and services at prices lower and of a quality that is not inferior to the goods and services of foreign companies, and at the same time satisfying both domestic and foreign consumers. This means that increasing the competitiveness of the national economy is possible through the transformation of the production of goods and services. In today's global world, the competitiveness of national economies is determined by its weight in the global economy, the availability of competitive advantages in specific industries, and the potential for their development. The leading factors for improving the country's competitiveness are the legislative policy in the field of economic transparency, the presence of innovation hubs(systems), the degree of external independence and national security (the absence of military

conflicts), economic and social stability, and a strong education system. It is also necessary to have a strategy for socio-economic development and a strategy for transition to innovative development.

II. MODERN METHODS OF ASSESSING COMPETITIVENESS

Currently, there are many different ratings compiled by international organizations and research institutes around the world to determine the degree of competitiveness of the economies of various countries around the world [7]. The most famous among them are the following:

1. "Global Competitiveness Report" compiled by the world Economic Forum (WEF).
2. "E-government readiness Report" prepared by the UN.
3. Report of the International budget partnership on the Open Budget Index.
4. The UN Annual report on human development, measured by the HDI (human development index).
5. Reports Of the economic Forum in Davos, Switzerland.
6. The world Bank (WB) Report on doing business, called "Doing Business".
7. Credit rating issued by one of three international agencies: Moody's, Fitch and Standard & Poors.

8. International innovation index. The Global Competitiveness index is an annual report published by the world Economic Forum since 1979. The index was developed by Spanish economist Xavier Sala-I-Martin. This index reflects the ability of countries to provide a high standard of living and well-being for their citizens, which depends on how productively and effectively countries use the resources at their disposal. Thus, the competitiveness index measures the aggregate impact of institutions, economic policies, and various factors that can lead to economic prosperity in the medium term. Since 2004, the global competitiveness report also shows the ranking of countries by this indicator. When developing the index for each country, 110 different factors are taken into account, of which two-thirds are empirically obtained by the researchers and authors of the report, and one-third comes from open sources provided by the UN

The report notes that as a country develops, wages also increase, and in order to maintain high profits, labor productivity must also increase in order for the country to achieve global competitiveness. But the reasons for increasing productivity in Sweden are radically different from those in Ghana or any other African country. Therefore, the report divides countries into 43 categories: developing based on economic factors, developing based on increased efficiency, and developing based on innovation. The top ten countries for 2016-2017 are represented by the following: Switzerland, Singapore, USA, Netherlands, Germany, Sweden, Great Britain, Japan, Hong Kong, Finland.

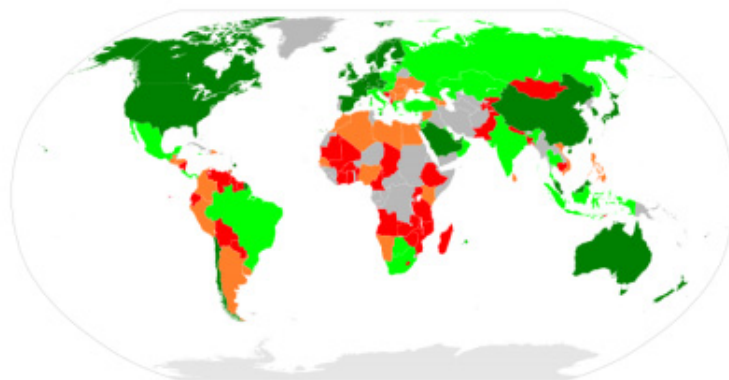


Fig. 1. Green corresponds to a more competitive country, orange – less.

The rating is developed based on 12 factors that determine competitiveness:

1. institutions;

2. infrastructure;
3. stable macroeconomic situation;
4. health and basic education;
5. the situation with higher education;
6. efficiency and openness of the domestic market;
7. the situation on the labour market;
8. the development of the financial system;
9. ability to take advantage of existing technologies in the country;
10. the volume of the domestic and foreign market, which enter the technological production in the country;
11. production of new products using the latest technological developments and its range;
12. innovation.

The e-government readiness report has been prepared by the UN Department of economic and social development since 2003. The report is made publicly available once every 2 years. This overview provides information on the use of information technology by the government to facilitate and speed up access to public services, including by entrepreneurs (online business registration, and issuing licenses and permits via the Internet). Currently, most countries of the world are developing information technologies to provide services to citizens. With the introduction of e-government, the concept of "queues" is becoming a relic of the past, all services can be accessed from the comfort of your home. The highest degree of development of e-government is the ability of citizens to participate in popular voting (referendums, presidential, parliamentary and municipal elections) through IC technologies.

III. AZERBAIJAN'S COMPETITIVENESS INDEX

The world Economic Forum publishes an annual rating of global competitiveness of the world's countries. In the ranking for 2016 - 2017, Azerbaijan took the 37th position in this list, which can not but please. The research covers 138 countries.

If we compare with last year's report, we will see an emerging trend towards improving indicators. Let me remind you that in 2015-2016, our country occupied the 40th position in the rating.

Also, Azerbaijan leads the countries of the Commonwealth of Independent States (CIS) in terms of competitiveness. For comparison, next to US among the CIS countries, Russia took the 43rd place, and Kazakhstan is content with the 53rd position. Other CIS countries occupy more modest positions: Georgia – fifty-ninth, Tajikistan-seventy-seventh, Ukraine – eighty-fifth.

In this calculation, the highest competitiveness index corresponds to a rating of 7 points. In 2016-2017, the competitiveness index of the Republic of Azerbaijan was 4.4 points, which is higher than average, but at the same time shows that our national economy has room to grow.

When calculating this year's rating for Azerbaijan, the fall in energy prices and the devaluation of the national currency were taken into account (table1).

An important feature of the current rating is that it was compiled during a period of falling oil and gas prices, which are the main components of export of Azerbaijan. Even so, Azerbaijan was able to strengthen its competitiveness by moving 3 positions ahead in the ranking. The report prepared by the WEF States that this was achieved primarily due to the improvement of education in the country and timely reforms that allowed "improving the business environment and the efficiency of the goods market".

TABLE I. WORLD COMPETITIVENESS INDEX: AZERBAIJAN AND CIS COUNTRIES

Countries	2011	2012	2013	2014	2015	2016	2017	2018	2019
Azerbaijan	69	64	66	69	51	55	57	46	59
Belarus	-	-	-	-	-	-	-	-	-
Kazakhstan	61	56	61	66	67	72	72	51	50
Moldova	82	86	97	95	-	94	93	87	89
Russia	75	62	58	51	63	63	66	67	64
Tajikistan	104	96	117	116	122	116	105	100	-
Ukraine	84	78	73	72	82	89	82	73	84
Quantity of countries	117	125	131	134	133	139	142	144	148

According to the rating, Azerbaijan is included in 16 countries that are in the process of transition from the first to the second stage of socio-economic development. In addition to Azerbaijan, this list includes the following countries: Iran, Kuwait, Mongolia, Vietnam, Venezuela, Philippines, Botswana, Gabon, Moldova, Saudi Arabia.

It is also worth noting that our country is included in the list of 27 countries that have become the most competitive in individual areas (industry, agriculture, quality of educational and medical services, etc.).

According to the competitiveness report, Azerbaijan took the 3rd place in the number of procedures needed to register and start a business, that is significantly reducing their number; 9 place – on time, departing at the completion of all procedures to start a business; 18 – in terms of women's involvement in economic processes on the labor market, which once again confirms the absence of any sex discrimination not only at the legislative level, but also at the household level; 39 at the stability of the main macroeconomic indicators; 36 position - to protect the rights and property investors; 41st place - on the level of public debt, which includes both foreign borrowings of the country and money borrowed on the domestic market by issuing and selling bonds to the population (the country's authorities annually reduce the percentage of external public debt to GDP); 30 – on the efficiency of the labor market, as well as 44th place – on the degree of development of innovation [12].

In the world economic forum's global competitiveness ranking for 2019, Azerbaijan took the 58th position in the overall list of 141 countries covered by the study.

With a total score of 62.7 points, the country improved its position in the ranking by 11 positions and 2.7 points compared to last year. Last year, Azerbaijan ranked 69th out of 140 countries.

IV. CONCLUSION

Based on the conducted analysis, it is possible to note that in the 2019 ranking, Azerbaijan showed improvement in such indicators as the labor market, business dynamism, food market, infrastructure, skills, public institutions, market scale, and innovation potential.

The country's position has become weaker in terms of indicators such as IT capacity and healthcare. There are no changes in the financial sector since last year.

In terms of macroeconomic stability, there was a slight increase, which was influenced by low inflation and a low level of external debt. However, despite this, the country is still at the bottom of the rating (103rd place).

Azerbaijan is next in the ranking to countries such as Kazakhstan, Colombia, Greece, South Africa, Turkey and Costa Rica.

If we consider the development of Azerbaijan's competitiveness within the Eurasian region, then the country's position is closest to Kazakhstan, which took the 55th place in the rating, also showing growth compared to last year.

WEF experts believe that countries in the region should pay more attention to financial sector development and innovation in order to improve their competitiveness. This will also help advance

structural changes. The Russian Federation remains the leader in the Eurasia region, taking the 43rd position in the rating.

WEF assesses the competitiveness of countries based on 12 indicators, including infrastructure, macroeconomic stability, health, commodity market productivity, labor market productivity, financial sector development, technology development, innovation potential, etc.

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Role of Innovative Development in Implementation of Competitive Strategy of Business Organizations in Construction

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Abstract—The article substantiates the feasibility and effectiveness of innovative development in the formation of a competitive strategy for a construction company. It is competitive strategies that represent the directions for realizing the competitive potential, which reflects the competitive advantages of an entrepreneurial organization. The choice of strategy as a “measure of readiness” to achieve goals in the field of innovative development of the enterprise depends on the innovative potential. Experience shows that despite the constant increase in the importance of innovations, not all companies have to introduce new technologies: some small enterprises are not able to develop them, or it makes no sense for enterprises in a state of decline to modernize production. In this regard, it is necessary to determine the conditions under which it is advisable for companies to develop new products. First of all, this is when there is a threat of obsolescence of existing goods, new needs of buyers appears, tastes and preferences of consumers change, the life cycle of goods decreases, and competition increases. The authors of the article propose to use the model of innovative development in the management practice of construction enterprises, within the framework of which, the result of a sequence of actions is the development of a competitive strategy for the production and sale of construction products, taking into account the synthesis of the interests of subjects participating in the innovation process at the enterprise.

Keywords—innovative development, innovation, competitive strategy, competitiveness, construction company

I. INTRODUCTION

As the environment is constantly changing, the construction business organizations appear to compete. The economic nature of the modern competition modifies but not rejects the basic principle of rivalry – the principle of rivalry [14]. The construction companies involved in the competition and having the competitive opportunities which composition and structure correspond to the innovative development tasks face the necessity to undertake several simultaneous actions:

- survey of manufactured product consumer needs;
- survey and analysis of needs in the products the manufacturing method of which is close to those manufactured by the company;
- survey and analysis of dynamics of scientific and technological progress in construction and the related fields.

Survey of manufactured product consumer needs is aimed at identifying the development trends of these needs considering the opportunities of their satisfaction by the efforts of a particular company. The company reacting to the change in needs can make changes to products manufacturing technology and thus solve the problem of matching supply to demand. By surveying the wider range of needs, covering the kinds of products the manufacturing technology of which is similar to the technology that has been already mastered by the company; the company expands its opportunities for supply to demand matching. The boundaries of the innovative search are expanded and sometimes go beyond the industry [15]. Survey of scientific and technological progress in construction and at the inter-industry level sets the vector of the innovative development of the company. The analysis horizons are rather wide in this case. They are endless from the theoretical point of view but limited by technical and resource potential for a particular company [8].

II. MATERIALS AND METHODS

The innovative potential is analyzed on the basis of combination of both qualitative and quantitative methods (for example, using engineering forecasting methods). The result is a complex of innovative offers that can be implemented in a particular company under certain circumstances [6]. It is important to emphasize that only the trends of innovative search and the vector that will provide for determining not the particular innovative ideas but the method of their search are formed in this case. In fact, it deals with the determination of real sources of an innovative idea for the company. The problem of search for innovative ideas for a construction company is rather comprehensive. The innovative idea can be rightfully characterized as a business idea that is found in many contemporary authors [2, 3, 13]. The business idea differs from the intellectual idea by its relation to certain objective prerequisites.

The business idea forms a production final result model. It must meet the consumer requirements, interests of investors (save available resources and get a return on it) and interests of entrepreneurs striving for implementing the ideas as they are [10]. The business ideas are formed when exploring the environment, recognizing the conditions for competitive scene transformation, the needs, innovative processes in industries and business areas. A business idea implementation requires using special methods of organizational and economic support [11, 7]. The following methods can be used:

- setting up a new company;
- separate activity within already existing company;
- agreed activity with other business subjects, extensive development of partnership relations.
- The selection of any method depends on the following factors:
- the scale of transformations associated with the idea implementation;
- the competitive potential of a small or medium-sized company with all its components;
- company financial status;
- its target priorities, particularly, drive to transition to a group of companies with higher competitive status;
- nature of the competitive strategy selected;
- commitment to (or no commitment to) the principles of entrepreneurship;
- presence of additional competitive advantages (for example, management experience).

It should be emphasized that if the company management is fully aware of the modern competition intensity, trends and nature of interactions attributable to the construction market, the selection will result in transition to a "milder" form – contest-based competition and drive to the agreed actions with other business subjects. And it should be noted that the drive to development of external interactions reflects the external factor impact. But the competitive potential in the part

relating to its innovative component is also formed under the external factor impact. Among their entire variety, the most significant ones can be distinguished, thus, the production and process potentials in this case. Although other types of potential of a construction company can be supplemented through external interactions.

III. RESULTS AND DISCUSSION

The process and production potentials of the construction company are clearly determined [4]. There is always the already accumulated production experience in the form of the mastered technologies, available modern equipment, experience of its using, production facilities, production infrastructure, logistics systems, etc. There is a parallel task - the efficient use of this potential. To solve it, the diagnostics of the production and process potentials should be performed [17]. Such diagnostics should provide for studying the structure of the potential with separation of the elements that:

Firstly, can be successfully used for further production development on the basis of the innovation used;

Secondly can be involved in this process when undertaking the relevant modernization measures, such as repair, retooling, etc.;

Thirdly cannot be used due to physical and moral wear.

According to the results of the diagnostics, it is proposed to form a system of production and process limiting devices and consider them in the determination of the innovative development trends. In addition, it is important to determine and record the real production and process advantages to be saved, used and replenished. It is reasonable to study these components of the internal environment simultaneously with the external factor diagnostics, since the priorities between them are never known. The combination of these processes is the main principle of the innovative search within the framework of business activity. In the places where the results of any diagnostics coincide, the innovative development trends should be searched to ensure competitive advantages [16].

The lack of priorities in these kinds of diagnostics is very important. It is a well-known fact that when building the innovative development models of the company, the impact of the model subject is observed. Some part of such subjects (for example, marketing specialists) is of the opinion that the external environment and, particularly, the need and consumer demand should be primary and set the production development parameters [18]. And the other part, which is, as a rule, the specialists in production process management and planning, give priority to the available resources [1]. Both positions may have the right to exist but neither of them can be recognized as fully justified. The internal control system improves the efficiency of functioning and economic development, representing a way of business expertise [20].

The efficiency conditions are unchanged: this is the resource weighted goal-oriented activity [9]. That is why this study emphasizes the equal significance of internal and external factors of innovative development that was determined by the management theory but distorted in practice. In the construction companies, such distortions appear to be most vivid as the factor analysis and formation of the relevant managerial decisions are the prerogative of a rather limited circle of people (top managers) and depend on their views, that is, subjective.

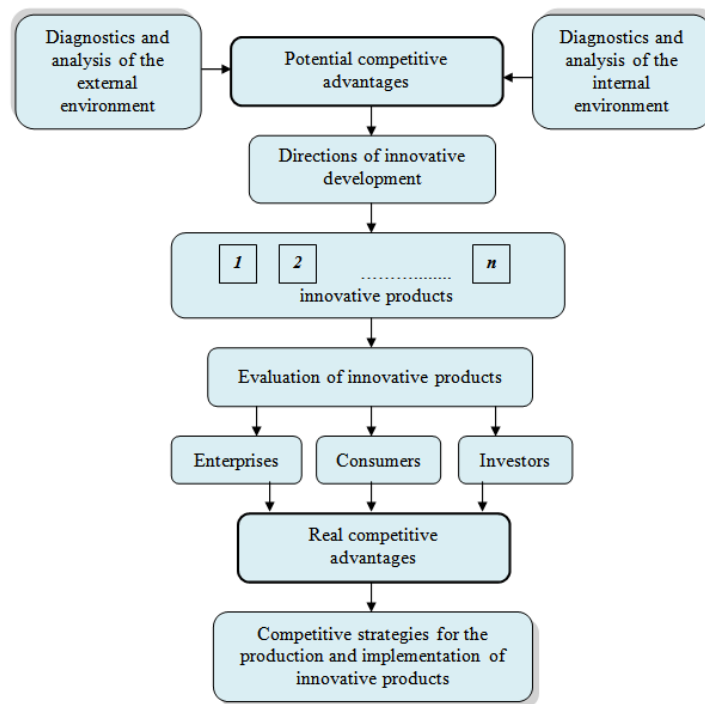


Fig. 1. Model for the formation of a competitive strategy for the production and sale of innovative products

Considering the above, it is suggested that the construction companies use the innovative development model in the practical management (figure 1). The result of the sequence of actions within this model is the development of competitive production strategy and construction products (works, services) sales.

IV. CONCLUSIONS

In conclusion, the peculiarity of this model, along with the above, is the assessment of the formed complex of innovative products that are supposed to be introduced from the consumer point of view, the company itself and investors. Similarly to the results of two kinds of diagnostics, a synthesis of interests of the subjects participating in the innovative process in the company is required. Assessing the degree of conformity to these interests is possible by using the development of the innovative products indicating system. For this purpose, the known planning and forecast methods can be used.

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Digital Technologies in the Field of Public and Territorial Administration: New Challenges and Global Trends

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Abstract—Today, the main challenge for economic development is the digitalization of all aspects of public life. The main task of public authorities is to create a digital ecosystem, which, unlike the traditional one, would reduce the time and financial costs for collecting, processing and transmitting information necessary for the implementation of their functions in interaction with citizens and business entities. The creation of a unified database for the provision of public services and the need to authorize each person in it leads to the emergence of categories such as digital avatar, digital or virtual citizenship. The article raises the question of studying these categories and the need for their legal justification. This is a key task not only for the development of theory, but also for the practice of state and municipal administration. In order to receive feedback and strengthen the involvement of citizens in the legislative process, new tools can be used (crowdsourcing, a digital profile of a citizen, a single trust space for an electronic signature, etc.). Informatization of all spheres of public life creates objective prerequisites for the formation and development of network, virtual structures in various fields of activity, including politics, economics, science and education. To provide the stable development of such a system and the coordination of the activities of the participants, new mechanisms of self-regulation and self-development are needed, as well as a new management model adequate to the challenges of the digital world.

Keywords—regional economy, digital management technologies, quality of life of the population, spatial analytics, territorial development, performance efficiency, territory, social policy, economic growth, electronic administration systems.

I. INTRODUCTION

Today, the ubiquity of digital technologies leads to a radical transformation of the way of life, the line of socio-economic development. A certain trigger was the pandemic announced by the World Health Organization, which forced the society to switch to new formats of communication and management models. Technologies such as “smart cities”, “smart enterprises”, “smart homes”, “smart information and analytics”, “smart medicine”, “safe city”, e-government and a number of others are becoming common and regular. This kind of transformation requires new skills and competencies from people and businesses, but, above all, psychological readiness for innovation and constant mobility.

In the field of business, the level of competitiveness has already begun to be determined by the speed of implementation and the efficiency of using digital technologies. Artificial intelligence, robotics, the Internet of things, wireless technologies and others are those production factors that can replace a human being or significantly increase his labor productivity.

Traditional processes of creating goods and services are collapsing. To convert resources into finished products, the technologies of additive manufacturing or 3D printing are increasingly used,

which can significantly reduce the manufacturing time of a product and remove intermediaries from the production process.

Many companies consider e-commerce as the main point of business growth and expansion of geography of presence. Today, mobile communications are no longer the privilege of the elite and are becoming an integral part of every person's daily life. Thus, mobile gadgets are becoming an effective tool for doing business. Following e-mail, companies are starting to develop mobile versions of corporate portals. One can take as an example the most popular business applications - mobile versions of Lotus Notes or MS Outlook; CRM and ERP systems; portable business analytics ("Manager's Tablet"); various software products that automate the production and management process depending on the scope and extent of activity.

Companies are beginning to compete with digital platforms, and it takes a small group of talented enthusiasts to create a large, fast-growing industry.

Scientific and technological progress and ubiquitous digitalization do not leave an ordinary person without attention. The development of social networks and all kinds of entertainment sites, mobile banking, mobile e-commerce - all this is already becoming the norm of life.

With the advent of various digital services and the development of "smart" spaces, human life is changing, it becomes more comfortable, free and rational.

However, the growing flow of information in the modern world is so great that a person is not able to cope with it on his own. He is helped by electronic assistants and artificial intelligence, which allow deep and comprehensive analysis of large amounts of data, to get the most out of them and to receive an unprecedented level of accuracy from their analytical processing.

The rapidly growing volume of data begins to exceed the human capacity to assimilate it, which leads to an increase in demand for artificial intelligence (AI) technologies and electronic assistants.

Certainly, digital technologies, like any phenomenon, are not without negative consequences. First of all, this is the disappearance of certain professions, types of activities and markets, imperfection and vulnerability of the personal data storage system, the growth of cybercrimes, the lack of "digital literacy", especially among the elderly. In addition, the development of digital technologies erases geopolitical boundaries, a certain threat to the territorial integrity and geographical sovereignty of the community arises. The internal control system improves the efficiency of functioning and economic development, representing a way of business expertise [12].

All this somewhat reduces the level of public trust to the digital environment and slows down its development. As a response to this challenge, it is necessary to reinforce the role of public authorities in the processes of regulation and stimulation of the development of the digital economy. A definite step in this direction has already been taken. So, in the Decree of the President of the Russian Federation of May 7, 2018 No. 204 "On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024", the nationwide vector of development of Russia was determined - the accelerated introduction of digital technologies in the economic and social spheres. This message of the President of the Russian Federation received legislative support in a number of legal acts: in the Decree of the Government of the Russian Federation of 03/02/2019 No. 234 "On the management system for the implementation of the national program "Digital Economy of the Russian Federation" [5], in the "Passport of the national project "National Program "Digital Economy of the Russian Federation" (approved by the Presidium of the Council under the President of the Russian Federation for Strategic Development and National Projects, Protocol No. 7 dated 04.06.2019).

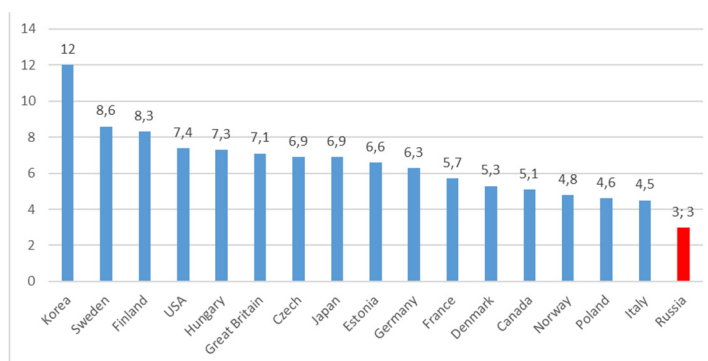
Despite the short period, the first steps have already been taken in the field of building a virtual model of territorial administration:

- a digital communication platform has been developed in the field of strategic management, which creates a certain platform for the development of common actions and their coordination at all levels of government in the process of developing a strategic plan;

- there has been developed AIS “Typical cloud solution for the automation of project activities of public authorities” (TOP APD);
- a national data management system (NDMS) has been created;
- the Unified State Platform for Data Collection of the Industrial Internet of Things has been developed and its development has been ensured, namely: a toolkit has been developed for analyzing objective data on supervised objects based on approved departmental data models used in the CTD, etc.

Evaluating the achievements of our country in terms of key indicators of the introduction of digital technologies and their development, we can conclude about its dynamic development. According to a study by the Higher School of Economics, for the period 2010–2017, the ICT sector, which includes telecommunications services, the production of software and information / communication equipment, and the wholesale of ICT goods, grew by 17%, almost doubling GDP growth [1].

However, Russia's indicators in the global space for the development of the digital sector and its contribution to the economy are rather modest (Figure 1).



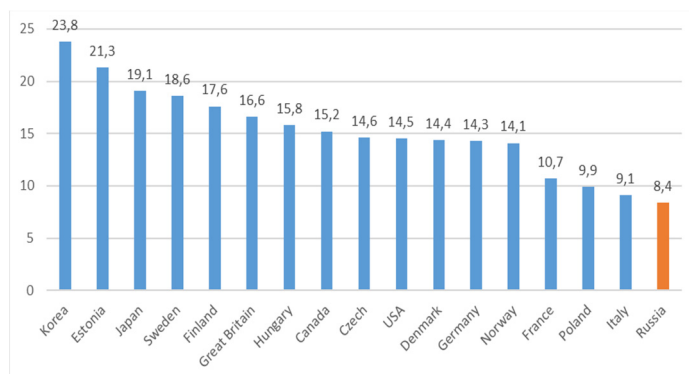
* Excluding the ICT goods wholesale industry

Source: OECD, HSE ISSEK, Institute of Growth Economics calculations

Fig. 1. Contribution of the digital sector to GDP (as of 2017, in %)*

According to data on Figure 1, Korea is the absolute leader in terms of the share of the digital sector in GDP. Russia is almost fourfold behind the leader in this indicator.

A rather low value in Russia has the indicator "the number of employed per 1,000 workers" (Figure 2). Here again, Korea is the undisputed leader, but Russia's lag behind the leading country is slightly less - twofold.



Source: ISSEK HSE, OECD, Institute for Growth Economics calculations

Fig. 2. The number of people employed in the ICT sector per 1,000 people in 2017, units

According to the rating of the World Economic Forum, Russia in 2018 ranked 43rd among 140 countries, and in the area of "Penetration of information and communication technologies" – 25th [11].

At the same time, Russia's lagging behind can be viewed from a positive point of view. This suggests that Russia has potential and opportunities to expand the number of jobs in this area of activity. This process can be stimulated by public authorities, which should create favorable conditions for the development of the digital economy and narrow the gap in the spread of information technologies in comparison with the leading countries of the world.

In other words, the public authorities are faced with the task of radically changing the technologies and management methods used, which would become adequate to the new conditions of a high-tech society, and certain work is also needed to reduce the gap between Russia and the world's leading countries in terms of the level of development of the digital sector and its contribution to the economy, as well as the creation of a domestic unified information and telecommunications system for managing territorial development, integrating and harmonizing various databases formed by various public authorities, business entities, credit and financial organizations and others.

II. METHODOLOGY

For the formation of a scientific hypothesis and the choice of a theoretical and methodological basis for the research, fundamental works of domestic and foreign scientists in the field of the digital economy and the development of network and virtual forms of management were of great interest.

The methodological foundations of informatization of modern society were laid by N. Wiener, an American mathematician, one of the founders of cybernetics and the theory of artificial intelligence. K. Shannon, an American engineer, cryptanalyst and mathematician, is rightfully considered another "father of the information age".

Among other foreign scientists dealing with the development of information resources, who, as it should be noted, are the leaders in this area, are D. Bell, P. Drucker, F. Kamman, M. Castells, J. Maleski, F. Machlup, M. Malone, S. Park, P. Pilzer, T. Sakaya, D. Siegel, T. Stewart, O. Toffler, C. Handy, L. Edwinston and many others.

In the domestic economic science, the problems of informatization and the use of information resources, until recently, were not the subject of close analysis. The works of such scientists as O. Antipina, S. Dyatlov, V. Inozemtsev, R. Nizhegorodtsev, V. Tambovtsev, R. Tsvylev and others had a significant impact on the development of the information paradigm.

Conceptual provisions of virtual management are one of the backbone and stabilizing factors for the functioning of the digital economy. The basic aspects of the functioning of virtual organizations and management were studied in the works of V. Afanasyev, A. Babkin, M. Granovetter, V. Inozemtsev, M. Castells, V. Makarov, L. Pidoimo, A. Ursul, S. Fabrichnov, L. Yakobson and others.

However, the problems of the formation and effective use of information resources as factors in the development of the regional economy still require their scientific understanding.

We believe that there is a need for scientific modernization of the theory of territorial development management from the point of view of the possibility of introducing elements of virtual management into it and developing mechanisms for constructive interaction through digital platforms of three active subjects: the state, business and individuals. The new paradigm of territorial development should unite the economic, political, social and scientific life of the state and its subjects and stimulate the further effective development of the information society and the digital economy. This formulation of the problem translates this problem into a transdisciplinary task.

The model of virtual territorial development management should be built using geodata, geoinformation, spatial data models, GIS, as well as using "cloud" technologies. The process of building models, in our opinion, will allow in a visual form and at a lower cost to show how the

interaction of a real object and the external environment occurs, as well as to identify the factors and conditions under which this interaction will be optimal. Unlike traditional modeling, geoinformation will allow one to make a binding to the terrain and visualize spatial data using various methods. All this will make it possible, without significant costs, to consider various ways of developing the territory, locating productive forces, regional planning, reconstruction and housing development of individual parts of the territory. Considering the virtual models of the future city, it is possible to identify design flaws and possible consequences of the decisions made for the environment and the development of the social sphere at an early stage. Working with virtual and augmented reality opens up opportunities for the emergence of new methods of data analysis, as well as new forms and methods of reporting and forecasting. The virtual management process is able to quickly respond to the changes in the external environment and the emergence of new innovative developments.

The new paradigm of virtual territorial development management should take into account the heterogeneity of spatial development and the provision of resources (natural, human, economic and others) in order to pursue a policy aimed at leveling territorial development and an equal increase in the level and quality of life of the population.

In addition, any territory as an administrative-territorial unit is a complex, highly dynamic and open socio-economic system. As a result, there is an increase and complication of economic ties. And this leads to the emergence of the so-called mobile network environment, which allows the establishment of interactive, multilateral and regular interoperations between economic agents for the sharing of knowledge and the exchange of resources.

The deep fragmentation of the economy existing in Russia creates certain obstacles for the development of network forms of interaction. A certain reengineering of the institutional structure of society and strategic guidelines for the country's economic development in the conditions of an innovative economy is required. Since even the most advanced technologies cannot successfully develop and function in a poorly developed business and institutional environment.

To ensure the stable development of the state and its subjects, today we need not just discrete innovations, but continuous innovative activity. This situation is achieved only within ecosystems, where new products and technological innovations are created together, in the format of collective actions.

A situation arises when, on the one hand, it is necessary to investigate the reality and trends of its development, and, on the other hand, to provide prompt and reliable information for interested stakeholders, first of all, as well as public authorities, in the form of a set of supporting signs in order to make operational management decisions. In this situation, it is necessary to turn to the methodology of simulation modeling, which will allow transferring the collected information from the category of inert material into the evaluation process, thereby increasing the efficiency and validity of management decisions. The information collected is usually quantitative and qualitative in nature, which complicates the process of its analysis and evaluation. In this regard, optimization-qualimetric management models will be of certain interest. The effectiveness of their use will lie in the possibility of variable management in conditions of uncertainty and in assessing the quality of the decisions made before their implementation.

Theoretical and practical thoughts about this problem could be found in articles of such authors as Czarnecki M.T. – “Managing by measuring: How to improve your organization's performance through effective benchmarking” [5], Dorfman R., Samuelson P.A., Solow R.M. – “Linear programming and economic analysis”, Brown R.G - “Economic Order Quantities for Materials Subject to Engineering Changes” [3], Bellman R. - “On the Computational Solution of Programming Problems Involving almost Block Diagonal Matrices” [2], Fleming Q.W., Hoppelman J.M. – “Earned value Project Management” [6], Tijms H.C. - “Stochastic Models – An Algorithmic Approach” [8], Morse P. - “Queues, Inventories and Maintenance” [7].

The advantage of using the optimization-qualimetric model is the possibility of using an inverse algorithm, which allows, based on the required estimated level, to determine the actual parameters for extrapolation. This is of great practical importance in the field of territorial administration.

Public authorities preliminarily determine the values of indicators that will signal the successful development of the territory, and then, comparing their values with the actual ones, develop strategic plans for the development of the territory.

When using the optimization-qualimetric model, it is necessary to determine the values of the "boundary states of the balanced system" with the designation of their boundaries. In other words, the set values of the indicators can deviate both in the positive and in the negative direction. However, such deviations within a certain interval will be considered normal. Only deviations that go beyond the boundary state will require prompt intervention from the authorities. The use of this category will be considered as a criterial assessment of the effectiveness of the developed program document, and the threshold values of the indicators will allow timely corrective actions to be taken in order to prevent critical deviations and make informed management decisions.

Certain restrictions in the construction of a new model of territorial development management will arise due to the uncertainty of the development of one of the main resources of the economy - personnel. It is the knowledge and ability of people, their key competencies that will determine the success of modernization of the territory development management system, as well as the possibility of its effective operation.

Thus, the new virtual model of territorial management, based on optimization-qualimetric modeling, will increase the flexibility and efficiency of the management process, move away from hierarchical management systems and create a horizontally connected network environment for the free flow of technologies and innovations between sectors and territories.

III. INNOVATIONS IN THE FIELD OF SPATIAL DEVELOPMENT AND PUBLIC ADMINISTRATION

In the digital age, information is turning into a strategic asset of public authorities, which can be used to significantly increase the effectiveness of implemented policies. The use of artificial intelligence and robotization of a number of routine processes will significantly reduce transaction costs and risks, improve the quality of service and the level of customer satisfaction.

The goal of digital transformation in the field of state and municipal administration is to create a digital ecosystem under the guidance of the state, which would make it possible to build constructive interaction in the virtual space of authorities with commercial and non-profit organizations, financial institutions and citizens.

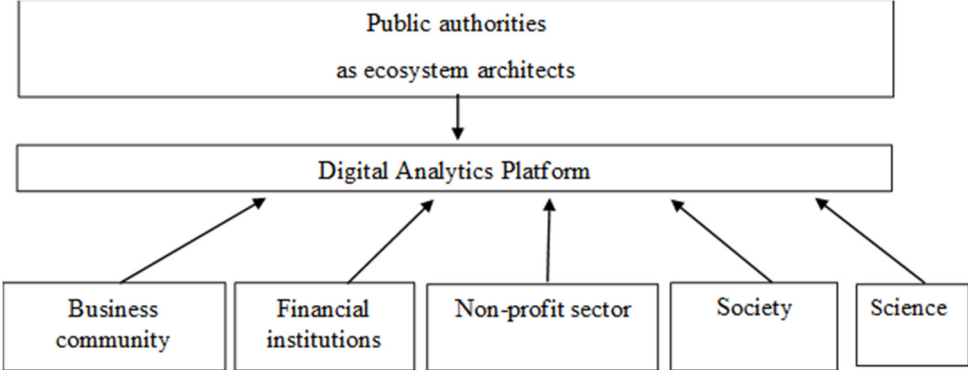


Fig. 3. Public administration ecosystem in the context of digital transformation

In a number of foreign countries, various standards for the provision of digital services have been developed and are being implemented, a digital government is being created, the priority task of which is to collect and integrate information about the economic situation, legal entities and individuals into a single database, available for joint use by various public authorities. Of course, this form will not replace the actually operating authorities, it is a kind of shell, an electronic form of communication between state authorities, local governments, business structures and citizens based on information and communication technologies.

Mass digitalization raises many philosophical and legal questions. By authorizing himself on digital platforms, a person provides his personal data and transfers certain rights for supporting him in various life situations. Thus, a person has a "digital twin" and new forms of citizenship - digital, virtual.

In business, the digital platform is shaping the new infrastructure of markets by eliminating intermediators and hierarchical relationships. This approach allows businesses to reduce costs, expand their geography and market share. At the same time, by entering the business models of economic entities, the owners of digital platforms gain control over supply chains and the pricing process. In other words, there is a strategic threat for a business to become dependent on the owners of digital platforms or even lose control over their business.

In this regard, public authorities need to protect the market from being monopolized by the owners of digital platforms, to form control mechanisms and norms of behavior for users and owners of digital platforms in cyberspace. To solve this problem, it is necessary to implement reasonable digital protectionism, provide state guarantees and preferences to increase consumer trust in digital platforms, as well as develop technologies for personal identification and analysis of digital traces.

Note that the ideas of customer focus and maximizing the usefulness of the activities of public authorities for citizens have become very popular in the leading countries of the world. Moreover, there takes place a borrowing and adaptation of management methods used at the level of an economic entity in relation to territorial management. This is not accidental, since the business sector is highly dynamic and less formalized due to the high level of competition, which determines its rapid adaptation to the turbulence of the external environment and leads to the need for a constant search for new management solutions to increase competitiveness.

Within this approach, the territory is considered as a quasi-enterprise with a geographic location, resources, objects of economic activity, infrastructure, qualitative and quantitative composition of the population and the actual administration elements (public authorities). However, the purpose of the activity of such a quasi-enterprise, in contrast to the traditional one, is to achieve a social effect, and not to maximize profits. In this regard, this kind of quasi-association can be called a "social corporation". In turn, residents of the territory, local and foreign business, public organizations and associations are clients, on the quality of service of which the prosperity of the territory and the quality of life of the population will depend.

The key factor for the success within this approach is the competitiveness in all fields and on all levels of management. Public authorities, to manage the territory, should use not administrative, but the economic influence methods applied at the single enterprise level and adapted to the conditions of managing complex social-economic systems which help to compete for clients and other territories.

The following goal will be of decisive importance here: creating a favorable social, economic and ecological climate for people to live and attracting investors. In order to realize this goal, it is necessary to develop infrastructure, provide for a flexible system of benefits and preferences for local taxes, create conditions for attracting qualified labor resources, etc.

In this regard, the issues of rational distribution of productive forces and district planning began to acquire great importance. A figurative comparison can be made here. Just like the alignment of combat forces on the fronts largely determines the outcome of hostilities, the location of production plays a decisive role in the economic and social development of a territory.

The creation of an integrated system of spatial development of the territory is the only opportunity to preserve the spatial integrity of the territory and ensure its stable socio-economic development. In order to see the "whole picture" of spatial development, geospatial data are widely used, including maps, transport and other layers, and address data. Relying on spatial analytics, authorities can get answers to questions about the real state of business in a particular territory, about the possible vector of changes associated with the turbulence of the external environment, obtained on the basis of modeling and forecasting. We believe that further economic development

of the country is impossible without the development of technology for collecting, processing and analyzing spatial data, and this task should be considered as a national priority for Russia.

The system of identification of spatial objects existing today includes all kinds of registers and cadasters, developed by various federal executive authorities. With the joint use of such spatial data, various kinds of difficulties appear, so today there is a need to harmonize and integrate databases, to build a single information space for the country. Without such a system, spatial development will proceed spontaneously, which will ultimately lead to fundamental changes in the geopolitical sphere and will threaten Russia's national interests and security.

Automation of the spatial objects identification system will enable public authorities, organizations and citizens to gain free access to spatial data, which will ensure transparency and efficiency of management.

For increasing involvement of the population into the development and implementation of state and municipal policies, digital technologies can be used (crowdsourcing, a digital profile of a citizen, a single trust space for an electronic signature, etc.). The tools and methods of e-government are quite diverse and are constantly updated due to the rapid development of the information society. Crowdsourcing, which, like many other technologies, initially proved its business efficiency in the field of entrepreneurship, presents ample opportunities for increasing civic engagement and getting feedback. For example, the UK government created the “Jolitics” social network (<https://twitter.com/Jolitics>), which allows citizens and public groups to lobby their interests in the legislative process. In the United States, this task is performed by the “Pop Vox” crowd platform (<https://www.popvox.com/about>), which is open to proposals for draft legislation pending in Congress. In Finland, citizens can initiate amendments to laws through the resource “Open Ministry” (<http://openministry.info>). One of the most developed platforms in Russia is the “Moscow Government Crowdsourcing Projects” website (<https://crowd.mos.ru/>).

However, it takes time and a high level of information propaganda about the functions and benefits of the new electronic service to promote any new phenomenon.

IV. CONCLUSIONS

Summarizing the above, we note that today digital technologies are a reality that permeates all spheres of everyday life, economic and management activities. Not only modern business, but also public authorities are gradually moving into the virtual space. The level of success and competitiveness is beginning to be determined by the quality of digital platforms used by business and government, as well as the speed of implementation of advanced technologies.

The world is on the verge of a radical restructuring of the management system. Information technologies create objective prerequisites for the creation and evolution of network as well as virtual management structures in various spheres of public life, including politics, economics, science and education. Networked business communities do not know spatial boundaries and do not have a lifetime, their functioning is determined by the timing of the project concept implementation. The networks are based on the principles of cooperation of legally independent enterprises, geographically distributed and operating in an integrated information space. The coordination of the actions of the network participants occurs within the framework of the implementation of joint projects, and the interaction is dynamic in nature.

The transition to a digital economy and a new territorial management system will increase the level and quality of life of each person and create certain conditions for realizing the potential of each person. Russia has already done a lot to catch up with the world's leading countries in terms of digitalization, but there is still much to be done in order to take its rightful place in the global high-tech market.

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Organizational and Management Features of the Automated Trip Payment System's Implementation in Public Transport of the Republic of Crimea

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Abstract—The article analyses the practice of the automated trip payment system's (ATPS) implementation in public transport of the Republic of Crimea in terms of its organizational and management peculiarities. In order to achieve the objective of the article, the following problems have been solved: the characteristics of the existing public transport system of the Republic of Crimea; review of the experience of such innovations in the cities of the Russian Federation; the identification of the peculiarities of the planning, organizing and management of the proposed system's implementation; analysis of management decisions and their expected results at the stages of system's development and testing. Methods of research include the analysis, the synthesis and the compilation of a wide range of data of scientific publications, statistics, mass media. The conclusions show that such regional nuances as the established structure of the public transport system, the transitional nature of administrative and legal relations, the functioning of several local banks, the seasonal nature of demand for public transport services, etc. form special requirements to the organization and management mechanism of ATPS in the public transport of the Republic of Crimea and to the algorithm of its operation, which is not always taken into account in practice by decision-makers.

Keywords—organization, management, management decisions, the automated trip payment system (ATPS), public transport, peculiarities, range of data special requirements, take into account, the Republic of Crimea.

I. INTRODUCTION

Public transport is an important component of the logistic system of any region and settlement – be it either a village or a metropolis. Works of reputable scientists in the field of urban transport management, among which stands out the works of T. Litman [12] and V. R. Vuchik [22], as well as reports of Kh. L. Irigoyen [8] and G. Bruggeman [4] at international scientific and practical events, confirm the growing positive impact of efficient public transport in cities and the development of non-motorized modes of movement on population mobility and labor productivity. Positive results in improving transport services for the population in different countries of the world indicate a decrease in the growth of the private cars. But they are the main cause of traffic congestion, environmental pollution and often a decrease in the urban environment quality, also they form so-called "vicious circle of urban transport" [8].

Experience of many countries around the world shows that the specificity of the public transport industry is that only the direct interest and participation of municipal and regional authorities in solving issues of increasing the efficiency of its work is able to give significant results in this area. Thus, according to the Colombian politician and successful urbanist-practitioner, twice the mayor of Bogotá E. Peñalosa, "the main problems of urban transport are more political than technical", and "the economy cannot create a better city, but a better city can create an economy" [4, 15]. At the same time, in addition to availability and punctuality of arrival, an important part of the public transport attractiveness, convenience of use and safety for the passenger travel is the process of travel payment, the way it is made.

Modern world is characterized by an intensive pace of innovation in all areas of activity, by high rates of business processes. In Russian Federation, these trends are reflected in the growing attention to digitalization and its introduction in all spheres of life. In this regard, the relevance of the use of automated trip payment systems (hereinafter – ATPS) in public transport is not in doubt. At the

same time, we have accumulated sufficient experience of such implementation both abroad and in various regions of Russia. Therefore, in order to develop optimal organizational, managerial and technical solutions and to avoid repeating mistakes when introducing such systems, this experience should be used.

II. METHODOLOGY

The problematics of introducing automated and contactless payment methods for transportation in recent years has been considered in the works of many Russian researchers, including F. Z. Aralbayeva and O. M. Kharkova [2], L. S. Arkhipov and V. V. Kosulin [3], E. V. Budrina and A. S. Lebedeva [5, 6], O. S. Kovalchuk and S. A. Yatsenko [9], B. A. Levin and L. B. Mirotin [7], A. V. Ryazanova [17, 18] and others.

E. V. Krikavskiy touched upon the problems of investing in transport infrastructure in different periods of time [10, 11]. The author also covered topical issues of the transport complex development of the Republic of Crimea, in particular transport support in tourism, as well as organization and improvement of urban transport [19, 20].

Based on the above-mentioned relevance and topicality of this issue for the Republic of Crimea, the purpose of this study is to analyze the organizational and management conditions for the ATPS implementation in urban public transport of the Republic of Crimea. The objectives of the study are to identify regional features and their impact on the planning, organization and management of the implementation of the proposed system, taking into account the accumulated experience of other regions/countries and the specifics of the Crimean region.

The analysis of a wide range of sources on the research topic, the use of logical and comparative analysis methods, as well as the author's knowledge of regional features and local specifics, permit to count on the reliability of the results, the validity of conclusions and recommendations.

III. RESULTS AND DISCUSSION

First and foremost, we should admit that since the implementation of ATPS in urban passenger transport is nothing more than a project, it requires an appropriate competent and balanced approach using effective project management tools. An important role is assigned to the development of the project concept itself and to its planning.

It is obvious that the choice of the ATPS implementation concept, strategy and payment technology directly depends on how successfully the system will work. If management decisions are wrong, the system itself may not bring profit, will not facilitate the carriers activities, but is likely to create additional difficulties [17, 18]. Therefore, the choice should be thorough and substantial, and the transition to intelligent trip payment systems should be incremental. For this purpose, it is important to have a clear understanding of the situation in industry and in the region.

The dynamics of the main indicators of automobile transport activity in the Republic (table 1) reflect the political and economic situation.

According to the table. 1 it is obvious that passenger traffic and passenger turnover fell in 2015, followed by a gradual increase in these indicators, which may be explained by the instability of the political situation at that time. Simultaneously we can note a significant increase in the volume of transport services in monetary terms in general and per capita during the entire period under review, which is due to the termination of railway communication between the peninsula and the mainland, the reorientation of passenger traffic to automobile and air traffic, and partly to rising prices due to the crisis in the economy.

We should notice a stable positive trend in the absolute number of passengers transported in 2015-2018, which cannot be said about the passenger turnover indicator for the same period. This indicates a decrease in the travel distance of passengers. According to the author, we can expect a downward change in these indicators due to the opening of the railway service on the Crimean bridge at the end of 2019, but it will be possible to reliably judge this only by the end of

2020. We should also note that these statistics do not distinguish between external, inter-municipal and intra-city transport.

TABLE I. THE MAIN INDICATORS OF AUTOMOBILE TRANSPORT ACTIVITY IN THE REPUBLIC OF CRIMEA IN 2014-2018 [16]

Indicator	2014	2015	2016	2017	2018
Passengers were transported by public buses ¹), thousands of people	127217,4	92092,2	102001,8	132721,4	149715,5
Passenger turnover of public buses ^a , million passengers per km	2607,2	2150,2	2385,8	2383,8	2458,4
Availability of organizations ' own moving vehicles (passenger buses), units	1679	2748	1994	2527	2476
Number of public buses per 100,000 population, by the end of the year, units	72	134	104	132	...
Volume of transport services to the population, million RUB	1135	6995	7255	12538	...
Volume of transport services per capita, RUB	602	3679	3799	6554	...
Passengers were transported by public buses ¹), thousands of people	127217,4	92092,2	102001,8	132721,4	149715,5

Taking into account the activities of individual entrepreneurs engaged in passenger transportation on a commercial basis.

According to official statistical data, the Republic of Crimea ranked 25th among the regions of the Russian Federation in terms of passenger transportation by public buses in thousands of people, as well as in terms of the number of public buses per 100,000 people at the end of 2018 [16], and it ranked 20th by passenger turnover of public buses in million pass-km, this indicates the sufficient development of this industry in the Republic. By the volume of transport services rendered to the population in millions of rubles at the beginning of 2018, the Republic of Crimea was on the 30th place among the regions of the Russian Federation, according to the same indicator calculated per capita in rubles – only on the 44th place.

It is important to pay attention to that fact that according to the Simferopol administration, “with general motorization, passenger traffic decreases every year. This is evidenced by data on the number of passengers transported on regular routes, submitted by representatives of carriers annually for route passports. At the same time, the number of buses is not reduced, which leads to an increase in the number of routes, as well as operating time with low profitability” (Simferopol administration, 2016).

According to official data of the Ministry of transport of the Republic of Crimea, the total number of road carriers that carry out passenger transportation on regular routes on the Peninsula is 71, among them 38 are legal entities and 33 are individual entrepreneurs [Ministry of transport of the Republic of Crimea, 2020]. It should also be noted that out of the number of legal entities, 32 enterprises are registered in the form of limited liability corporation. Thus, the dominance of private capital in the sphere of passenger transportation can be traced in the territory of Crimea. These data reflect the typical development of the public transport industry over the past 20-25 years. Moreover, among state and municipal transport companies the municipal unitary enterprise of the Republic of Crimea “Goravtotrans” and the state unitary enterprise of the Republic of Crimea “Krymtrrolleybus” take leading role, both of them are located in Simferopol, the administrative center of the Republic and its largest city by population.

But in recent years, there has been a tendency to revise and reduce the routes of urban transport served by private carriers, in favor of working municipal ones on them, because of the greater passenger capacity of vehicles, comfort and better technical condition of the auto park.

As for the strategy and technology of trip payment in urban public transport, the Republic of Crimea by the end of 2019 had a fixed fare and a mixed payment technology – mainly cash, moreover without providing a travel ticket by private carriers. It was also possible to pay for the trip with a bank card and transport cards in buses and trolleybuses of municipal enterprises using the driver's validator located in his cabin, in that case passengers could get a receipt. Passengers entitled to preferential trip were required to present a corresponding certificate, with the exception

of old-age pensioners in municipal trolleybuses. On suburban routes, there were conductors who accepted payment and gave out tickets.

Obviously the evolutionarily developed system of payment for public transport in the Republic of Crimea did not meet the modern needs of passengers, municipalities and society as a whole, it required revision and improvement. The main reasons for that are:

- non-transparency of carriers' revenue when accepting cash trip payment from passengers and as a result, the shortfall in tax revenues to the regional budget, the need to account the number of privileged passengers and the total number of passengers on routes;
- non-compliance with the schedule on urban public transport;
- need to improve traffic safety;
- inconsistency of management decisions while implementing APTS in the Republic of Crimea, in particular, an attempt to introduce a single transport card in 2019 in parallel with the approval of the Project concept "Multifunctional card for the resident of the Crimean Republic for 2019-2024" [14]. This last document may be considered a serious and concrete step towards the implementation of APTS in the Republic of Crimea.

IV. CONCLUSIONS

Main conclusions and recommendations concerning the organization and management features of the APTS implementation in public transport of the Republic of Crimea may be formulated as follows:

1. The public transport industry in the Republic of Crimea has significant regional features – continuing transformation of the road network both in and outside localities due to the construction of the "Tavrida" highway; a significant segment of private carriers in the structure of passenger transport companies; marked seasonal fluctuations in the nature of work, especially in coastal cities, caused by the resort season; non-transparency of carriers' income and lack of a clear picture of the transported passenger number, including preferential categories; increasing traffic congestion in Simferopol and other cities due to the growing number of private cars, that makes it difficult to keep up with public transport schedules;

2. An attempt to introduce a transport card for non-cash trip payment in 2019 on municipal and suburban routes in Simferopol, Alushta and Yalta is sure not to be considered as successful for passengers. This is connected with non-optimal organizational, managerial, and tactical decisions: the high cost of the card, the limited period of funds usage on the card, an inconvenient system for purchasing and replenishing the card, and weak information support for this innovation.

3. Analysis of management decisions on the APTS implementation in Crimea has shown that the following steps are necessary for the successful project completion and the effective system functioning:

- broad information support for this innovation in the mass media, active advertising in public places, at bus stops, on billboards and other advertising media, especially in public transport, equipped with video screens, in the format of videos explaining the features of the implemented system;
- priority usage of APTS on the routes of municipal and state carriers and strict compliance with the rules for transportation of privileged categories of passengers using multifunctional cards;
- due to the significant segment and high social significance of routes that are served by private carriers, it is possible to encourage them to join the APTS by compensating for the transportation of exempts and introducing stricter competitions for route maintenance;
- while implementing APTS, the public good in the form of high-quality transportation

services should become a priority in making management decisions, that will increase the attractiveness of public transport and its profitability. Therefore, it is reasonable to review the salary system for drivers, taking into account compliance with the traffic schedule and traveled mileage, and timely compensation to carriers for preferential categories of passengers;

- successful experience shows that the greatest effect of the ATPS implementation may be achieved in conjunction with the optimization of public transport in cities by analyzing passenger traffic and allocating lanes for public transport, following the example of many cities in Russia, Europe, and the world.

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Investment in Human Capital as a Factor of Growth of the Gross Regional Product

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Abstract—The article is devoted to the study of investments in human capital of the Belgorod region for 2010-2019 and the identification of its share in the gross regional product of this territory. As a characteristic of human capital expenditures, we consider expenditures on education, health care, and the average monthly nominal accrued salary. The structure of human capital is presented, which consists of such elements as the contribution of a region or country to the level of education, professional training and competence, health, and so on. The aspects of human capital, which depend on the institutional, financial and economic, digital, demographic, socio-mental, environmental, and production factors, influence on the entire economy of the region are revealed. Authors states that in modern conditions of instability, the growth of the country's economy largely depends on how much money the state invests in human capital, which is one of the most important components of modern productive capital.

Keywords—macroeconomic indicators, gross regional product, region, development trends, investment, human capital

I. INTRODUCTION

Currently, there are many indicators that characterize the socio-economic situation of regions, the main of which are the gross regional product, production of goods and services, income, investment, savings, etc. Gross regional product (GRP) is a General indicator of the economic activity of a region that characterizes the process of producing goods and services for final use. GRP is calculated in current basic prices (nominal GRP volume), as well as in comparable prices (real GRP volume). One of the most significant and growing factors affecting the volume of GRP is human capital.

II. METHODOLOGY

Based on the review and analytical excursus of scientific and methodological theories, the content of regional indicators and indicators for assessing its development is described.

Methods of systematization, analysis and graphics are used to study the dynamics of the main indicators of the Belgorod region in 2010-2019.

The future GRP trends are presented using the graphical method until 2029 using exponential approximation, and generalizing conclusions on investments in the region's human capital are formed.

III. RESULTS AND DISCUSSION

Gross regional product (GRP) is the gross value added of services and goods that are created by the region's participants. GRP is calculated as the difference between output and intermediate consumption. The GRP indicator is very close to the gross domestic product (GDP) in terms of financial content. However, there is a significant difference between GRP (at the regional level) and GDP (at the Federal level).

The amount of gross regional products in Russia is not equal to GDP, since it does not include value added for non-market collective services (defense, public administration, etc.) provided by state institutions to society as a whole [12].

There are several methods for calculating GRP:

1. Production method:

$$GRP = \text{Gross value added of economic sectors} = \text{Gross output} - \text{Intermediate consumption} \quad (1)$$

2. Distribution method:

$$GRP = \text{gross profit of the economy and gross mixed income} + \text{Wages} + \text{Net taxes on production} + \text{imports} \quad (2)$$

3. Use method:

$$GRP = \text{Final consumption} + \text{Gross capital formation} + \text{Net exports} \quad (3)$$

Figure 1 shows the dynamics of the GRP of the Belgorod region for 2010-2019 in current prices and shows the trend line up to 2029.

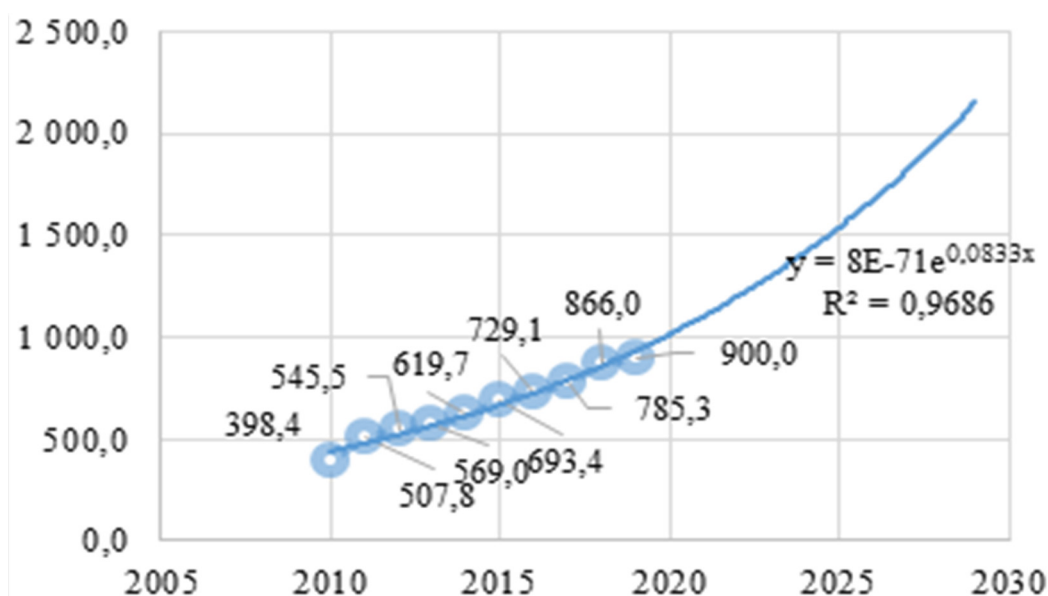


Fig. 1. Dynamics of 2010-2019 and forecast for 2020-2029. GRP of the Belgorod region in current prices, billion rubles

A trend line is a graphical method of technical analysis to identify trends in any factor, element, etc. a trend line is most reliable or reliable if its value (R^2) is close to 1.

There are several types of trend lines:

1. Linear approximation is the most appropriate linear line that is used with simple data sets. Such data is called linear if the passing line at the data points resembles a string. In other words, a straight trend line is most suitable for increasing or decreasing at a constant rate of a certain value ($R^2=0.9817$).

2. Logarithmic approximation is the most suitable curved line, which is characteristic for quickly increasing or decreasing the speed of data changes and for their alignment. A logarithmic trend line can use positive and / or negative values ($R^2=0.9817$).

3. Polynomial trend line is a curved line that is used when the data presented changes. This line is most suitable for analyzing costs and profits in large data sets. The degree of the polynomial is determined by the number of extrema (minima and maxima) of the curve ($R^2=0.9827$).

4. Power approximation is a curved line suitable for sets that compare data measurements and increase by a certain frequency. An example is the acceleration of a contest in a single second interval. If there are zero or negative values in such data, it is not possible to use a power trend line ($R^2=0.9838$).

5. Exponential approximation is a kind of curved line that is most suitable for cases when the values of the presented data gradually change or fall to higher units. However, for data that contains negative or zero values, the exponential trend line cannot be applied ($R^2=0.9838$).

For this analysis, an exponential trend line was used, since R^2 is as close to 1 as possible.

Based on these data, we can conclude that during 2010-2029, there was a positive dynamics of GRP: in 2010 – 398.4 billion rubles; in 2019 – 900 billion rubles, which indicates a stable economic situation in the region not only at present, but also in the presented forecast until 2029.

It should be noted that investments in human capital are expenditures that are made for the purpose of future growth of labor productivity of employees and that contribute to increasing future incomes both as individual carriers of capital and society as a whole. Investments in human capital include certain expenses for General and special education, and for maintaining health; costs that are associated with job search, migration, training in the workplace, finding economically relevant information about wages and prices, and other sources of personal income, as well as the birth and upbringing of children. For an employee of the organization, the economic effect of investment is expressed in their income. For a company that invests money in staff development - in increasing labor productivity. For society as a whole - in maintaining the stability of the competitiveness of the national economy and the growth of the gross domestic product, including the gross regional product [7].

For a more detailed analysis of human capital expenditures in the Belgorod region, let's look at their dynamics for 2010-2019, presented in table 1.

Based on the data presented in the table, it can be concluded that spending on education during 2010-2018 was constantly increasing. The increase in spending on vocational and General education may be due to the introduction of various projects and programs that are aimed at ensuring the competitiveness of all education in Russia (including education in the Belgorod region), the growth of the corresponding labor market needs, and the increase in spending on pre – school education-with the creation of additional places, the equipment necessary for them, and maintenance (including due to the growth in the number of relevant personnel) [5].

TABLE I. DYNAMICS OF LEADING EXPENDITURES ON HUMAN CAPITAL IN THE BELGOROD REGION FOR 2010-2019

Indicator	Years									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Education expenses, million rubles	14400,3	16154	18535	20679,2	22324,5	23578,7	24586,3	26214,9	29379,8	23763,8
Health care expenses, million rubles	16270	20479	24253	27231,7	9718,9	10552,2	10154,5	5931,4	7824,7	11381,9
Average monthly nominal accrued salary, rubles.	15938,4	17667,6	20002,1	22220,9	23895,1	25456,2	27090,9	29065,6	31851,9	34614,5
Total, million rubles	30670,3	3663,3	42788	47910,9	32043,4	34130,9	34740,8	32146,3	37204,5	35145,7

* Compiled from materials [10]

The Federal project "Success of every child" provides for the creation of a mobile Technopark "Quantorium" - 16,934. 0 thousand rubles and the creation of new places in educational organizations of various types for the implementation of additional General development programs of all directions – 34,138. 7 thousand rubles.

Within the framework of the Federal project "Promotion of women's employment - creating conditions for pre - school education for children under three years of age" for the creation of additional places for children aged 1.5 to 3 years of any orientation in organizations engaged in educational activities (with the exception of state and municipal), and individual entrepreneurs engaged in educational activities for pre-school educational programs, including adapted ones, and child care-39,481,1 thousand rubles [9].

Healthcare costs in Russia are among the lowest in the world. Over the past ten years, this indicator has had an unstable trend: from 2010 to 2013, it increased (from 16,270 million rubles to 27,231. 7 million rubles – by 67.37%), in 2014 it sharply decreased to 9,718. 9 million rubles. (by 64.31%), further increased in 2016 to 10154.5 million rubles. (by 4.48%), in 2017 it decreased again to 5931.4 million rubles – by 41.59% and in 2019 it amounted to 11381.9 million rubles. This trend is due to the unstable economic state of the entire state.

The average monthly nominal accrued salary during 2010-2019 was constantly increasing: in 2010, this indicator amounted to 15938.4 rubles, in 2019 - 34614.5 rubles. remuneration is one of the most important indicators for assessing the material well-being of the population, which affects its standard of living. The system of setting and evaluating wages is one of the factors of macroeconomic stability both in the country and in the region. The level of wages plays a significant role in maintaining macroeconomic equilibrium. Changes in the ratio of wage levels, along with other factors, lead to the movement of employees between enterprises, industries, and regions. Similarly, wage differentiation by profession is one of the factors of professional mobility of employees [1].

For figure. 2 shows the proportion of human capital expenditures to GRP. These indicators show that the proportion of human capital expenditures to GRP has been constantly changing. Its maximum value reached in 2013 (0.084), the minimum – in 2011 (0.007). Changes in human capital expenditures depend on various factors: integration, socio-demographic, socio-mental, institutional, industrial, environmental, demographic, economic, and socio-economic. Thus, human capital needs to be considered at the sectoral, national, regional levels, as well as at the level of the individual and the organization.

According to Russian experts, investment in human capital reached its maximum size in the pre-crisis years (2005-2008 and 2012-2014) with the dynamic development of the financial, banking, communication, digital, service, and infrastructure components of the economy. These trends began

to concentrate in large cities and regions, which required the availability of highly qualified personnel [3].

At the same time, the development of mass and accessibility of higher education has led to a decrease in employers' interest in University graduates, and educational effectiveness has begun to decrease with the emergence of an understanding of professionalism as a portfolio or set of certain competencies, knowledge and skills. During periods of economic crises, there was a significant reduction in production and regions and industries that did not require a high proportion of workers with higher education, such as agriculture and the agricultural industry, began to develop. In addition, the impact of higher education has decreased as it has become almost ubiquitous. In many models, the factor of proximity to the most developed partner was definitely significant, which increased the opportunities for increasing access to the markets of personnel, services, goods and technologies [4].

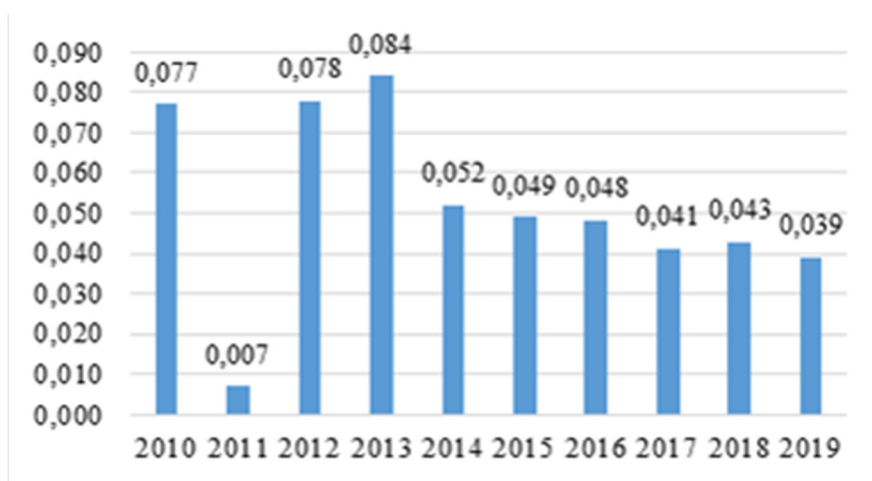


Fig. 2. The share of spending on human capital to the GRP of the Belgorod region for 2010-2019.

At the macroeconomic level, human capital includes the contribution of a country or region to the level of competence, education, health, professional training, and so on. This level includes the total human capital of the entire population of a country or region. At the enterprise level, human capital is the productive capacity of all its employees and their combined qualifications. At the individual level, human capital is the accumulated experience, knowledge, skills and other production characteristics that a person acquires in the course of training, practical experience, and professional training, with the help of which he has the opportunity to earn income.

One of the significant provisions of the theory of human capital is that its growth is among the most important causes of economic development, since human capital accounts for a large share of the welfare of society [15].

In modern conditions of instability, the growth of the country's economy largely depends on how much money the state invests in human capital, which is one of the most important components of modern productive capital, which can be represented by a rich stock of acquired knowledge, developed abilities, determined by creative and intellectual potentials. The main factor of existence, increasing the value and development of human capital is investment. Investment in human capital is any measure that is taken to increase labor productivity. All types of expenses that can be estimated in monetary or other form and that are appropriate in nature, as well as contribute to the growth of future earnings (income) of a person, are considered as investments in human capital [11].

The Main directions of the budget, tax, customs and tariff policy for 2021 and the planning period of 2022 and 2023 [8] present expenditures of the budget system budgets by sections of the functional classification (2019-2023) as a share of GDP that the state is going to invest in education, health and social policy.

TABLE II. THE PROPORTION (FRACTION) GDP TO SUPPORT THE SOCIAL SPHERE, %

Section	Years				
	2019	2020	2021	2022	2023
Education	3,7	4,0	3,9	3,7	3,6
Healthcare	3,5	4,1	3,8	3,7	3,6
Social policy (grants to the Pension Fund, social payments, etc.)	11,8	13,5	12,8	12,1	11,9

* Compiled from the materials [8, p. 76]

The growth indicators in 2020, compared to the previous year is due to emergency economic measures related pandemic (new hospitals and additional places, additional payments to medical staff, financial payments to families with children, the growth of unemployment benefits and number of recipients, etc.). However, in 2021-2023. the indicators fall or rise by 0.1% and remain approximately at the level of the nineteenth year. An analytical digression in recent decades shows that investment in human capital in Russia has always been insufficient in comparison with developed countries, which spend on health and education from the budget (if you take a share of GDP) one and a half or two times more.

At the same time, an increase in the average level of education in a country (or region) leads to an increase in the output of products and goods on a scale of 3% to 6% per person employed in the economy, provided that an expanded neoclassical approach is used. According to research [6], this can lead to accelerated economic growth of more than a few percent, according to estimates based on the new growth theory. Digitalization and the transition to technological platforms for training and production can increase GRP growth by up to 10-15%.

The main factors of the macro environment include natural, demographic, scientific and technical, economic, cultural factors, and political factors.

The factors at the national level that affect the development and formation of human capital include: features of the current economic policy; features of the stage of economic development; the state and features of the country's economy; the level of financial development of the state.

The main regional factors that affect the state of human capital in the regions of the Russian Federation can be considered: natural and climatic conditions; economic and geographical location; demographic potential and population structure; natural resource potential; structure and specialization of the economy; type (level) of socio-economic development of the region; financial security.

Environmental factors at the national and regional levels can be divided into two main groups: direct and indirect impacts. Direct impact Factors include suppliers of financial, labor, material, information and other resources, competitors, consumers, etc. indirect impact factors are background factors that reduce or increase economic sustainability. This group of factors includes the state of the economy, socio-political, regulatory, natural factors, and so on [11].

IV. CONCLUSIONS

Our research allows us to draw the following conclusions:

1. Investment in human capital in Russia over the past decade has been unstable.
2. In the short term the share of social expenditures remains unchanged.
3. Investment instability is related to the discrepancy between the supply of human capital from education and the demand for future knowledge, skills and competencies in demand in the labor market.
4. The growth of investment in human capital will depend on the institutional, financial and economic, digital, demographic, socio-mental, environmental, and production trends of society
5. The growth of investment in human capital is becoming an important factor in the economic development of the state and regions.

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SECTION 4. Innovations in management

Methods for Evaluating and Improving the Effectiveness of Management of Integrated Structures in the Agro-Industrial Complex

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Abstract—The purpose of the research is to develop proposals for improving the management of a modern vertically integrated agro-industrial formation created in the Belgorod region of Russia on the basis of the APC "Collective farm named after Gorin". During the analysis of production and commercial activities, it was found that in 2017-2019 there was a simple growth rate of resource efficiency indicators, which is calculated as the average index of individual indices using the geometric mean formula. The discounted growth rate of resource efficiency indicators for this period was 118.4%. The authors propose formula that allows to calculate the price level for agricultural raw materials, which provides equal payback for standard variable costs in the production of agricultural raw materials and its processing. If the actual variable costs are less than the standard costs, the company will receive margin income that exceeds the standard value. In order for the anti-cost mechanism to work, two main conditions must be met. First, regulatory variable costs must be justified and correspond to the capabilities of related enterprises. Secondly, the revision of the cost standards should be carried out only on sufficient grounds, for example, when switching to a fundamentally new technological level.

Keywords—agro-industrial formations, management efficiency, approaches to efficiency assessment, corporate effect, cost-effective mechanism, pricing for agricultural raw materials

I. INTRODUCTION

Improving the economic efficiency of managing integrated structures in the agro-industrial complex is an important research area, since the latest achievements in the agricultural economy are mainly related to the development of large-scale multifunctional agro-industrial production. The history of economic activity of the majority of agro-industrial formations does not exceed two

decades, which means that the possibilities for improving their management have not yet been exhausted.

So far, the most intensive processes of agro–industrial integration have taken place "from above" at the initiative and under the management of the owners of processing enterprises [15, 16]. Recently, agro-industrial integration "from below" has been spreading at the initiative and under the management of the owners of agricultural organizations [12]. Reserves for improving management efficiency are most in demand for integrated structures that are at the beginning of their life cycle.

Despite the continuing importance of the problem of measuring and increasing the effectiveness of enterprise management, regardless of their specialization, structure and size, there is still no convincing theory and methodology that allows us to uniquely interpret and measure the effectiveness of enterprise management.

Thus, in the methodological recommendations of Rosinformagrotech in paragraph 1.5.2. "Effectiveness of the organizational and managerial subsystem of an agricultural organization" on page 38, it is noted that "the definition of management effectiveness is reduced to assessing the role of managers in achieving the goal and improving production efficiency. To do this, it is necessary to use indicators that reflect the growth of production efficiency as a result of management efficiency", and the following definition is given: "Economic management efficiency is the level of creating economic conditions for the implementation of expanded reproduction of an agricultural organization" [3]. Previously on page 36 in this paper, a general criterion of management efficiency is formulated "as a result of the functioning of a management system that ensures the achievement of the goals set for the object of management at the lowest cost" [3]. In this article, two concepts are mixed: "enterprise goal" and "production efficiency", which often overlap, but may have an independent meaning in the practice of managing an agro-industrial enterprise.

This confusion of ideas is quite common. For example, the opinion of O.N. Shevtsova, V.M. Galinou and S.V. Volkova that should distinguish between the economic efficiency of enterprises and enterprise management efficiency, combined with the statement that to evaluate the last important increase of efficiency of activity of the enterprise, caused by control actions [10].

While the vast majority of researchers consider economic efficiency as the ratio of effect to cost or as the ratio of the resulting economic effect to its target value, the effectiveness of enterprise management is interpreted in different ways. The latter circumstance causes attempts to classify the opinions of researchers about the content of the concept of "enterprise management efficiency". One of these attempts was made by O.V. Kharitonova, who gives a wide list of approaches described in the literature to assess the effectiveness of enterprise management [6].

In our opinion, the most common five approaches to assessing the effectiveness of enterprise management (table 1).

TABLE I. EXISTING APPROACHES TO ASSESSING THE EFFECTIVENESS OF ENTERPRISE MANAGEMENT

Approach	The essence of the approach
Resource approach	The effectiveness of enterprise management is evaluated by the level of activity efficiency, which in turn is measured by the ratio of the company's performance results to available resources
Stereotypical	The efficiency of enterprise management is estimated as the ratio of the results of the enterprise to the cost of management
Private	The effectiveness of enterprise management is assessed by the level of efficiency of management work, by the level of efficiency of individual management decisions
Combined	The effectiveness of enterprise management is evaluated by a set of indicators that characterize the effectiveness of the enterprise and the effectiveness of specific management actions
Targeted	The effectiveness of enterprise management is assessed by the degree of achievement of the company's goals

An example of a resource approach is the statement of K.A. Zadumkin: the more inefficient the management system is, the more resources (temporary, financial, material) are needed to achieve the set results [14]. Many agree with the resource approach, since resource constraints are a determining factor in the development of economic systems, and the current and future well-being of individuals and society as a whole depends on how these resources are used. However, the resource approach is also limited. The company's management can maintain a high "results / costs" ratio without developing the resource base. In the history of mankind, one of the largest "results / costs" ratios has occurred in gathering.

By analogy with the resource approach, the economic efficiency of management is considered by some authors as the ratio of the result obtained to management costs. This stereotypical approach is justified if it is possible to measure the effect of specific management actions, and then correlate it with the costs generated by these actions. An attempt to evaluate the effectiveness of management, for example, by dividing the annual profit by management costs, does not meet the interests of most stakeholders. The owners of the enterprise are not interested in this ratio, but in the dividends that they will receive. V.I. Malyuk critically assesses the stereotypical approach and rightly notes that it is hardly possible to allocate the part of the overall result that was provided by the rational management of the organization. It is also difficult to estimate the overall management costs [8].

The private approach involves measuring the effectiveness of enterprise management by the level of efficiency of management work, by the level of efficiency of individual management decisions. An example of this approach is the methodology for evaluating and improving the effectiveness of management processes in an enterprise, described in the work of D.A. Shageev and E.S. Kolotukhina [9].

The combined approach is the most popular, which is due to the desire of researchers to link the assessment of the effectiveness of the enterprise with the assessment of the effectiveness of management activities. This is partly due to the fact that they are aware of the limitations of the resource and private approaches. For example, O.V. Kharitonova suggests to evaluate the management efficiency of agro-industrial enterprises to use a generalized indicator of management efficiency, taking into account the level of management efficiency and the level of production efficiency [6]. Shevchenko considers the effectiveness of the industrial enterprise management system as a function (result) of the effectiveness of the management object and the effectiveness of the subject of management [2].

The most adequate to task of evaluating the effectiveness of management is the targeted approach. N.N. Yarkina notes that in a broad sense, the essence of management activity is reduced to setting goals, developing algorithms and organizing their achievement, which determines the need to use a target approach to evaluating the effectiveness of enterprise management. At the same time, the target approach does not contradict, but rather complements the resource approach, expanding the range of traditional performance indicators that correlate results and costs, at the expense of targets built on a different methodological basis that characterize the quality of management decisions in the field of competitiveness, innovation and investment, marketing, business risks, etc., reflecting the success of the enterprise's interaction with environmental factors [13].

V.I. Malyuk identifies two aspects of the target approach to assessing management effectiveness: 1) the accuracy of target setting; 2) the degree of implementation of the goals and tasks accepted for execution in the established time frame [8]. Therefore, the target approach is justified if the goal setting function is performed properly: the set goals meet the interests of the company's stakeholders and are designed for an acceptable level of effort of managers and performers.

It seems that the solution to the problem of interpreting and measuring the effectiveness of enterprise management is possible, not so much by contrasting the approaches considered, but by supplementing them with an interest-oriented approach. The effectiveness of enterprise management can only be measured and interpreted unambiguously based on a specific interest. It is obvious that when evaluating management in general and specific management decisions, it is difficult to be guided by such a large set of indicators, especially since they partially duplicate each

other, and partially change in opposite directions. Therefore, it is more practical to use several indicators that directly reflect the interests of the owners of the enterprise and other persons on whose activities the production and commercial results of the enterprise depend.

At the same time, we should not ignore the general patterns that affect the assessment of management activities and the content of the developed measures to improve management efficiency. In particular, the concept of the types and causes of management inefficiency deserves attention and development. A.N. Tsvetkov describes two types of inefficiency in enterprise management: 1) technical inefficiency of management, which is expressed in the uneconomical use of all types of resources due to technological or managerial imperfections; 2) economic inefficiency of management, manifested in the rejection of the best alternative use of the organization's resources [11]. For an integrator company that performs the function of a holding company in addition to its production functions, a third type of inefficiency should also be taken into account: corporate inefficiency, which is expressed in incomplete receipt of the corporate effect. In general, the corporate effect is achieved by combining the interests of partners in agro-industrial formation and joint actions to create added value.

M.N. Kabanenko, S.N. Ugrimova and N.A. Andreeva note that the creation of a modern holding company in the agro-industrial complex provides for the establishment of direct links between participants, the elimination of intermediaries, reducing indirect costs and increasing profits, ensuring the financial stability of its participants [5].

The main economic effect of agro-industrial integration is achieved by introducing into the economic space of agricultural production those links in the value chain that previously belonged to industrial monopolistic structures. As noted on this occasion I.V. Emanuel, from the point of view of agricultural enterprises, the goal of forming a vertical integrated structure is to establish such organizational and economic relationships between farms and the processing enterprise that would ensure maximum satisfaction of the needs of agricultural producers in the timely processing and sale of agricultural products, subsequent reimbursement of costs and obtaining a share of profits distributed among the integration participants in accordance with their contribution to the overall result [4].

S.A. Kozhevnikov calls the main prerequisite for the formation of vertically integrated companies the presence of intersectoral relations between producers and processors of products. The tasks to be solved include: creating an economic structure that is resistant to the influence of external and internal factors; ensuring the consolidation of financial flows; reducing the need for working capital; increasing total assets; and centralizing business processes [7].

Therefore, the assessment of the effectiveness of management of integrated structures and the development of management improvement proposals based on it should take into account all possible types of inefficiency and rely on all types of approaches considered. The main economic indicator that should be used to judge the effectiveness of management of an enterprise, its individual branches and agro-industrial formation as a whole is value added, since changes in the value added affect the interests of the owners of the enterprise (in terms of profits), employees (in terms of wages) and the budget system (in terms of tax deductions).

II. METHODOLOGY

Evaluation of management efficiency and development of proposals for improving the management of agro-industrial formation was carried out on the materials of the agro-industrial formation created on the basis of the agricultural production cooperative "Collective farm named after Gorin". The purpose of the research is to develop proposals for improving the management of a modern vertically integrated agro-industrial formation. An assessment of the efficiency of using production resources is given. Designed simple and discounted indices of resource efficiency APC "Collective farm named after Gorin". Using a correlation and regression analysis performed on a set of enterprises in the Belgorod region, it was established that there are reserves for increasing the efficiency of the main branch of the APC "Collective farm named after Gorin" – pig farming. To improve the efficiency of managing the interaction of related enterprises that are part of the agro-industrial formation, an anticost pricing mechanism is justified.

III. RESULTS AND DISCUSSION

The analysis of production and commercial activities of an integrated agro-industrial formation shows that it is a chain of technologically and economically connected centers of value creation. The movement of the value added stream is illustrated in figure 1.

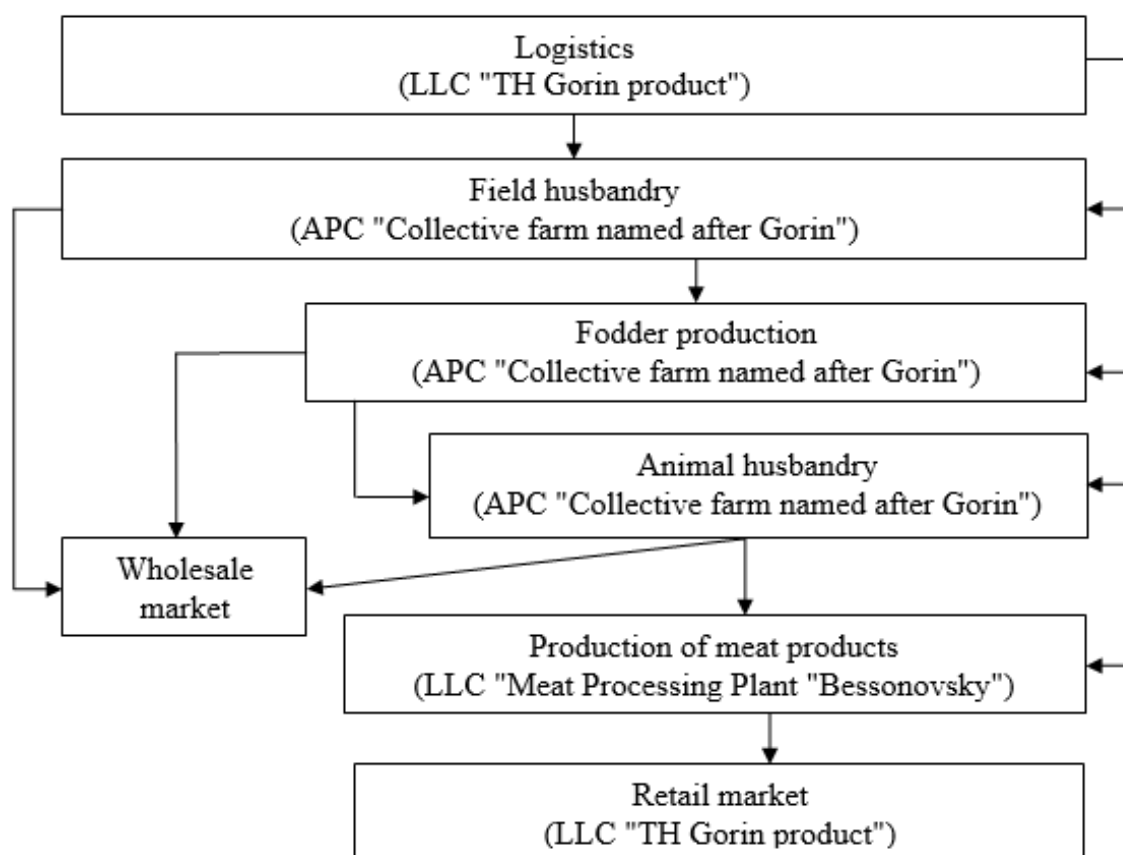


Fig. 1. Value added flow in the integrated agro-industrial formation created on the basis of the APC "Collective farm named after Gorin"

The flow of added value begins to form in the field-growing divisions of the APC "Collective farm named after Gorin", which grow crops and produce grain, sunflower seeds, green mass of annual and perennial grasses, corn, vegetables and potatoes. The bulk of this product is used in feed production for obtaining compound feed, silage, haylage, hay and green feed.

Feed production is the second center of added value after field production. The produced feed is used in animal husbandry for the production of milk and growing live weight of pigs and cattle. Animal husbandry is the third center of financial responsibility. Live weight of pigs and cattle is sold in LLC "Meat Processing Plant "Bessonovsky", which acts as the fourth center of financial responsibility of the agricultural holding. The fifth and final center of financial responsibility is the retail chain of LLC "TH Gorin product", which sells meat products received from the meat processing plant to the final consumer. Thus, the economic and technological interrelation of the listed centers of financial responsibility is obvious. Mismanagement in any financial responsibility center results in loss of added value created in previous centers and missed opportunities for subsequent centers.

The predominant share of added value of agro-industrial formation is formed in the APC "Collective farm named after Gorin" and LLC "Meat Processing Plant "Bessonovsky". At the end of 2019, the value added of these two enterprises amounted to 995 million rubles (table 2).

TABLE II. ECONOMIC EFFICIENCY OF PRODUCTION RESOURCE MANAGEMENT OF APC "COLLECTIVE FARM NAMED AFTER GORIN" AND LLC "MEAT PROCESSING PLANT "BESSONOVSKY"

Indicators	2017	2018	2019	2019 in % to 2017
Value added, million rubles	729	827	995	136.5
Average annual number of employees, people	1650	1614	1596	96.7
Arable land, ha	16468	16501	16400	99.6
Residual value of fixed assets at the end of the year, RUB mln	3028	3222	3289	108.6
Added value in the calculation:				
per 1 employee, thousand rubles	442	513	624	141.1
per 1 ha of arable land, thousand rubles	44.3	50.1	60.7	137.0
per thousand rubles of fixed assets, RUB	241	257	303	125.6
A simple index of resource efficiency				134.4
Discounted resource efficiency index				118.4
A simple index of resource efficiency				134.4

The main production resources of the agro-industrial formation are personnel, arable land and fixed production assets. In 2017-2019, the efficiency of using each of these resources has increased. Therefore, the simple resource efficiency index calculated using the geometric mean formula from individual indexes exceeds 100%:

$$\sqrt[3]{141.1 \times 137.0 \times 125.6} = 134.4\%$$

To bring the cost indicators of different years to a comparable form, it is necessary to adjust the growth rate of resource efficiency indicators using the discount procedure. Thus, at a discount rate of 10%, the discounted resource efficiency index is

$$\sqrt[3]{\frac{141.1}{1.1^2} \times \frac{137.0}{1.1^2} \times 125.6} = 118.4\%$$

Consequently, in general, for the totality of the used production resources, an increase in the efficiency of their use is observed, even taking into account the discounted value added.

The analysis is based on resource-based and interest-based approaches. It is also desirable to obtain an assessment of the effectiveness of management based on a targeted approach.

The targeted approach to evaluating the effectiveness of management is implemented by correlating the result obtained with the possible result with the best use of resources. If it is difficult to evaluate the result with the best use of resources, use the result obtained in other enterprises as a comparison base. In any case, a comparison with other companies will not be superfluous. Here it is important to implement the principle of the only difference and compare the effectiveness of management of specific and economically significant activities. Such activity for the APC "Collective farm named after Gorin" is pig farming.

Over the past three years, pig farming has accounted for more than 58% of the total farm revenue. At the same time, according to the average daily increase in live weight of pigs, the APC "Collective farm named after Gorin" was inferior in 2017 to six enterprises of the Belgorod region, and in 2018 – to seven enterprises.

The correlation and regression analysis performed on the aggregate of pig breeding enterprises in the Belgorod region for 2017-2018 showed that there is a statistical relationship between the average daily weight gain of pigs and the cost of live weight, which is described by the equation

$$Y = 129.7 - 0.1125X, \quad (1)$$

where Y – the expected cost of 1 ton of live weight of pigs, thousand rubles; X – average daily in-crease in body weight, g.

The correlation coefficient is -0.579. The graph of dependence and the correlation field are shown in Figure 2. It follows from the obtained equation that with an increase in the average daily gain in live weight of pigs by 1 g, the cost of 1 ton of live weight of pigs decreases by 112 rubles.

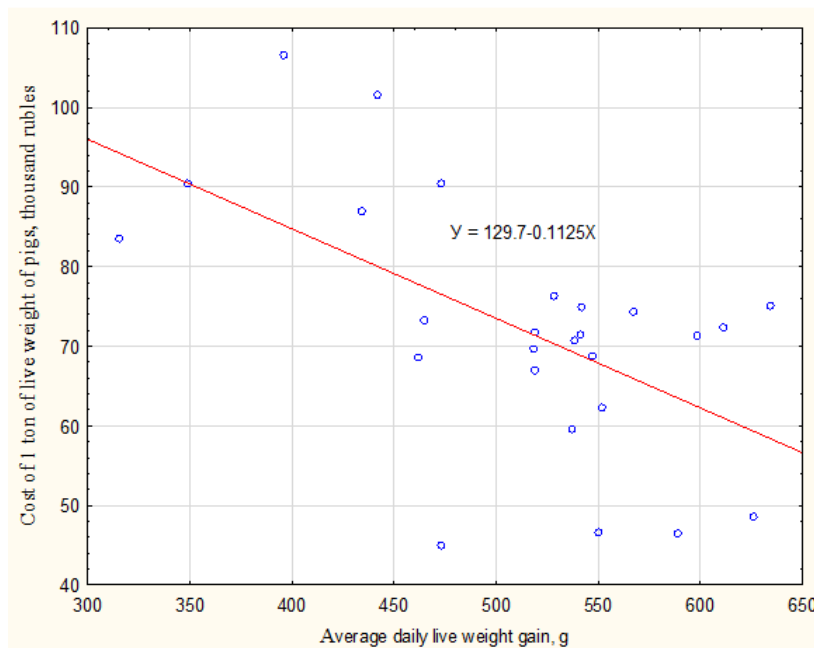


Fig. 2. The relationship between the average daily weight gain of pigs and the cost of live weight

Substituting into equation (1) the data of the APC "Collective farm named after Gorin" on the average daily weight gain shows that there are deviations of the actual cost level from the expected values for this equation (table 3).

TABLE III. ANALYSIS OF DEVIATIONS IN THE COST OF LIVE WEIGHT OF PIGS FROM THE EXPECTED LEVEL IN THE APC "COLLECTIVE FARM NAMED AFTER GORIN"

Indicators	2017	2018
Actual average daily weight gain of live weight of pigs, g	519	541
Actual cost of live weight of pigs, thousand rubles per ton	71.772	71.535
The expected cost, calculated according to the equation (1), thousand rubles per ton	71.313	68.838
The actual level of cost to expect, thousand rubles per ton	+0.459	+2.697

According to table 3, in 2017, the efficiency of the pig industry of the APC "Collective farm named after Gorin" in the ratio "growth-cost" was slightly lower than the average for the region, since the actual cost of live weight was higher than expected by 0.459 thousand rubles per ton. In 2018, the efficiency of raising pigs in the ratio "growth-cost" significantly decreased. The analysis

shows that the APC "Collective farm named after Gorin" has significant reserves for increasing added value by increasing the productivity of pigs and subsequently reducing the cost of production.

Reducing the cost of live weight of pigs is relevant not only for the agricultural enterprise, but also for the agro-industrial sector as a whole, since it expands the space for regulating the level of transfer price for live weight of pigs, which allows maintaining mutually beneficial relations between related enterprises. The APC "Collective farm named after Gorin" applies the practice of creating new subsidiaries, in which at the first stage the property complex of a new business direction is formed; at the second stage, the staff is selected; at the third stage, the created division is allocated to a legal entity by creating a subsidiary limited liability company.

After the implementation of the third stage, there is an objective need to organize effective intra-holding relations between related enterprises. The organization of intra-holding relations between related enterprises is based on the self – sufficiency of the parties, on the one hand, and on the other hand – on the centralized management of the process of concluding and executing purchase and sale transactions. The price must be an element of a cost-effective mechanism. Its level and the procedure for determining it should encourage related enterprises to take constructive actions to improve the economic efficiency of their own activities by reducing the cost and improving the quality of products. A rational solution is to determine the price based on the principle of equal payback of normative variable costs [1]. We suggest calculating the price of agricultural raw materials using the following formula:

$$d = \frac{ac}{a+b}, \quad (2)$$

where d - basic price of agricultural raw materials, RUB/kg; a – standard unit variable costs for the production of agricultural raw materials, RUB/kg; b - standard unit variable costs for the processing of agricultural raw materials without the cost of purchasing them, RUB/kg; c – proceeds from the sale of products made from 1 kg of agricultural raw materials, RUB (complex production price).

For example, with specific variable costs for the production of live weight of pigs 54 RUB/kg, variable costs for processing (excluding costs for the purchase of pigs) 92 RUB/kg and a complex production price of 232 RUB/kg, the purchase price for live weight of pigs will be

$$d = \frac{54 \times 232}{54 + 92} = 85.8 \text{ RUB/kg}$$

Formula (2) makes it possible to calculate the price level for agricultural raw materials, which ensures equal payback of standard variable costs in the production of agricultural raw materials and in their processing. In the example considered, the return on standard variable costs is 159%:

$$\frac{d}{a} = \frac{85.2}{54} = 159\% \text{ and } \frac{c-d}{b} = \frac{232-85.8}{92} = 159\%.$$

If the actual variable costs are less than the standard, then the company will receive a marginal income that exceeds the standard value. In order for the counter-cost mechanism, incorporated by pricing according to formula (2), to work, it is necessary to provide two basic conditions. First, the target variable costs must be justified and appropriate to the capabilities of related businesses. Secondly, the revision of the cost norms should be carried out only if there are sufficient grounds for that, for example, when moving to a fundamentally new technological level.

IV. CONCLUSIONS

Assessment of the effectiveness of management of integrated structures in the agro-industrial complex can be carried out using various approaches. The most relevant is the complex application of resource, targeted and interest-oriented approaches. The performed analysis of the activities of modern agro-industrial formation showed that there are reserves for improving management

efficiency both in the sphere of production and in the sphere of interaction of related enterprises. To increase the return on production resources and increase value added in the interests of the main stakeholders, it is necessary to form an anti-cost mechanism that orients enterprises that are part of the agro-industrial formation to fulfill mutual obligations with the lowest costs. A key element of the cost-saving mechanism should be the establishment of transfer prices that ensure equal payback for variable costs of related enterprises. The cost-effective pricing mechanism will allow you to effectively manage the interaction of related enterprises in the agro-industrial formation.

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Actualization of Goal-Setting in the Management of Joint-Stock Companies

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Abstract— In the article, based on the results of the research carried out, the main directions of up-dating goal-setting in the management of joint-stock companies are substantiated: targeting, taking into account the complex of interests of stakeholders, including shareholders, personnel, buyers, authorities in the territory of presence; decomposition of the statutory goal of a joint-stock company in the form of a cortege of sub-goals and tasks, communicating them to each division and performer; organization of goal achievement by applying basic and special management functions. The authors' analysis of the content of several thousand charters of open joint-stock companies available on the Interfax corporate information disclosure site shows that the most common are stereotypical formulations that indicate that the activity of an equity company is the extraction of profit. The impact of elements of statutory goals on the financial results of joint-stock companies is estimated. Multiple regression analysis was performed in the context of 54 regions of the Russian Federation. Data on the occurrence of each of the elements of the statutory goals are used as predictors. Two indicators act as a response: the share of break-even joint stock companies in the region and the average level of profitability of joint stock companies. To assess the impact of combinations of elements of statutory goals on the level of profitability, the average values for types of statutory goals were compared using the Student's criterion.

Keywords—goal setting, joint stock companies, statutory goal, profitability, sustainable development, stakeholders

I. INTRODUCTION

Along with fairly widespread publications in which there is a stereotypical statement “as you know, the purpose of a firm is to make a profit,” there is now a sufficient number of works with a more detailed attitude to goal setting in commercial organizations.

So, I. Bondar believes that the general goal of a commercial organization is the state of the latter or the result of its economic activity, which meets the interests of the owners of the resources involved. The owners of economic resources include employees who own labor or human capital [4].

According to A.M. Zhemchugov and M.K. Zhemchugov, the purpose of the enterprise can be considered as the implementation of the enterprise's mission to optimally meet the needs of all interested parties by the enterprise, of which the owner is the legislator of the enterprise - the founder of its institute. And the main goal of the enterprise is to form an institution that ensures the fulfillment of the noted mission [12].

V.I. Bespyatykh notes the key importance of goal-setting in management. Formulation of goals, in fact, is the first and most important element of management methodology, as a subsystem of a management system. First, goals are formulated, and then, in order to achieve them, a program must be developed, discussed and approved, on the basis of which the management mechanism is used [3]. In enterprise management, goal-setting performs a key function, since it gives direction to production and commercial activities in accordance with the available resources and priorities.

M.M. Panov considers goal-setting as the primary phase of management, involving the setting of a general goal and a set of goals (goals tree) in accordance with the purpose (mission) of the system, strategic settings and the nature of the tasks to be solved [6]. A.M. Zhemchugov and M.K. Zhemchugov also see goal-setting as the main section of management [11]. By the extent to which the goal-setting function is developed, one can judge the development of the management institution in the organization. V.N. Khodyrevskaya and E.M. Sakharova, highlighting in her classification five levels of management development at the enterprise, characterize the lowest level of unrealized goal-setting function, which is expressed in the fact that goals are not defined or are too vague [5].

Consequently, goal-setting is a system-forming management function that determines the content of planning, organization and other management functions. The effectiveness of goal-setting depends on many factors, but first of all, on taking into account the interests of persons whose professional activity creates a product in demand on the market. Labor productivity, reduction of all types of losses, staff involvement - all this depends on the quality of management activities in terms of goal setting. Justification and formulation of the statutory goal of the enterprise determines the content of subsequent management decisions and affects the results of activities [2].

Note that in the scientific literature, in addition to the term "goal setting", there is the term "goal forming", for example, in the work [1]. A number of authors consider these terms as synonyms. Others, for example A.I. Prigogine emphasizes the difference between the concepts and argues that in relation to business, the more appropriate term is "goal forming," since a person in general and a leader in particular have little opportunity to influence their own goals. The goals are formed, and not otherwise, under the influence of mechanisms and processes of a social nature [7].

Despite the fact that, according to M.A. Rummyantsev, goal-setting is the Foundation of economic and political power [8], E.Yu. Savchenko and A.A. Belkin note that organizations in modern Russia face a number of problems in the field of goal-setting, primarily strategic: misalignment of goals; lack of understanding of the organization's mission by employees; lack of expression of the organization's strategic vision; the actual lack of clearly formulated strategic goals of the organization. Misalignment of goals, according to these authors, is expressed in a typical situation for organizations, in which the goals of its various subjects contradict each other, which leads to a decrease in the effectiveness of the process of achieving goals and the effectiveness of the organization as a whole. Misalignment of goals can only occur when the goal setting function is not performed properly [9].

II. METHODOLOGY

The empirical basis of the study was information about the content of the statutory goals of joint-stock companies, obtained by studying the statutes published on the corporate information disclosure website "Interfax". It was examined 4455 charters of joint-stock companies registered in 46 regions, 6 territories and two Federal cities (Moscow and Saint Petersburg) Russian Federation. It was determined that in 137 of the 4455 charters examined, the purpose of the joint-stock company's activity was not formulated. 12 main elements of statutory goals are identified in 418 charters, as well as 68 types of statutory goals represented by various combinations of these elements.

The available information array includes information on joint-stock companies with incomplete information (there is no information on costs for 354 joint-stock companies), and on joint-stock companies with abnormal levels of profitability, for example -3198% and 2524%. To increase the objectivity of the analysis, and to analyze the influence of the content of the statutory objectives on the level of profitability of joint-stock companies, the available data set was reduced in the early to 4101 units by the exclusion of joint stock companies for which there is no information on cost of sales, and then to 3892 units by eliminating another 209 companies with extreme values of profitability (5% of 4101).

The list and frequency of occurrence of the elements of the statutory objectives of the surveyed joint-stock companies characterize the data of table 1.

TABLE I. OCCURRENCE OF ELEMENTS
IN THE CHARTERS OF JOINT STOCK COMPANIES, %

The elements of the statutory objectives	Occurrence, %
Profit	95.5
Profile activities of the organization	12.7
Public (state) interests	12.6
Development (improvement) of the organization	12.1
The interests of the shareholders	5.6
The interests of the employees	3.3
Efficiency	2.3
Value of shares	1.0
Quality of products (services)	0.5
Competitiveness	0.5
Financial stability	0.3
Interests of the founders	0.1

The statistical relationship between the content of the statutory goals and the financial results of joint-stock companies was evaluated using multiple correlation and regression analysis. A pairwise comparison of the average levels of profitability for groups of joint-stock companies with different types of statutory goals using the Student's criterion was carried out.

The activity of one of the joint-stock companies, the statutory purpose of which is a stereotypical wording found in 57.6% of the surveyed joint-stock companies, is studied. There is a contradiction between the content of the statutory goal and the economic policy aimed at intensive development of the enterprise and increasing employment of the rural population. Proposals for updating goal setting are justified.

III. RESULTS AND DISCUSSION

Noteworthy is the prevailing occurrence of the element "Profit", which in the charters of joint stock companies present in the phrases "gain profit" or "making a profit", due to the influence of stereotypical views about the purpose of a commercial organization. The performed correlation and regression analysis, however, does not confirm the positive impact of this element on the profitability of joint-stock companies.

When constructing multiple regression models, information about the occurrence of elements of statutory goals in the context of 54 regions of the Russian Federation was used as factor features. The response is based on two indicators: the share of unprofitable joint-stock companies in the region (model # 1) and the average level of profitability of joint-stock companies (model # 2). The parameters of model # 1 are shown in table 2.

The "Efficiency" element has a direct and statistically significant impact on the share of break-even stock companies in the Russian regions.

TABLE II. PARAMETERS OF A MULTI-FACTOR REGRESSION MODEL OF THE IMPACT OF THE OCCURRENCE OF ELEMENTS OF THE STATUTORY GOAL (%) ON THE SHARE OF BREAK-EVEN JOINT-STOCK COMPANIES (%) IN THE REGIONS OF RUSSIA (FORWARD STEPWISE PROCEDURE)

The elements of the statutory objectives	B	Std. Err.	t(46)	p-level
Efficiency	0.787	0.347	2.27	0.028
Quality of products (services)	-0.992	0.367	-2.70	0.010
Value of shares	-1.790	0.869	-2.06	0.045
Competitiveness	0.908	0.606	1.50	0.141
Profile activities of the organization	-0.316	0.174	-1.82	0.075
Development (improvement) of the organization	0.239	0.146	1.64	0.108
Interests of the founders	7.108	6.087	1.17	0.249
Intercept	72.358	2.981	24.27	0.000
Coefficient of multiple regression R = 0.552; Coefficient of determination R ² = 0.304; F(7, 46) = 2.875; p < 0.014				

Step-by-step selection of predictors using the Forward Stepwise procedure excluded the element "profit" from their composition, which is caused by the absence of a statistically significant influence of this variable.

The parameters of model # 2 are shown in table 3.

TABLE III. PARAMETERS OF A MULTI-FACTOR REGRESSION MODEL OF THE IMPACT OF THE OCCURRENCE OF ELEMENTS OF THE STATUTORY GOAL (%) ON THE AVERAGE PROFITABILITY OF JOINT-STOCK COMPANIES (%) IN THE REGIONS OF RUSSIA (FORWARD STEPWISE PROCEDURE)

The elements of the statutory objectives	B	Std. Err.	t(48)	p-level
Quality of products (services)	-0.474	0.130	-3.64	0.001
Public (state) interests	0.073	0.058	1.26	0.213
Value of shares	-0.866	0.298	-2.90	0.006
No goal	-0.200	0.109	-1.84	0.073
Competitiveness	0.388	0.265	1.46	0.151
Intercept	3.854	0.885	4.36	0.000
Coefficient of multiple regression R = 0.583; Coefficient of determination R ² = 0.340; F(5, 48) = 4.954; p < 0.001				

With different levels of statistical significance, the direct impact on the average level of profitability of such elements of the statutory goal as "Public (state) interests" and "Competitive-

ness" has been established. A statistically significant inverse effect on the average level of profitability of joint-stock companies in the regions occurs for the elements " quality of products (services)" and "share Price". The absence of a goal has the opposite effect on the level of profitability. The "Profit" element again, as in model # 1, was not selected by the standard procedure of multiple regression analysis.

TABLE IV. GROUPS OF JOINT STOCK COMPANIES WITH AN AVERAGE LEVEL OF PROFITABILITY EXCEEDING CONTROL

Combinations of elements of the statutory goal	Number of JSC	Profitability	
		average, %	variance
Profit, shareholders ' interests, the core business, the interests of employees	3	29.2	1049.3
Profit, quality, organization development	2	25.8	1497.3
Profit, shareholders ' interests, core business	4	17.0	2794.6
Profit, shareholders ' interests, public interests	16	16.7	786.3
Profit, organization development, efficiency	5	15.9	267.4
Profit, quality, core business	2	13.6	313.4
Profit, efficiency	28	10.9	251.7
Profit, the interests of employees	2	10.5	106.7
Profit, public interest, efficiency	8	10.1	93.0
Profit, shareholders 'interests, public interests, employees' interests	9	8.0	116.6
Profit, competitiveness and the public interest	2	7.1	74.0
Profit, profile activity, efficiency	9	7.1	382.2
Profit and interests of shareholders	87	6.7	340.1
Profit, core business, organization development, efficiency	3	6.2	70.2
Profit, core business	273	5.5	587.5
Public interest	4	5.4	59.2
Profit, public interest, the interests of employees	3	5.3	76.9
Profit, the interests of employees, the interests of the shareholders	2	5.2	56.4
Profit, interests of shareholders, public interests, development of the organization	4	5.2	133.9
Profit, core activities, development of the organization, the interests of employees	2	5.2	4.8
Profit, public interest, organization development	21	4.6	337.9
Profit, shareholders 'interests, product quality, competitiveness, employees' interests	8	3.9	98.5
Profit and public interest	378	3.9	546.1
Profit, interests of shareholders, development of the organization	29	3.8	861.7
Extracting (receiving) profit	2229	3.8	604.5
The goal is not stated in the charter (control)	137	3.6	688.7

Profit-making as an independent element and as a single goal does not have a statistically significant impact on the profitability of joint-stock companies, which is not true for combinations of the "Profit" element with other elements that form goals balanced by the interests of stakeholders.

Various combinations of elements identified in the statutory goals of joint-stock companies allowed identifying 68 types of statutory goals. Table 4 shows data for 25 groups of joint-stock companies with average profitability exceeding its level in the group of joint-stock companies whose charters did not specify the goal. Some of these groups are small, which makes it difficult to identify a possible significant difference between the average levels of profitability. The Student's t-test was used as a statistical criterion for testing the hypothesis of equality of averages.

Information on group means, between which there is a statistically significant difference, is given in table 5.

TABLE V. SIGNIFICANT DIFFERENCES BETWEEN THE TYPES OF STATUTORY GOALS IN TERMS OF THE LEVEL OF PROFITABILITY OF JOINT STOCK COMPANIES

Combinations of elements of the statutory goal	Average profitability, %	tscore	t05
Profit, shareholders' interests, the core business, the interests of employees	29.2	1.989	1.987
Profit and interests of shareholders	6.7		
Profit, shareholders' interests, public interests	16.7	2.111	1.966
Profit and public interest	3.9		
Profit, shareholders' interests, public interests	16.7	2.076	1.961
Extracting (receiving) profit	3.8		

Thus, the results of economic and statistical analysis of mass data indicate that higher profitability is demonstrated by joint-stock companies that have the most balanced interests of their main stakeholders for their statutory purposes.

Profit, which many joint-stock companies postulate as a statutory goal, is an important result and condition for further economic development, but cannot be considered as the only reference point. There is a contradiction between the mono-goal "making a profit" and the content of the activities of dynamically developing joint-stock companies. One of such companies is JSC "Samarinskoe". An analysis of the activities of JSC "Samarinskoe" shows that profit is not the main goal of shareholders, although the current Charter contains the following wording: "the Purpose of the Company is to make a profit."

Only in 2019, JSC "Samarinskoe" invested about 1.1 billion rubles to increase milk production by 2.5 times and bring it to 40 thousand tons per year. In 2017-2019, the number of cows increased by 75%, and milk production increased by 78%. The average number of employees has increased by 22%, while the number of people employed in agriculture has decreased in the country as a whole. Significant investments of money and human capital in the development of the dairy cattle industry, which many consider as unprofitable, cannot be explained by the desire only to make a profit. Every year, the shareholders' meeting of JSC "Samarinskoe" makes a decision according to which more than 92% of retained earnings are allocated for reinvestment (table 6).

TABLE VI. DISTRIBUTION OF PROFITS AT JSC "SAMARINSKOE"

Profit year	Total profit, RUB	including distributed		Share of profit allocated to business development, %
		on development of activity	for dividend payment	
2016	98176133	93676261	4499872	95.4
2017	206916233	202067233	4849000	97.7
2018	63394285	58545285	4849000	92.4

Therefore, the wording of the statutory goal of this enterprise needs to be updated. A possible option is "sustainable development of the joint-stock company in the interests of buyers of products, shareholders, residents of the region and members of the workforce". Sustainable enterprise development means expanded reproduction in all areas, including social, environmental and economic.

IV. CONCLUSIONS

The main directions of updating goal-setting in the management of joint-stock companies are: 1) targeting, taking into account the complex of interests of stakeholders, including the interests of shareholders, personnel, buyers, authorities of the territory of presence of joint-stock companies; 2) decomposition of the statutory goal of the joint-stock company in the form of a cortege of sub-goals and tasks, communicating them to each division and performer; 3) the organization of goal achievement by applying basic and special management functions.

In any case, no matter how decomposition and goal attainment are performed, the goal stated in the charter matters. This is evidenced by the results of economic and statistical analysis of mass data on goal forming and the activities of several thousand joint-stock companies.

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Innovations in the Personnel Management of an Agricultural Enterprise

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Abstract—The research made it possible to substantiate recommendations for improving the personnel management of agro-industrial enterprises in the context of these areas. A proposal has been developed to improve information support on the state and movement of human resources of agro-industrial enterprises. Recommendations for managing the innovative activity of human resources of agro-industrial enterprises, including organizational and economic measures for the development of mass innovation creativity and project activities, are proposed. To manage mass innovation creativity in an agro-industrial enterprise, it is necessary to: create and maintain the database "Innovation proposals"; develop and apply the "Procedure for considering innovation proposals and material remuneration for innovation activity"; form a production and technical commission to evaluate innovation proposals and organize its work. To manage the activity of employees for the initiation of innovative projects and subsequent stages of the project life cycle, the staff of agro-industrial enterprises should be supplemented with the position "Specialist for working with investment projects". The article presents a promising methodology for evaluating personnel based on professional standards. The normative basis for evaluating personnel is a description of the work functions included in the professional standard.

Keywords—innovations, personnel management, agro-industrial enterprises, staff turnover, professional standards, innovation activity, staff assessment

I. INTRODUCTION

In recent years, Russian agro-industrial enterprises have achieved significant results in increasing the volume of production of agricultural products and products of its processing. At the same time, long-established trends of rural population decline and corresponding reduction of human resources of the agricultural economy persist. Therefore, one of the promising tasks in further improving the functioning of agricultural enterprises is to use effective novelties that increase labor productivity to a level that compensates for the loss of human resources and provides solutions to problems in the field of food security of the country.

According to the generally accepted classification, novelties introduced in the practice of personnel management belong to the organizational type of innovation. Organizational innovations create prerequisites for technological and marketing innovations, which are also relevant for agro-industrial enterprises. The main point is the differentiation of the concepts "novelty" and "innovation". V. G. Larionov gives definitions that distinguish these concepts in personnel management: "HR novelty is a product of intellectual activity in the field of personnel management (a new tool, technology or a new combination of methods of personnel work), issued in accordance with the established procedure in the form of a document (standard, methodology, instructions, recommendations, regulations). HR innovation is the final result of implementing an innovation that leads to a partial change in HR work as an object of management and obtaining an economic, social or other type of effect" [9]. O. E. Savitskaya and O. P. Lukyanova understand HR novelties as a special activity for the development and implementation of novelties aimed at improving the ability of personnel to effectively solve problems aimed at the development of enterprises in difficult conditions of severe competition [11].

It follows from the above material that novelty is a broader concept than innovation. Not every novelty is an innovation, but only one that has a positive effect. This provision should be considered as a starting point for the development of innovative proposals in personnel management. Refusal from it will be associated with low efficiency of the implemented novelties. This leads to the main rule: only those novelties that are likely to bring a significant positive effect should be introduced.

Yu. N. Lobas and E. A. Yeresko believe that the research area of innovative personnel management is the issues of development, renewal, needs and characteristics of personnel and personnel systems of the enterprise. According to these authors, the personnel sphere is one of the most difficult from a socio-psychological point of view [10]. N. B. Fateeva considers that innovative personnel management is based on the following basic provisions: the need for close connection of personnel planning with the development strategy of the organization; quantitative assessment of the costs of working with personnel and their impact on the economic indicators of production; determination of the necessary compensation package for effective work in the labor market. Innovations in personnel management occur at the following stages: selection of personnel for work; professional orientation and adaptation of personnel; personnel training; performance evaluation [6]. I. A. Dokukina, Yu. L. Makarova and A.V. Polyanin believe that in order to successfully solve problems, personnel services should actively apply innovative information technologies in their practice in the conditions of digitalization. [5].

Conditions for the introduction of advanced information technologies in personnel management are significantly expanded after the introduction of the electronic workbook (EWB) in Russia from January 1, 2020. It is expected that the EWB will provide permanent and convenient access for employees to information about their work, and employers will open up new opportunities for personnel accounting. One of the conditions for successful implementation of information technologies is the elimination of inconsistencies in regulatory documents. Thus, the content of the federal statistical observation form no. "II-4 (H3)" does not correspond to the provisions of the Labor code of the Russian Federation. This form does not reflect all the grounds for termination of an employment contract provided for in the Labor code of the Russian Federation, and one of the reasons for the retirement of employees "due to a reduction in the number of employees" does not have an ana-log in the Labor code of the Russian Federation, which together prevents an objective analysis of the movement of personnel.

V. N. Belkin, N. A. Belkina and O. A. Antonova draw attention to another important aspect – the lack of scientific elaboration of problems related to the innovative activity of enterprise personnel. In Economics, many basic theoretical issues remain unclear, including those related to the management of innovation activity of enterprise personnel. An analysis of business practices shows that only about 40% of workers respect and support innovative workers. Numerous results of socio-logical surveys confirm that the real system of labor relations of enterprises is unfavorable for employees to display innovative activity. In order to overcome the negative attitude to the innovative activity of the staff, it is necessary to work on managing the innovative activity of employees [3]. One of the ways to solve this problem is to introduce positions of employees

specializing in investment and innovation activities into the staffing of agro-industrial enterprises. Thus, the Order of the Ministry of labor of Russia dated 16.04.2018 approved the professional standard "Specialist in working with investment projects". Analysis of the content of this document shows that it needs to be adapted to the specific conditions of the enterprise, after which it will be suitable for conducting procedures for selecting, hiring and subsequent evaluation of the activities of a specialist in working with investment projects.

A specialist in technical rationing is also in demand, since the introduction of technological innovations usually requires either a revision of existing resource consumption standards or the development of new standards. However, there is no professional standard for a specialist in technical rationing yet. Despite the fact that, as noted by N. N. Bogdan and M. G. The national qualification system is currently being actively developed in Russia, which is reflected in a number of measures taken: changes to the Labor code are being made, professional standards are being developed to replace outdated qualification reference books, professional qualification Councils and centers for independent assessment of qualifications are being created [4], and there is a significant shortage of professional standards. As of May 2020 only 22 professional standards have been approved by the Russian Ministry of labor for agricultural professions. For example, there is no professional standard for zootechnician.

Nevertheless, the development of professional standards, despite all the costs associated with their imperfection and implementation practices, serves as an important normative basis for personnel evaluation. At the same time, it should not be expected that the professional standard approved by the Ministry of labor of the Russian Federation will fully take into account the specifics of professional activity in a particular enterprise. In any case, it is necessary to adapt it to the conditions of the enterprise. The adaptation of an existing professional standard or the development of a new one is a needed innovation in the personnel management of an agro-industrial enterprise, which allows you to carry out a set of actions for the selection and evaluation of human resources.

Thus, innovative activity in personnel management of an agro-industrial enterprise is aimed at regulating the level of three main factors: 1) the quantitative and qualitative state of the enterprise's human resources; 2) wake-up motives and incentives for innovative activities of personnel; 3) methods of human resource management.

II. METHODOLOGY

The empirical basis of the study was open data published on the website of Rosstat and the website of the company "ConsultantPlus", as well as operational information about project management activities in agro-industrial enterprises.

The purpose of the research is to develop innovative proposals for improving the personnel management of agro-industrial enterprises. To achieve this goal, the following tasks were completed: 1) justified proposals for improving the information support of personnel management in accordance with the labor code of the Russian Federation; 2) developed recommendations for the management of innovative activity of human resources; 3) a promising method of personnel evaluation based on professional standards is proposed.

In particular, the analysis of guidelines for filling out the federal statistical observation form no. "II-4 (H3)" and relevant norms of the labor code of the Russian Federation allowed us to form proposals for creating and maintaining a database on the movement of human resources of an agro-industrial enterprise. Assessment of the adequacy of the content of labor functions of the professional standard "Specialist in working with investment projects" to the practice of project management in agro-industrial enterprises allowed us to develop a draft of an adapted professional standard suitable for an objective assessment of the labor activity of a specialist in investment project management.

III. RESULTS AND DISCUSSION

Innovative activity in the personnel management of an agro-industrial enterprise currently has three main aspects. The first is related to the introduction of effective innovations in information

support, an example of which is the development of a corporate database that allows you to objectively monitor the movement of human resources and make effective management decisions in the personnel management system [2].

Data on turnover of employees in the database about movement of human resources, in contrast to the forms of Federal statistical observation no. "П-4 (H3)" must include the reasons for the disposal in accordance with the Labour code (table 1).

TABLE I. INFORMATION ON DISPOSAL OF EMPLOYEES

	Reasons for employee disposal
01	dropped out workers from the organization, total
	including:
02	by agreement of the parties
03	due to the expiration of the employment contract
04	at the employee's initiative
05	at the initiative of the employer
06	transfer of an employee to another job (position)
07	refusal of an employee to continue working in connection with a change of owner or reorganization
08	the employee's refusal to continue working due to a change in the terms of the employment contract determined by the parties
09	refusal of the employee to transfer to another job, which is necessary for him in accordance with the medical report, or the employer's lack of appropriate work
10	refusal of an employee to transfer to work in another locality together with the employer
11	circumstances beyond the will of the parties
	among them:
12	conscription of an employee for military service or referral to alternative civil service
13	reinstatement of an employee who previously performed this work by a decision of the state labor inspectorate or a court
14	administrative punishment that excludes the possibility of performing the employee's obligations under the employment contract
15	sentencing an employee to a punishment that excludes the continuation of the previous work
16	recognition of an employee as completely unable to work in accordance with a medical report
17	the death of an employee
18	occurrence of emergency circumstances that prevent the continuation of labor relations

The proposed form will allow to objectively analyze the movement of human resources, in particular, to monitor the turnover of personnel. It, in contrast to the software system "1C: Enterprise", which calculates the turnover rate as a ratio of the number of dismissed employees to the average number of employees, allows to methodically correctly calculate the turnover rate.

For table 1, the employee turnover rate should be calculated as the ratio of dropped employees indicated in the lines 04, 05, 06, 07, 08, 09, 10, 14, 15, to the average number of employees for the corresponding period.

The second aspect involves managing the innovative activity of human resources involved in all divisions of the agro-industrial enterprise. Two directions are relevant here: 1) mass innovation creativity. Almost all employees who have mastered their profession and have experience of working in a particular enterprise have ideas, suggestions for improving the organization of production and industrial relations, improving technologies, saving material and technical resources, and saving working time; 2) a single, but more focused and large-scale innovative proposal, which is, in fact, the initiation of an investment project.

To manage mass innovation creativity, it is necessary: a) to create and maintain the database "Innovation proposals"; b) to develop and apply the "Procedure for consideration of innovation proposals and material remuneration for innovation activity"; c) to form and organize the work of the production and technical commission for evaluating innovation proposals.

The database "Innovation proposals" should include information about the author of the proposal, the content of the proposal, the timing of its submission and review, the conclusion of the production and technical commission, a description of the implementation results, the amount and nature of remuneration for the author of the proposal. The size and nature of the royalties should be commensurate with the beneficial effect of implementing the promotion. The composition of the production and technical commission for evaluating innovation proposals should correspond to the profile of the considered rationalization proposal. The period of time between submitting the proposal and notifying the author of the decision (conclusion) of the production and technical commission should not exceed 30 days.

To manage the activity of employees for the initiation of innovative projects and subsequent stages of the project life cycle, the staff of agro-industrial enterprises should be supplemented with the position "Specialist for working with investment projects". The description of labor functions included in the professional standard approved by the Ministry of labor of the Russian Federation is given in table 2.

The analysis shows that the content of the generalized labor function "B" - The implementation of the investment project does not correspond to practice. Its labour functions are the responsibility of managers and supervisors of investment projects, who are usually chief specialists and managers of agro-industrial enterprises. Taking into account the established practice, a specialist in working with investment projects is called to perform functional project management, providing methodological and organizational assistance in the implementation of projects.

TABLE II. DESCRIPTION OF LABOR FUNCTIONS INCLUDED IN THE PROFESSIONAL STANDARD "SPECIAL LIST FOR WORKING WITH INVESTMENT PROJECTS"

Generalized labor functions		Labor functions		
<i>code</i>	<i>name</i>	<i>name</i>	<i>code</i>	<i>skill level</i>
A	Preparing an investment project	Development of an investment project	A/01.6	6
		Conducting the analytical stage of the investment project examination	A/02.6	6
		Formation of an expert opinion on the possibility of implementing an investment project	A/03.6	6
B	Investment project realization	Managing the effectiveness of an investment project	B/01.7	7
		Communications management of the investment project	B/02.7	7
		Investment project risk management	B/03.7	7

Hence, our proposal is to adapt the content of the generalized labor function "B" in the following wording (table 3).

TABLE III. DRAFT DESCRIPTION OF THE LABOR FUNCTION "B" INCLUDED IN THE PROFESSIONAL STANDARD "SPECIALIST IN WORKING WITH INVESTMENT PROJECTS"

Generalized labor functions		Labor functions		
<i>code</i>	<i>name</i>	<i>name</i>	<i>code</i>	<i>skill level</i>
B	Methodological guidelines for the implementation of an investment project	Development of recommendations for managing the effectiveness of an investment project	B/01.7	7
		Development of recommendations for managing communications of the investment project	B/02.7	7
		Development of recommendations on investment project risk management	B/03.7	7

The development of draft professional standards and the adaptation of existing professional standards make it possible to create an up-to-date regulatory framework for personnel evaluation. The introduction of the position "Specialist in working with investment projects" into the staff schedule and the selection of a competent employee for it will increase the effectiveness of activities for managing the innovative activity of human resources of agro-industrial enterprises.

The third aspect is related to the improvement of personnel assessment based on the implementation of existing professional standards and the development of current projects of professional standards. To assess the performance of labor functions by a specialist working with investment projects, we suggest using the method of expert assessments. Each expert is asked to evaluate the performance of these employees' work functions using a four-point scale. Previously, the experts hear the employee's report on the work done in the context of labor functions of the professional standard. Each expert in the assessment sheet proposed to him (table 4) notes for each work function the degree of its performance by the employee.

TABLE IV. DRAFT LIST FOR EVALUATING A SPECIALIST WORKING WITH INVESTMENT PROJECTS FOR COMPLIANCE WITH THE PROFESSIONAL STANDARD (FRAGMENT)

Generalized labor functions	Labor functions	Degree of performance of functions	Degree of performance of functions	Expert opinion
A Preparing an investment project	A/01.6 Development of an investment project	high	1,0	1,0
		medium	0,7	
		mediocre	0,3	
		insufficient	0,1	
	A/02.6 Conducting the analytical stage of the investment project examination	high	1,0	1,0
		medium	0,7	
		mediocre	0,3	
		insufficient	0,1	

The completed assessment sheets are summarized in table 5.

Note that the code B/01.7 for the labor function "development of recommendations for managing the effectiveness of an investment project" means that it belongs to the generalized labor function "B", its serial number as part of the generalized function "1", and the required skill level – the 7th.

The consolidated assessment of the expert commission is formed taking into account the significance of labor functions (table 6). In this example, the coefficients of significance of generalized labor functions and particular labor functions are determined in proportion to the required skill level:

$$6 / (6 + 7) = 0,462; 7 / (6 + 7) = 0,538$$

Coefficients of significance of private labour functions were calculated in a similar manner. For example, for a private labor function B/01.7:

$$7 / (7 + 7 + 7 + 7) = 0,25$$

The efficiency coefficient of a specialist working with investment project is calculated using the arithmetic weighted average formula.

TABLE V. EXAMPLE OF CALCULATION OF MEAN SCORES FOR THE EMPLOYMENT FUNCTIONS

Labor functions	Degree of performance of functions	Estimation of experts					Average mark	
		<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>		
A	A/0 1.6	high	1,0	1,0			1,0	0,88
		medium			0,7	0,7		
		mediocre						
		insufficient						
	A/0 2.6	high	1,0					0,76
		medium		0,7	0,7	0,7	0,7	
		mediocre						
		insufficient						
	A/0 3.6	high					1,0	0,76
		medium	0,7	0,7	0,7	0,7		
		mediocre						
		insufficient						
B	B/0 1.7	high		1,0				0,76
		medium	0,7		0,7	0,7	0,7	
		mediocre						
		insufficient						
	B/0 2.7	high						0,70
		medium	0,7	0,7	0,7	0,7	0,7	
		mediocre						
		insufficient						
	B/0 3.7	high	1,0	1,0		1,0	1,0	0,94
		medium			0,7			
		mediocre						
		insufficient						
	B/0 4.7	high						0,70
		medium	0,7	0,7	0,7	0,7	0,7	
		mediocre						
		insufficient						

The assessment of the level of the performance coefficient by a specialist in working with investment projects and the analysis of the values of its components makes it possible to draw conclusions about the compliance of the position and measures for the formation of competencies.

TABLE VI. EXAMPLE OF CALCULATION OF THE CONSOLIDATED ASSESSMENT OF THE LABOR ACTIVITY OF A SPECIALIST WORKING WITH INVESTMENT PROJECTS

Generalized labor functions						
<i>A. Preparing an investment project</i>				<i>B. Methodological guidelines for the implementation of an investment project</i>		
The coefficients of significance of the aggregated labor functions						
0,462				0,538		
Labor functions						
A/01.6 Development of an investment project	A/02.6 Conducting the analytical stage of the investment project examination	A/03.6 Formation of an expert opinion on the possibility of implementing an investment project	B/01.7 Development of recommendations for managing the effectiveness of an investment project	B/02.7 Development of recommendations for managing the communication of the investment project	B/03.7 Development of recommendations for managing the risk management	B/04.7 Development of recommendations for managing deadlines and monitoring the implementation of an investment project
The coefficient of significance of private labour functions						
0,334	0,333	0,333	0,025	0,25	0,25	0,25
Average expert assessment of the degree of performance of labor functions by a specialist						
0,82	0,76	0,76	0,76	0,70	0,94	0,70
Calculation of the efficiency coefficient of a specialist working with investment project						
$KE = 0,462 \times (0,334 \times 0,88 + 0,333 \times 0,76 + 0,333 \times 0,76) + 0,538 \times (0,25 \times 0,76 + 0,25 \times 0,70 + 0,25 \times 0,94 + 0,25 \times 0,70) = 0,787$						

IV. CONCLUSIONS

Thus, promising innovations in personnel management of agro-industrial enterprises include: 1) information support for human resource management; 2) management of innovation activity of human resources; 3) personnel assessment based on professional standards (figure 1).

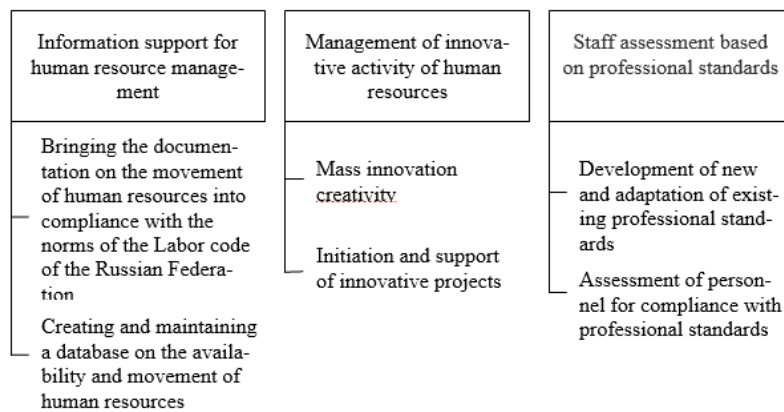


Fig. 1. Promising innovations in personnel management of agro-industrial enterprises

The directions of implementing promising innovations are interrelated. Information support of human resource management closely intersects with the management of innovation activity of personnel. Organizational and economic measures to increase the innovative activity of personnel include, among other things, the introduction of specialists to the staff of agro-industrial enterprises whose activities are regulated by professional standards developed and adapted to the conditions of agro-industrial production. Current professional standards are part of the information support for human resource management. Therefore, the innovative proposals considered in the article must be applied in a comprehensive manner, which will ensure the highest return on them.

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Disposal of a Production Project in Russia

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Abstract—Starting and running a business in Russia is significantly different from the same process Europe or the United States: it is much more difficult to dispose of a business than to start it, especially for unquoted companies. The inconvenience of liquidating direct investments is a serious barrier for foreign investors who are interested in the production sector of the Russian economy. In this article I would like to highlight the main challenges for the company's owners while disposing of a project and to share my practical experience of solving them in a production company in Russia. Firstly, I consider spotting the optimal time for such disposal depending on the company's strategy. Secondly, I show how to develop the plan for complete or partial exit from the project and to find a buyer. Then, I analyze the methods of calculating the fair price of a business project in Russia and the ways of convincing the buyer. I also describe the local specifics of the due diligence of the project for sale and the methods of maintaining confidentiality when preparing the transaction. Finally, I consider various ways of finalizing the deal from the legal and tax points of view. This article gives an entrepreneur the instruments to develop the exit strategy from a project in order to secure his direct investments in Russia

Keywords—business, business project, conclusion of transactions, direct investment, investors, entrepreneur, market economy, strategies.

I. INTRODUCTION

In this article I would like to highlight the main challenges for the company's owners while disposing of a project and to share my practical experience of solving them in a production company in Russia. Firstly, I consider spotting the optimal time for such disposal depending on the company's strategy. Secondly, I show how to develop the plan for complete or partial exit from the project and to find a buyer. Then, I analyze the methods of calculating the fair price of a business project in Russia and the ways of convincing the buyer. I also describe the local specifics of the due diligence of the project for sale and the methods of maintaining confidentiality when preparing the transaction. Finally, I consider various ways of finalizing the deal from the legal and tax points of view.

This article gives an entrepreneur the instruments to develop the exit strategy from a project in order to secure his direct investments in Russia.

II. RESULTS AND DISCUSSION

A. Reasons for Taking off a Business Project

The process of starting and running a business in Russia is very distinctive from Europe or the United States: it is much more difficult to stop participating in a business project than to start it, especially in the companies not listed on the stock exchange. Although there are lots of other hurdles for developing projects in Russia (such as bulky financial reporting, high level of corruption, unfavorable changes of legislation, etc.), the issues arising from the sale of business have formed the most serious barriers for the foreign investors interested in the production sector of the Russian economy.

When starting a project in any country, an entrepreneur should have the exit strategy, I mean the strict plan stipulating when, under what financial, production or other circumstances he should sell this business, and what are the best ways to do it. Unfortunately, many Russian businessmen do not care about exit plans, or they hope their businesses will grow eternally and further will be passed on by inheritance. I think that both Russian businessmen and foreign investors should consider several situations when they should dispose of a business even if they are reluctant to do it.

The variety of disposal decision triggers is huge: the most common are the continuing losses, lack of finance and diminishing market share, with a possibility to lose this business unless you

manage to sell it. In addition, a businessman may simply get tired of his project, may find a new, more interesting, not necessarily business-related activity, may wish to change his place of residence, retire, enter the civil service⁴, get full-time employment. There may be also reasons related to family and health, but the most positive reason is the businessman's desire to leave the project at the peak of its profitability, seeing no possibilities to develop it any further.

The ability to recognize this peak and to make the disposal decision on time requires great strategic skills and exceptional courage. This is akin to closing a growing positive position on the stock exchange, but much more sophisticated, as it entails a long series of complicated actions.

In this article I would like to highlight the main challenges that the company's owners will face while disposing of a project and to share my practical experience of solving them in a production company in Russia in 2017. I hope this article will give the entrepreneurs the necessary guidance to develop the exit strategy from a Russian project for securing their direct investments.

B. Benefits of Timely Project Disposal

From the seller's point of view, the timely disposal maximizes his profits from the project or minimizes his losses (depending on the project stage) and solves his personal issues. For the buyer it is an opportunity to enter the project at the most convenient moment at the fair price.

For the project itself, changing the proprietor on time either opens a new development stage or saves the project from waiving. The benefits for the corporate finance market are also obvious, because successful business sale deals increase the liquidity of the market and, as a result, boost its investment attractiveness. The business community of the entire country benefits from improvement of business disposal infrastructure, which attracts new businessmen and capitals to the market.

As the timely disposal of a business project gives nothing but benefits to all the interested parties, let us analyze the main issues impeding the process. In my opinion, there are seven of them.

C. Main Issues of the Disposal

The first issue is to determine the appropriate moment, that means to set up the project's key performance indicators (KPI) and their critical values that should lead to the disposal decision. Based on my own business experience I strongly recommend to form the KPI system before entering any business project and to revise it on a regular basis.

The second issue is to develop the clear exit plan if it was not set up at the beginning of the project. The plan should have the strict schedule, time limits for the negotiations per each prospective buyer and per the whole process. Upon setting up the plan can be changed in detail, but the time frame should be complied with thoroughly.

The third issue is to calculate the real value of the business project and to determine its sale price based on this value. At this stage the project owners should forget about the historical cost of investments and consider the market price affordable by a potential buyer. Setting up the price corridor could be the best way.

The fourth issue is to choose the buyer searching engines, to prepare the essential information for the engines, to find the prospective buyers and to conduct the preliminary negotiations with them.

The fifth issue is to conduct the due diligence of the project: to determine the optimal amount of information for sharing with the prospective buyers, to organize the due diligence process minimizing the risk of a hostile acquisition during the process.

The sixth issue is to maintain the confidentiality of the prospective deal from the company's staff, from the clients, suppliers and other stakeholders until the moment the sale is finalized.

⁴ This is, by the way, a convenient explanation for the business sellers who do not want to disclose the true reasons of the sale. See for details the Federal Law of Civil Service № 79-FZ of 27.07.2004 with amendments of 16.12.2019, Article 17 paragraph 3.1. Computer Law system Consultant Plus http://www.consultant.ru/document/cons_doc_LAW_48601/e7b86a940bc71a71af7b9288590f1ca92a69d878/ accessed on 11.06.2020

The seventh issue relates to the process of the deal execution, transfer of the title deeds and the instruments of control.

D. Spotting the Right Moment

It is easy to decide on disposal of a business with the continuous losses for several years, or when its revenue and market share are declining, or when the business is under attack of a hostile buyer (raider) so that the owner has faced the “sell or lose” choice. This marks that the most appropriate moment for disposal has been missed.

To prevent such “easy” decisions the business strategy should be stated at the beginning of the project along with the project goals for quarters and years and with the KPIs. The strategy should describe the project parameters that stipulate the exit. The regular revision of the strategy helps the owner to catch the moment when the project passes its peak.

In the considered Russian project the strategy was formed at the beginning, but unfortunately it was not corrected according to the business environment changes. In 2005 a production of dry construction mixtures (DCM)⁵ was established as a separate company on the premises of a financially unstable plant in the Krasnodar region (Russia). The risk underassessed by the founders was the sale of the main plant due to its financial problems.

The new owners of the main plant tried to improve its cash flow by means of increasing the rental rate for the successful tenant and threatening to take the project over aggressively. At that moment it was impossible to sell the DCM business to a third party because it would have inherited the dependence on the main plant.

In 2013 the DCM project’s owners were forced to relocate the production line to another part of the region. Although the transfer was long, hard and expensive, the business was saved from the waiver or acquisition, but the owners did not think of its disposal because the new place offered the new opportunities.

In 6 months after the business relocation the DCM market conditions changed significantly as Russia incorporated the Crimea and thus the economic effect of the Sochi Olympic Games-2014 appeared lower than expected. The federal government investments were rearranged to the Crimea, the private investments declined due to the sanctions effect. That’s why the DCM market of the Krasnodar region began to squeeze, and in the summer 2016 the sale of the considered project became essential.

E. Development of Exit Plan

In my opinion, the development of business disposal plan consists of: spotting the length of the process, the range of potential buyers, the length of negotiations for each buyer, considering the partial exit opportunity, calculating the fair price, choosing the buyers’ search engine, quality check of assets and liabilities, adjustments for the materials’ supply plan and the production plan.

In the considered project the initial exit strategy of 2005 was very simple: to sell all the raw materials, finished goods and equipment if the business is blowing up within 3 years from start. However, by the year 2016 the project became a complicated system with 12 types of products, 50 kinds of raw materials, 2 production lines and various intangible assets. It was not easy to sell all these assets fast and separately.

In the summer 2016 when DCM market conditions changed tremendously, the owners decided to sell the business. As this project was suffering the lack of finance most severely in winter, the length of the sub-project “Business disposal” was set up as 6 months.

The first prospective buyer appeared the next day after publishing the sale advertisement, but it was a big company with a slow decision-making. Having spent 2 months in useless contemplation, the project owners spotted the other 5 prospective buyers. All of them were from the construction industry: some were bigger production companies, and some were the wholesalers. The choice

⁵ Dry construction mixtures – a technology that became popular in construction industry in the second part of the XX century. The construction materials are produced mostly of cement, gypsum, sand and polymers as a dry mix and then mixed with water on the construction site just before their application.

between producers and wholesalers was made in favor of the latter because they were less experienced in production issues, so they were not that afraid of the drawbacks of equipment and raw materials supply that the project suffered.

The next stage – the comparison and final selection of the potential buyers relates to the opportunity of partial exit from the project. It should be noted that some buyers were not interested in the complete takeover, because they needed the expertise of the current management in the production and technology issues. At the same time all partial exit opportunities implied the transfer of the controlling stake to the new owner and the change of CEO and chief accountant. In Russian business environment it would have caused the complete loss of control on the profit distribution, so the project owners refused partial exit in September 2016 and this narrowed the choice of the best buyers from five to two. Thus, the appropriate length of negotiations for each of them was set from 2 to 4 months.

F. Determination of Fair Price

During the 26 years of my business career I was involved in numerous mergers and acquisitions projects. I noticed that Russian business sellers usually tried to determine the fair price as based on the historical cost of their investment plus some profit. Hardly they perceived the market price as the price affordable by a potential buyer. That is why the sellers in Russia often used to miscalculate the lower edge of the price corridor and thus they have difficulties in proving this level to the potential buyers.

According to the official standards of business assessment in Russia⁶ the business shall be value by a licensed assessor using one of the following three treatments: discounted cash flow (or profit), comparative method and historical cost method.

It sounds strange, but discounted cash flow method gives the less precise result in Russia due to rapidly changing legal and political environment and to the weight of discount factor determined by the assessor at his sole discretion. The existence of signed contracts with major customers does not guarantee the future cash flows, because it is difficult to sue the customer for not buying the contracted amounts (if you are not a monopoly like Gazprom, of course).

Comparative method is also less reliable than it seems because it is hard to find the comparable enterprise being sold in the market. When you find such a business, you cannot prove its relevance as the published financial reporting does not give you all the relevant information. For unquoted companies (LLC) the published reporting can be out of date or they can avoid publishing it. Also, the real values of merger & acquisition deals are usually kept in secret for such companies.

That is why historical cost appears the most reliable method of business assessment in Russia and is commonly used. But does it give the fair price? Usually not, as the businesses are often being sold with risks which deteriorate the cost of initial investment. The historical cost is rather a benchmark for the seller indicating the lower edge of price corridor.

Setting up the price corridor makes the negotiations smooth, flexible and time-based. The only problem is that business buyers in Russia frequently have quite a different view on the corridor's lower edge. Traditionally, the minimum price of a business here is the market (disposable) value of fixed assets plus the market value of raw materials' and finished products' inventories. The higher edge of price corridor depends on the lack/surplus of finance for the project's current operations, on the risks hidden in the company's financial reporting and the depth of understanding these risks by the buyer.

G. Choosing Buyer's Search Engine

Before choosing the method of the buyers' chasing, the selling text should be written indicating the most attractive parameters of the project, except for those that can clearly identify the company. Although the secret will be revealed after the buyer's first visit to the production site, it is better not state the company's name in the selling advertisement, because it can deteriorate the company's reputation in the way that we will explain in the next chapters. In the considered Russian project

⁶ The Order of the Ministry of Economic Development of Russia № 326 of 01.06.2015 on setting of the Federal Standard of business assessment № 8. Official site of the Ministry of Economic Development of Russia <http://economy.gov.ru/minec/activity/sections/corpmanagement/activity/201506101> accessed on 11.06.2020

the owners stated the city of the company's location, the distances to the main suppliers and customers, the production outline and capacity and the main intangible assets.

Then the project was offered for sale within the professional circle via a publication in the professional newspaper. At the same time, it was offered to the professionals interested in it the previous years, especially to those who used to have the joint projects with the company. Failing to reach the success within 3 months, the owners published the announcement first in the websites specializing on business sale. Surprisingly, the real buyer came only after the publication on Avito⁷.

H. Due Diligence

After acceptance of the preliminary price by the potential buyer the next stage is due diligence. This stage of business disposal, in my opinion, is the most tricky and controversial. First of all, what is implied by this term? According to the Cambridge dictionary definition, due diligence is the detailed examination of a company and its financial records, done before becoming involved in a business arrangement with it⁸.

Although the process consists of financial audit, business assessment and legal assessment, Russian bidders are mainly concentrated on the risks of the target company, such as: the relationships with the authorities, the existence and amount of tax claims, the exposure to money-laundering risks and aggressive tax optimization risks, the possible ecological harm from the company's activities, the risks of the formation documents of the company, the relationships between the co-founders and their legal grounds. The importance of the abovementioned issues in Russia is justified because each and any of them can devalue the price of a company to nil due to the inadequate actions of the state authorities and the slowness of the litigation process.⁹

That is why in Russian due diligence the buyer would like to prove that the business really exists and is being run on the legal grounds and will not be demolished by the state authorities, creditors or third party claimers in the next 12 months. The aim of the target company is to finish the process as fast as possible without showing the confidential or vulnerable information about the business to the potential buyer. The considered Russian company has gained the negative experience of a due diligence being turned into a hostile acquisition.

As the buyers are usually under time pressure, they are starting the due diligence by themselves from the information that can be easily accessed online free of charge: the extract from the Unified State Register of Legal Entities (<https://egrul.nalog.ru/>), the amount of taxes paid, the amount of tax claims¹⁰ the participation in court proceedings (<http://arbitr.ru/>), in law enforcement proceedings (<http://fssprus.ru/>), professional reputation. Actually, these open sources do not give much to an amateur researcher, they just point to the existence or absence of the main legal, tax and money-laundering risks. Understanding what is underneath the figures needs some professional expertise, for example, using the tax calculator in "Transparent business" web-service one needs to know the average level of taxes paid by the companies of the same size of the same industry to decide whether the target company is underpaying the taxes.

The second stage of the due diligence (for some bidders it is the first stage) is the bidder's personal inspection of the of the company's headquarters (production site, office). Sometimes the target company's management is afraid to show the production line and warehouses to the bidder, trying to avoid the technological secret's disclosure. In my opinion, such a secrecy is useless, cause the know-hows are set by the properly made technical documents and cannot be seen in 10-15 minutes excursion. This personal visit of a bidder not only strengthens the trust between the parties

⁷ Avito - the Internet service for posting sell/buy announcements of goods and services from individuals and companies, ranking second in the world and the first in Russia among online classifications

⁸ Cambridge dictionary, <https://dictionary.cambridge.org/ru/due-diligence> accessed on 11.06.2020

⁹ See for details "Insufficient protection of land users' rights in Russia", the article in "International Journal of Civil and Trade Law", Moscow, Russia, #2 of 2019, pp. 36-45: ISSN 2449-2541

¹⁰ These two parameters can be found via the recently developed option on the Federal Tax Service web-site called "Transparent Business" - <https://pb.nalog.ru/> accessed on 11.06.2020

of the future deal, but also shows the level of the production and service of the target company, its corporate culture, and the level of its personnel.

The third stage of due diligence depends on the level of trust between the parties and usually includes surrendering the financial documents from the seller: the necessary breakdowns to the balance sheet and profit and loss account (as these two reports made under Russian accounting standards do not give enough information), some management accounts related to profitability and liquidity of the business, patents, product prices, fixed assets' purchase agreements. The seller has to agree for such a disclosure, because he understands that official financial reporting of a Russian firm is not designed for management information. At the same time, he is exposed to the hostile acquisition risk since the detailed profitability information can allow the bidder to copy the business model without buying it or to take over the business by means of misappropriation of its management information.

I. Methods of Keeping Confidentiality

The Commercial secrets Law was adopted in Russia in 2004, and a lot of court decisions based on it have appeared by the end of 2010s. According to this law any information can be deemed a commercial secret provided that it suits all of the following conditions:

- it must have a commercial value;
- it must be unknown to the third parties;
- the access to it should be restricted;
- a trade secret regime should be introduced in respect of this information by its possessor¹¹.

It sounds strange, but a lot of Russian businessmen still do not believe that non-disclosure agreements in Russia can actually save the trade secrets in business-to-business cases, because they think it is very difficult to prove the leak of confidential information through your counterparty (e.g., prospective buyer). The recent arbitration practice in Russia proves the fallacy of such an opinion, as long as the possessor of a trade secret introduces the trade secret regime on his vulnerable information and stipulates it in any agreement which implies the transfer of such information to the counterparty.¹²

The other reason for the non-disclosure agreements' failure lies on the seller's personnel side. Your people can lose their motivation to work or can start searching for the same job with the competitors as soon as they notice their employer company is on sale. This situation will create the rumors of the future deal in the market and will affect adversely the market value of the project. So first you need to come up with a plausible legend for your employees (such as: attracting a new partner to your business, thinking about a tolling scheme, preparing for a bank loan, considering other forms of cooperation) and instruct the potential buyer to maintain the legend while he is communicating with your staff.

As for the clients of the business project on sale, the Russian contracts usually do not provide for any covenants to notify the counterparty about the change of the business ownership, so the clients of the seller will be the last ones to know about the deal. In order to minimize the risk of disclosure on the seller's side, the seller should not involve his employees in the preparation of the share purchase agreement and supplement documents.

J. Registration of Transactions

On the last stage of disposal process the parties should decide on the technique of the deal execution and the way of transfer the title deeds, the money and the company's management tools. There are two major ways of passing the share in Russian limited liability company (LLC):

¹¹ Article 10 paragraph 1 of the Federal Law of 29.07.2004 № 98-FZ "Commercial Secrets Law". Computer law system Consultant Plus accessed on 11.06.2020. http://www.consultant.ru/document/cons_doc_LAW_48699/0ca1b144b64eaa68cd80ca51ad37ac4047c47775/

¹² See for example the decision of Novosibirsk region Arbitrary Court for the case A45-47738/2018 of 29.03.2019 <https://sudact.ru/arbitral/doc/mCA2tiuzoidK/> accessed on 11.06.2020

acceptance of a new partner into the partnership with the consecutive release of the old one or selling the share from the old partner to the new one.

The second way appears to be the most convenient: the documents are checked by the notary whose obligation is also to register the deal with the State register, so all the process can take 7 days from the date of the parties' agreement. If we consider the first option, it will save the notary duty, but it will force the CEO of the company on sale to prepare and surrender all the documents to the State register by himself and this could last up to 1 month.

The share on sale should be first offered to the LLC itself and to its remained partners (if any) at the price of the proposed deal since their preemptive right is stated in the company's articles of association. The deal between the seller and the external buyer can proceed only if the LLC and the other existing partners refuse to buy the share within 30 days from the offer. In the considered Russian project this rule was easily evaded as the seller was the 100% owner of the company and he was its CEO at the same time, so the share was offered to the company one day and the next day the CEO signed the refusal, making the process of the deal smoother and faster.

The next barrier for the prospective deal is the obligation to notarize the share purchase agreement¹³ and, in case one of the parties is an individual, to receive the notarized spouse waiver before signing the agreement. The notarization of the deal has some benefits as well: the notary certifies the process of the consideration transfer (especially if it's cash which is quite common in Russia) and the registration of the deal with the state authorities is also the duty of the notary. During the 7 days stipulated by the law for deal registration the seller should surrender to the buyer the corporate seal, the electronic keys from the bank account and other e-signatures, the internal documentation and technological secrets. The deal becomes valid for the buyer and the seller as soon as it is notarized and for the third parties since the day of its official registration. At this day it's the right time for the seller's directors to resign.

The delicate point of the deal is whether to state its full amount in the share purchase agreement or not. Stating the full amount protects the buyer in case the deal being proclaimed null and void by any court later and also simplifies the financial accounting of investment cost. At the same time Russian sellers usually prefer not to show the full amount of the deal in order to reduce their own income tax. The Russian Tax Code relieves all the amount of money received by the seller from the income tax only if the sold share had been in his possession uninterruptedly for more than 5 years.¹⁴

In order to resolve this controversy, the parties could agree to show lower amount in the share purchase agreement and account for all the rest in the supplement agreements, for example, as consideration for the internal loans' assignment or for the trade mark transfer.

III. CONCLUSIONS AND SUGGESTIONS

My business experience proves that taking off a non-listed production company in Russia is a long and difficult process. The most common reasons for taking off are the continuing losses, lack of finance and diminishing market share. The other reasons could be the businessman's tiredness of his project, change of residence, retirement or entering the civil service.

During the process of business disposal there are 7 major issues to solve:

- to determine the appropriate moment;
- to develop the exit plan with the tough schedule;
- to calculate the real value of the business project and to determine its sale price based on this value;
- to choose the buyer' searching engines, to prepare the essential information for the engines, to find the prospective buyers and to conduct the preliminary negotiations with them;

¹³ Article 21 paragraph 11 of the Federal Law # 14-FZ on LLC of 08.02.1998 – Computer law system Consultant Plus accessed on 11.06.2020 http://www.consultant.ru/document/cons_doc_LAW_17819/0a525c7e819fb19114001672d79d782c72f55caf/

¹⁴ Article 217 paragraph 17.2 of Russian Tax Code. Computer law system Consultant Plus accessed on 11.06.2020 http://www.consultant.ru/document/cons_doc_LAW_28165/625f7f7ad302ab285fe87457521eb265c7dbec3c/

- to conduct the due diligence of the project;
- to maintain the confidentiality of the prospective deal;
- to execute the deal, to transfer of the title deeds and the instruments of control.

In my opinion, the most crucial issues are the determination of appropriate moment for sale and conducting the due diligence, avoiding a hostile acquisition at the same time. For improving the situation, I suggest the following.

Firstly, the business strategy should be stated at the beginning of the project describing the values of its key parameters that stipulate the exit. The regular revision of the strategy is necessary as the economic environment and legislation in Russia are changing too fast.

Besides that, Russian businessmen should rely more on the non-disclosure agreements, setting up the confidentiality treatment on the documents being passed in the process of due diligence. The official online services like “Transparent business” could show more relevant and up-to-date information about business counterparties, including the suggested average values of economic indicators (e.g. taxes paid) for the relevant businesses.

Thirdly, the process of deal execution should be accelerated by means of digitalization. It relates not only to the amount of documents presented by the buyers and sellers to the notaries (now mostly in paper mode), but also to the amount of paper documents presented to the Tax service in order to settle some disputes during the due diligence, to receive some confirmations or simply to waive a company inside the sold business structure that does not make the part of the deal.

I think these measures will change the business environment in Russia and remove the most serious barriers for the foreign investors interested in the production sector of the Russian economy.

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**Market Values in the Structure of Students' Human Capital:
Network Diagnostics and Results of Empirical Online-Research
(on the Example of the Research of Students of Belgorod State National Research University)**

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Abstract—On the basis of the carried out theoretical analysis and the conducted empirical research, conclusions are drawn about the relationship of the human capital of students with market values. An algorithm for the formation of a methodology for diagnostics and construction of value networks, reflecting the characteristics of market values of students and that part of young people who do not study at universities, is shown. A number of relevant conclusions are made about the mutual influence of obtaining scientific knowledge as the basis of students' human capital and the system of market values, the ratio of market values to business values, values of collectivism and human values. In modern conditions, market values and values of collectivism are largely opposed, sometimes even conflicting. In this respect, it is important to study the experience of Western European and Chinese universities, where such oppositions are less pronounced. In general, the world of student values reflects a complex and contradictory social situation in the formation of a market society. The relevance of the use of diagnostic techniques based on digital technologies for studying the values of students in the management of the learning process is emphasized.

Keywords—values, human capital, value networks, universities, students.

I. INTRODUCTION

The relevance of network research of market values in the structure of human capital of students is due to the importance of studying and analyzing changes in economic consciousness, which does not occur automatically with the beginning of market reforms. As the historical practice of the formation of the market in post-socialist countries shows, the formation of market values is an urgent problem for most of them.

Networked methods are becoming an important tool for digital technologies in socio-economic research of values, and in the context of crises, sanctions and pandemic, such technologies acquire

special relevance. The aim of the study is to identify and diagnose the social dynamics of market values in the structure of the human capital of students and its characteristics in comparison with their peers who do not study at universities. Thus, according to the intentions of the study, it is supposed to reveal the influence of higher education as the most important component of human capital on the formation of market values of students and the relationship of these phenomena. Another part of the goal is to discuss the capabilities of network diagnostics, its procedures and technologies. The scientific part of the research problem lies in the need to overcome the contradiction between the meaningful characteristics of the human capital of the individual, which is formed and formed from the entire set of external and internal conditions and factors in which the individual is in reality socialized, and methodological approaches, as well as methodological procedures, which are mainly addressed only on the fixation and analysis of circumstances and indicators external to the inner world of a person and do not affect the basic component of the personality - its values.

II. RESEARCH METHODS / METHODOLOGY

The formation of the methodology for diagnosing of social dynamics of market values in the structure of the human capital of students was lined up in a logical sequence that determined a number of successive elements.

A review of the literature suggests that the most well-established methodological base on the basis of which the market values of students and their social dynamics during the period of study at the university can be studied involves a systematic presentation of these values in integration with other elements of human capital. First of all, this is important from the point of view of the integrity, hierarchy and emergence of human capital as a phenomenon [1]. It should be emphasized that modern domestic and foreign researchers reveal human capital as a phenomenon that is necessarily dependent on a variety of personal properties and characteristics of a person, most of all on his values, orientations, motivation, knowledge, skills, abilities and other important elements of the personal structure [2]. In this understanding, human capital can be considered not only as a special form of private property, but also as a special way of including a person in market relations and the market economy [3].

The actual methodological problem of designing methods for diagnosing human capital in the student environment is the analysis of the relationship between knowledge as a basic element of human capital and values that direct, orient and form the vector of use and application of the knowledge gained, or, as philosophers say, the study of the vector of knowledge bound by an axiological hoop [4]. In modern sociology, knowledge and values are either recognized as coexisting next to each other (positivism), or as phenomena creeping into each other (post-non-classical sociology) [5]. Therefore, it is important to identify how, how values and knowledge are connected, which form one or another direction of the manifestations of human capital. According to Yu.D. Krasovsky, values are moral criteria "living" in a person's consciousness, an "ideological credo" of a person, which become a guide to rational action in endless acts of human interaction with people around him and the practice of activity [6]. Further, a rational choice forms a volitional act - an action. This conclusion was made by T.V. Mikhailov, who showed that values become a regulator of behavior at the volitional level, prompting a person to realize his human capital, constructing and building strategies for action.

Among the methodological positions that are important for conducting empirical research, the central ideas have become the positions of understanding sociology, where values are considered as the attitudes of the individual [7]. In this case, personality attitudes are considered as a set of a wide variety of conscious and unconscious reactions, states and personality predisposition to one or another activity, based on previous experience and regulating the strategy and tactics of personality behavior, the choice of meaningful, important - valuable, that determines the alternative choice, forms the vector of relations and actions. In this case, we rely on the point of view of V.A. Yadov (Yadov V.A., 1975), according to which personality attitudes to the greatest extent express the value orientations of the personality and its values. It is important to emphasize here that from the standpoint of an understanding sociology, any fact that has a certain meaning (importance,

significance) for a person or a group and that has received confirmation, fixation in reality and empirical experience can be considered value [8].

The team of authors proceeds from the hypothetical position that market values in the structure of human capital of modern youth who do not undergo training at universities and students receiving higher education will differ. First of all, this will be expressed in the fact that the market values of students will turn out to be more relevant and significant in the value system than it will be shown among young people who do not study at the university. Market values in value system of students will be linked by stronger ties with other values than will be recorded among young people who do not study at the university. Taken together, consideration of the hypotheses shown will indicate that the market values of students turn out to be more stable and more connected than the market values of young people who do not study at the university. In turn, this fact will indicate that university education as a whole reflects the interests of the market social environment, the market economy.

Further, the empirical research methodology was aimed at identifying the market values of students as internal personal attitudes towards the significant characteristics of oneself and the people around them, to which students are oriented. In a market society, market values, values that are formed by the entire set of socio-economic factors, become stimulators of human capital. First of all, we note that market values are the central mechanism in the acquisition of wealth and self-enrichment of a person, are the grounds for the realization of all other inclinations, interests and needs of the individual [9].

Based on the analysis of scientific literature, classical works on the theory of market society by A. Smith, K. Marx, works by M. Friedman [10], P. Drucker [11], K. R. McConnell K. R. and S.L. Bru [12], V. Mau, A. Buzgalina and A. Kolganova [13], and others, values were formulated market economy, which were subsequently used to construct a methodology for diagnosing student value networks. These values include: 1. Private property, the desire to possess and increase private property; 2. Entrepreneurship, enterprise; 3. Competitiveness; 4. Profit, concern for the profitability of the business; 5. Free market, perception of free market relations as a norm; 6. Striving for success and victory in the market struggle.

The market values of students in the framework of sociological analysis should be studied in the general system of values. Therefore, in the research methodology, not only market values were proposed for evaluation, but also other indicators reflecting the value of business qualities [15], qualities of collectivism [15], the qualities of a good person [16]. Business personality traits were characterized by purposefulness, pragmatism, prosperity, prudence, leadership and authority. The list of these qualities was compiled on the basis of an analysis of the literature on the personal properties and characteristics of managers as a special social group of people [17]. According to G. Hofstede, collectivist qualities play a particularly important role in the corporate culture of market organizations and constitute a certain value of corporate structures. The same position is shared by Sh. Schwartz and M. Rokeich, who, in the well-known procedures for measuring values, include the collectivist qualities of people as significant values of a market society [18]. The liver of qualities that characterize collectivism as a value included altruism, team spirit, benevolence, respect for people, caring for others, and helping other people. Another group of qualities characterized the personality as a "good person", "good" in the understanding of G. Spencer, who believed that such should be defined as people who, with their freedom, would not violate the interests and values, the freedom of other people [19]. The qualities of this group included love of freedom, truthfulness, adequacy, tolerance, openness, modesty.

Analysis of the methodological literature has shown that values cannot be identified based only on direct appeals to respondents - answers to the questions: "is it valuable?" for them or "not valuable?" Values are not always realized by the person himself, they can also be unconscious and direct the activity of the individual almost automatically.

In the interests of empirical research, the objects, subject and hypotheses of the research were determined. The object of the research is students of the Belgorod State National Research University. Another part of the respondents was represented by the youth of the Belgorod region, who do not study at the university. The subject of the research is the market values of students in

the structure of human capital. According to the research assumptions, a comparison of the market values of students and young people will reveal the differences and peculiarities of the value perception of the market by these groups of respondents. The survey of both students and young people within the same city should have been carried out according to the same criteria and indicators, and then a comparison of the result obtained. The research was carried out in 2020, it covers 277 people of Belgorod State National Research University students and 312 people - respondents, young people aged 18 to 23 years, living in Belgorod, who are not university students. The sample is random.

The respondents were asked to evaluate the qualities of a positive standard, themselves and a negative standard according to the 4 groups of qualities shown above: market, business, collectivist and the qualities of a good person. In total, 24 qualities were proposed for assessment, 6 qualities in each group. Detailed procedural aspects and a more detailed description of the diagnostic technique are presented in the works of the team of authors [20]. The mathematical apparatus and software make it possible to model the relationship between the values of each respondent with each and to identify stable trends and patterns in the formation of value systems. At the same time, a volume of information is formed that allows one to define such an analysis option as working with big data.

III. RESEARCH RESULTS / RESULTS AND DISCUSSION

The generalized result of the study was made up of networks of values in relation to positive and negative standards and self-esteem of respondents

Further, in Figures 1-3 and in Tables 1-3, summarized results of the analysis of value networks will be shown and brief comments to them.

Symbols used in the figures:

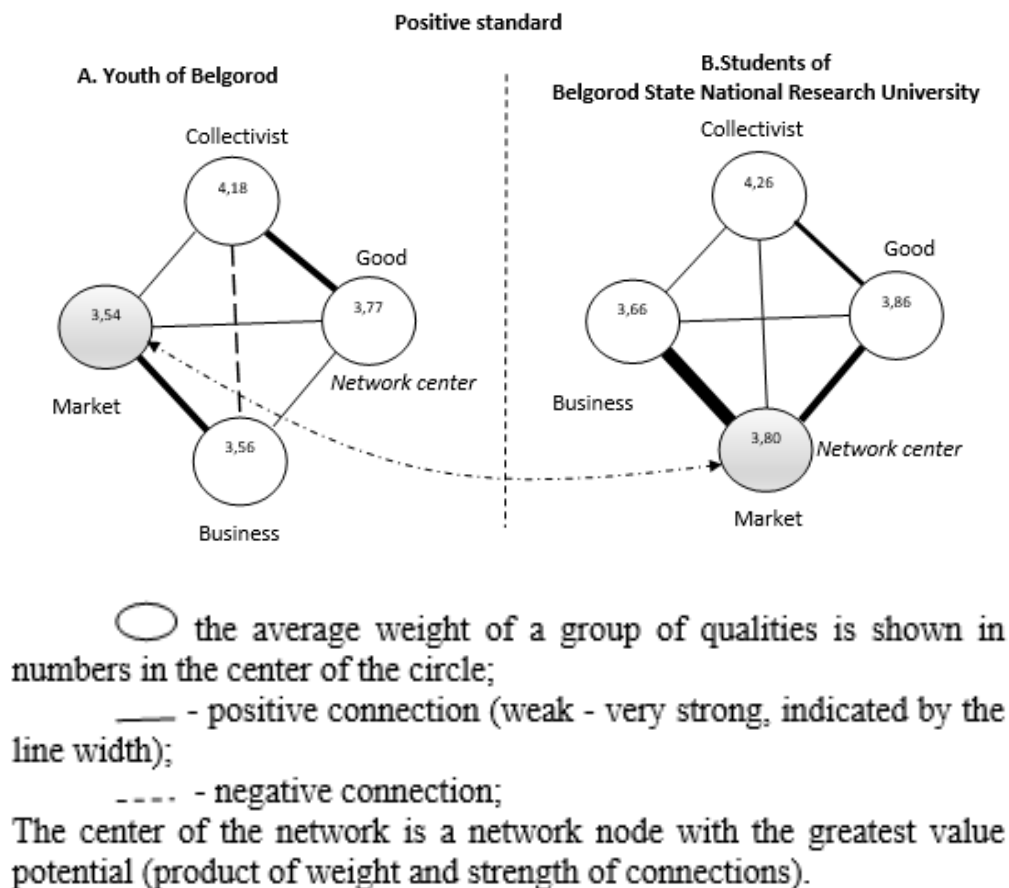


Fig. 1. Groups of the network of values of youth and students in the views of positive standards

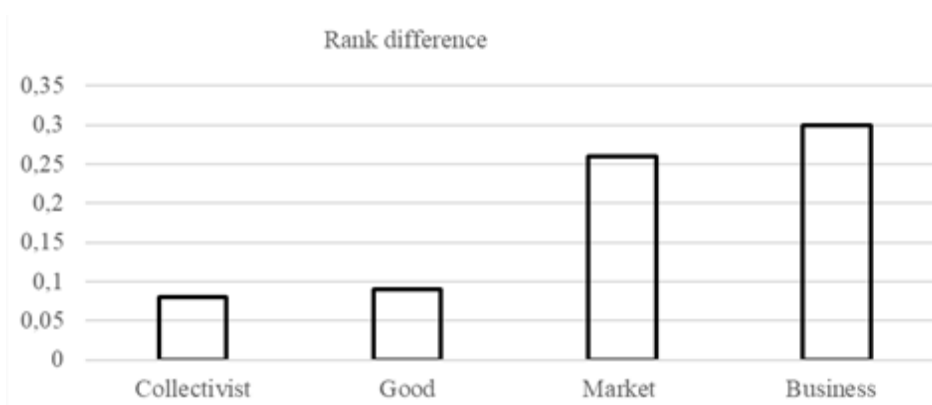


Fig. 2. The difference in rank in the assessment of a positive benchmark between university students and young people not studying at the university

An analysis of the results obtained shows that the value networks of students and the value networks of young people who do not study at the university have varying degrees of coherence and the strength of network connections. As can be seen in Fig. 1, the value networks of students are more significant, there are more strong and very strong ties, there is no conflict of values. As for the positive standard or the standard of imitation, the center of the value network for students is the value potential of the node of market qualities, i.e. a set of ranks characterizing prosperity, competitiveness, concern for the profitability of the business, the perception of the free market, the desire to own private property and entrepreneurship. Market qualities have the greatest network potential and are understood by students as leading values. At the same time, it can be seen that the highest scores were obtained when assessing collectivism, collectivist qualities of a positive standard, however, the connectedness of collectivist qualities with other qualities of a positive standard among students is much lower, i.e. collectivist qualities are understood by students as important and significant, but these qualities are weakly connected with values of other orders, in particular with business and market values. The center of the network of the value system of young people who do not study at the university is the set of qualities of a good person, and the values of the market economy are in this value system in the last places in the hierarchy.

Fig. 2 reveals the degree of differences in understanding of the importance of values between students and young people not studying at the university. Most of the contradictions in the value system of these two groups of respondents arise in the understanding of the importance and significance of business and market values. If students and young people assess human and collectivist values approximately the same, then they understand the value of business and market qualities in many ways in many ways, often in conflict.

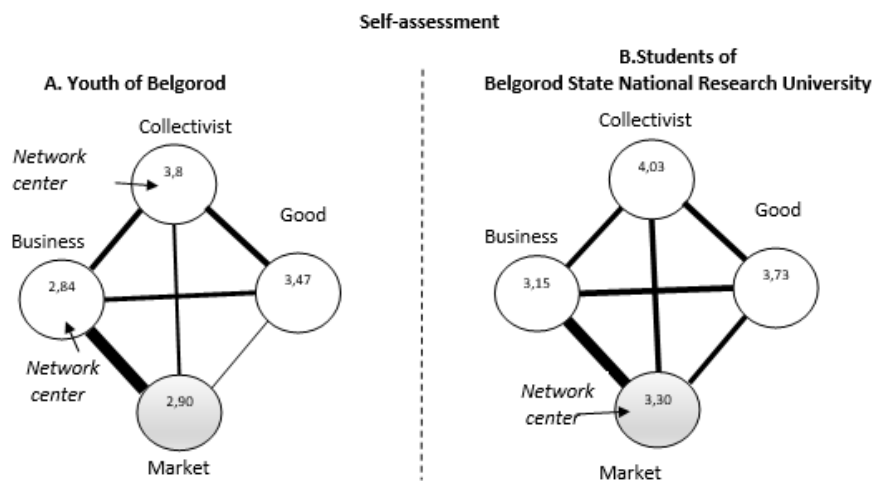


Fig. 3. Networks of values of youth and students in ideas about self-esteem

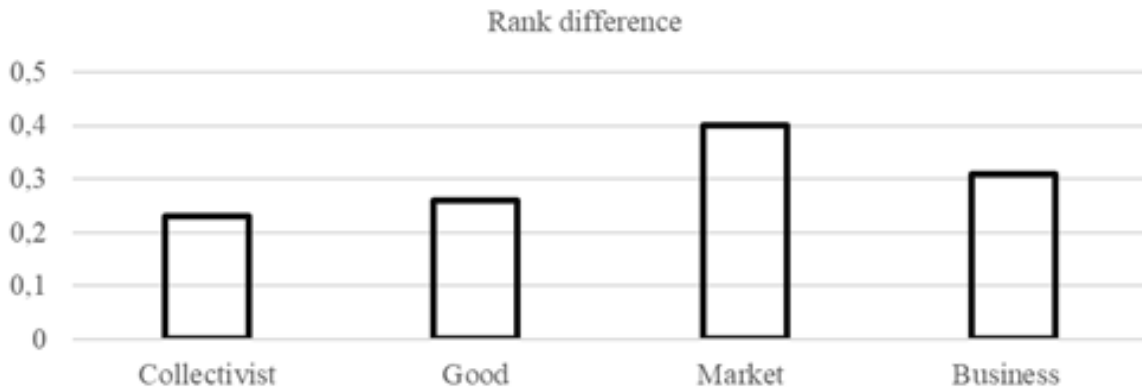


Fig. 4. The difference in self-esteem ranks between students and youth not enrolled in university

Market values of students begin to play an even more important role in evaluating themselves, themselves, as a person included in a market society. Fig. 3 shows that the group of market qualities in students' self-assessments has strong and very strong ties with all other groups of values, including collectivist qualities. As for the self-assessments of young people who do not study at the university, in the value system of this group of respondents, there are two network centers: collectivist values (they have a high weight, but weak network connections) and business values (they have a low weight, but these values are connected with all other values, including very strong ties). Collectivist values as the center of the entire value system are mainly determined by girls. For guys, the center of the value system is more often business values.

The formation of student self-esteem is most different from the self-esteem of young people who do not study at the university in understanding the role and importance of market values. As you can see in Fig. 4, differences in understanding market values are at their maximum. In other words, when assessing their life strategies, their understanding as a person, as a specialist, etc., students will be more focused on market values than is typical for young people not studying at a university.

Market values play the role of a criterion value and, along with business qualities, are the main characteristics with the characteristics of a negative standard, both among students and young people not studying at universities. In Fig. 5, you can see that, in general, students have more clearly formed ideas about who can be defined as the anti-standard for them. An important feature should be emphasized here: if the ideas about a positive standard and a standard for imitation are not so clearly formed, then the ideas about a negative standard (as it is impossible, what is wrong, etc.) is formed quite clearly.

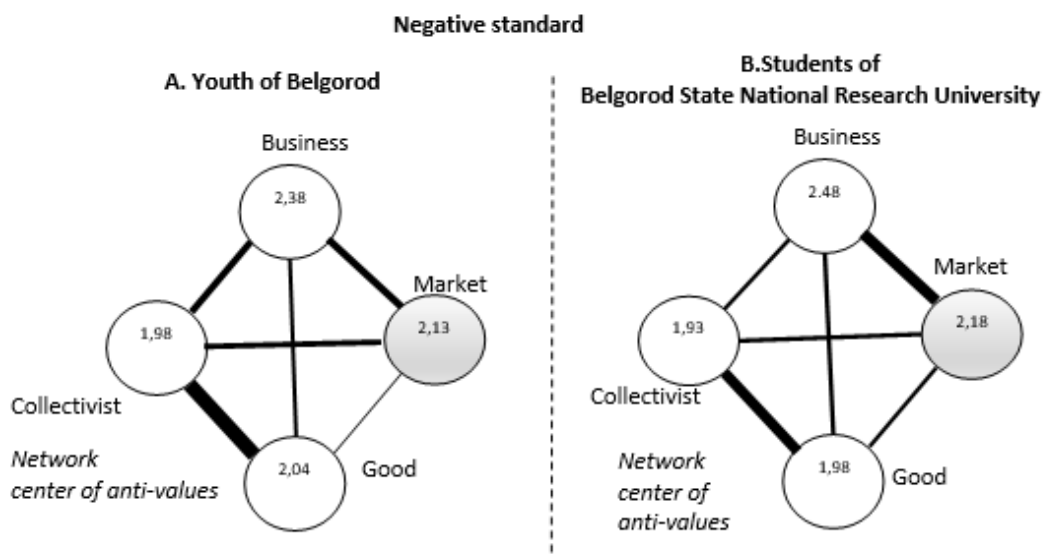


Fig. 5. Networks of values of youth and students in the perception of a negative standard



Fig. 6. The difference in ranks when assessing the negative standard between students and young people not studying at the university

Among students, as well as among young people who do not study at the university, the business and market qualities of the negative standard are connected with each other by a strong network connection, which suggests that the respondents of both groups classify active people as negative standards - “business”, “market”, but moreover, such anti-standards are characterized by the lowest level of collectivist qualities. In a different way, from the point of view of both students and young people, they are selfish people who manifest themselves as active, as businesslike for selfish purposes.

Fig. 6. shows the difference in values in perceptions of a negative benchmark. As you can see, market values in the characteristics of such people for students are significantly more significant than for young people who are not studying at a university. On the contrary, in such anti-standards, young people assess the qualities of a good person and the quality of collectivism much more strictly than is typical for students.

IV. CONCLUSIONS

The conducted research is indicative of social dynamics - the growing recognition of the importance of market values in the structure of human capital as university studies: the value of market qualities increases, which generally proves the influence of the knowledge gained on the formation of market values. According to the research, it becomes obvious that the network of market values is strengthening and expanding, and their role and significance in the entire value system of students increase. Higher education affects the content side of human capital and allows you to more adequately reflect and focus on the values of the market, to successfully socialize in market conditions. Getting higher education - knowledge as the basis of human capital - primarily affects the strengthening of students' self-esteem, where market qualities begin to play an increasingly significant and important role. Among young people who do not study at the university, these qualities are less significant in the respondents' self-assessments. Thus, the knowledge gained at the university has a significant impact on the formation of a network of values that serve as the basis for self-analysis of the individual in a market society.

The perception of market values as the norm of modern society by university graduates contributes to a better understanding of prospects and conscious goal setting in building a career, realizing their human capital. On the contrary, in the value system of young people who do not study at the university, the market qualities of a positive standard turn out to be the least important and least significant in the value hierarchy. This group of respondents assesses the business qualities of a person as more important in the structure of human capital. Market qualities play a decisive role in assessing negative standards of imitation, i.e. people whose human capital is assessed by students as negative. For young people not studying at the university, market qualities are much less important and less significant when evaluating negative standards; these respondents are more focused on other qualities by which the other person can be recognized by them as negative.

To the least extent, market values are associated with the values of collectivism. The value of the qualities of collectivism in terms of weight characteristics occupies the highest places in the hierarchy of students' values; they turn out to be the most significant in terms of their weight, i.e. by the level of assessment and recognition of them as important standards for imitation. However, according to the strength of connection, interdependence and compatibility with other values among students, they turn out to be the least connected. In particular, collective values are weakly connected with the values of the business order (among young people who do not study at the university, even a negative connection is recorded here - the conflict of collectivist and business values, their opposition). Collectivist values, according to the ideas of students, are criterion grounds for assessing not only positive standards and self-assessment, but also when assessing negative standards - anti-standards, i.e. people whose behavior and life position causes rejection. Collectivist values of negative standards, as we have seen, are evaluated most critically by both students and young people, i.e. the lowest marks - the most demanding. This situation of contradictory internal characteristics of students - values, in fact reflects the objective complexity of the social situation - the contradictory coexistence of the values of a market society and the values of essentially traditional society. The harmony of market values and the values of collectivism in the structure of the human capital of students is extremely difficult. Along with this, it should be emphasized that conducting such studies in universities in European countries and China shows that in the conditions of these societies, market pragmatic values and values of collectivism turn out to be with a greater degree of harmony, which characterizes the higher education system in these countries as more adapted to combine pragmatic (rational) and others, for example, traditional components of education [21].

The growth of the importance and value of students' market qualities occurs slowly, evolutionarily and mainly in senior years, when basic knowledge about the features of the modern market is formed. Such transformations occur more dynamically and intensively among students - residents of small towns, and the most significant increase in the value of market qualities is noted among girls who came to the city from small settlements. For these respondents, university studies have the most significant impact on the growing importance of market values. This is explained by the circumstances that such students are not very familiar with the peculiarities of market relations; nevertheless, for many of them, market relations become difficult barriers in establishing relationships with the surrounding reality even after graduation. On the contrary, for students who entered the university from large cities and have experience of work, the growth in the value of market values during the m period of study at the university was noted as insignificant. Least of all, the growth in the value of market qualities is characteristic of students - young men from among the inhabitants of large cities and with experience of labor activity. Such students most often know and understand well the importance of orientations towards market values even before entering universities and already have personal experience of life in a market environment in this sense, which undoubtedly affects the characteristics of their human capital: they are more prepared for the market.

It should be especially emphasized the important provisions related to the prospects for the development of network diagnostics of values that are relevant for managing the process of forming the human capital of students in universities. A significant advantage of digital technologies in relation to the diagnosis and management of the pedagogical process based on the study of value networks in universities is the ability to build unique models of values in study groups, courses, faculties, which makes it possible to adjust educational activities based on specific empirical data.

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Prospects for the Extraction of Non-Ferrous Metals from Cell Phones

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Abstract—The article defines the significance of the extraction and use of non-ferrous metals from cell phones and other equipment, which has advantages over the extraction of non-ferrous metals from ores from an economic and environmental point of view. It is noted that alternative methods of extraction of non-ferrous metals and new technologies are being considered. One of such innovative directions for the extraction of non-ferrous metals may be the project "metals from telephones and other electrical equipment". However, a large number of phones used, a quick change of models, determines the promising possibilities for the extraction and processing of non-ferrous metals from them. The author analyzes sales and turnover of cell phones in Russia and in the world. Analysis has shown the economic efficiency of such processing is substantial, and the cost of secondary precious metals is much lower than when extracting the same metals from ore. A comparative analysis of the content of precious metals in electronic equipment from different countries was also carried out.

Keywords—non-ferrous metals, benefits, prospects, economic efficiency, ecology, telephones

I. INTRODUCTION

This article identifies the importance of mining and processing non-ferrous metals. It should be noted that non-ferrous metallurgy is one of the industries that is characterized by a fundamental variety of industries, methods, processes with different types of mineral raw materials.

The tasks of the work are as follows:

- show and explain the prospects and possibilities of extracting non-ferrous metals from old electronic devices, including cell phones

Article problems:

- to identify and substantiate problems: industrial, natural, environmental, associated with the extraction of non-ferrous metals

Content:

- to determine possible directions of extraction and extraction of non-ferrous metals;
- to analyze data on the production and use of mobile phones in the Russian Federation and in the world;
- to substantiate the positive prospects for the implementation of the project for the disposal of non-ferrous metals from waste of electronic equipment, including cell phones [9].

II. METHODOLOGY

Research methods:

- analytical methods for processing information and building integrated solutions for further consideration of the project and its implementation;
- an abstraction method for studying the economic and environmental prospects of implementing a project for the extraction of non-ferrous metals and the processing of unnecessary equipment;
- a method for constructing economic hypotheses to identify the expected benefits of

extracting non-ferrous metals from electronic equipment;

- comparison method for the purpose of comparing the available metal elements in different techniques.

III. RESULTS AND DISCUSSION

Recently, it has become more and more economically profitable to use secondary raw materials in order to extract useful materials for their further use. In particular, waste from the electrical industry, radio and household appliances are sources of valuable metals. There are enough resources for e-waste mining today. Secondary production of gold, silver, platinoid groups falls under the rule of economic expediency: the income from their sale must exceed the amount of expenses. The content of gold, platinum, silver and palladium in waste is significantly higher than in ore. The share of secondary precious metals in the total volume of their production is currently about 40% and continues to grow.

Many rare metals, which were practically not used for a long time, are now widely used in the world. They have spawned completely new areas of modern industry, science and technology, such as solar power, ultra-high-speed magnetic levitation, infrared optics, optoelectronics, lasers and the latest generation of computers.

Recycling metals has both environmental and economic benefits. Particular attention is paid to the problems of depletion of natural resources and the environment, since non-ferrous metallurgy is a complex and difficult process from the point of view of organizing waste-free production, as well as the release of a large amount of toxic substances. In the production of non-ferrous metals, a lot of water is consumed - 1200 million m³ per year, and water resources are also polluted: salt solutions; mud water; secondary pollution caused by atmospheric precipitation. Production wastes pollute the soil in the surrounding areas [2].

It is important to note that the depletion of non-ferrous metal deposits on land creates incentives to seek new ways to find and extract them. When analyzing the latest developments and prospects for the extraction of non-ferrous metals by non-standard methods and methods: microorganisms for the extraction of metals from poor ores and man-made waste, the development of deep-sea deposits, etc. With the discovery of new microorganisms, it becomes possible to use them in the development of low-grade complex ores, in the extraction of valuable metals from electronic waste (e - waste), in the bioremediation of soils and waste waters. In the future, two to three decades, bacteria will begin to extract metals on asteroids and other planets, and microbe engineers will learn to carry out end-to-end reassembly of electronic components.

Consideration is given to startups for the extraction of metals on the Moon and asteroids and the possibility of processing them in space orbital factories; extraction of non-ferrous metals from industrial solutions and waste water.

The source of secondary precious metals is multicomponent scrap: military-technical equipment, computers and electrical equipment, scrap and waste from the electronic and electrical industries, machine-building industries, and the automotive industry. Electronic waste is making the most significant contribution, as electronic products become obsolete quickly and goes to recycling. A considerable amount of gold is contained in SIM cards. They cover the contact area, from one SIM card you can get up to half a gram of gold. Most of all gold is found in processors: on connectors - up to 3 mg; on the body in contacts - 2-3 mg; in the FCPGA package - up to 12 mg; processor memory slot - 1 mg. Also high gold content in the keyboard, cooler and computer power supply. Most of this metal is found in old computers: Intel; Pentium PRO.

Recycling of cell phones is very promising. Smartphones are pocket stores for precious metals and rare items. A typical smartphone contains about 0.034 grams of gold, 0.34 grams of silver, 0.015 grams of palladium, and less than one thousandth of a gram of platinum. It also contains the less valuable, but still important, aluminum (25 grams) and copper (15 grams). Most of all, a mobile phone contains copper - about 8.5 g, but in some devices its number can reach 15 g. It also contains about 3 g of cobalt [6,14].

Smartphones also contain a number of rare earth elements - elements that are actually abundant in the earth's crust, but which are extremely difficult to mine and extract: yttrium, lanthanum, terbium, neodymium, gadolinium and praseodymium.

In addition, plastic, glass, batteries go to waste - the list of materials that can be reused is quite long.

If you know the composition of an ordinary smartphone, then you can make interesting calculations. The sum of all the previously listed valuable elements in the device is approximately 18 grams.

If we assume that each household has two unused smartphones, taking into account the number of all households - about 49 million - we get a pretty impressive amount.

It turns out that in Russia there are about 100 million unused mobile phones, and the resources contained in them are worth almost 4 billion rubles!

Therefore, unused or defective electronic equipment should be returned to a professional recycling company to recycle expensive materials and protect the environment.

Today, there are more than two billion people in the world with smartphones, and this number is constantly growing. In addition, the concentration of some of these elements, such as gold and silver, in a mobile phone is much higher than their concentration in an equivalent mass of ore. One ton of iPhone will produce 300 times more gold than one ton of gold ore, and 6.5 times more silver than one ton of silver ore.

Two billion users update their smartphones every 11 months on average, old ones end up in a drawer, forgotten or thrown away. So far, only 10% is recycled, recovered and reused. At a time when the consumption of certain resources exceeds all conceivable and inconceivable quantities, it makes sense, both from an economic and an environmental point of view, to extract valuable substances from waste electronic devices.

One phone is not much, but a million cell phones can extract 16 tons of copper, 350 kilograms of silver, 34 kilograms of gold and 15 kilograms of palladium.

The challenge is simple: how to safely and economically extract these valuable materials. In countries such as China, where low-paid workers and children dismantle electronics, large quantities of electronic waste, including cell phones, are taken away or disposed of. The Chinese city of Guiyu has earned the dubious honor of being the largest electronic dump in the world. Residents of the city face serious health problems due to pollution of soil, rivers and air with mercury, arsenic, chromium and lead.

Electronic waste that is returned to the country of origin is also a problem. In Australia, for example, e-waste continues to be recycled in industrial smelters, which are expensive and harmful to the environment.

The old "mobile phone", which many have at home, contains:

* Au-0.024 g;

* Ag-0.25 mcg;

* Pd-0.009 g;

* TA (tantalum) - 0.4 g.

And that is not counting other metals (copper, tin, etc.). Precious metals are embedded in boards and all current-carrying contacts of cell phones [9].

From 40 mobile phones that have lost their practical interest, as much gold is extracted as from 1 ton of gold-bearing ore.

Let us make a comparison for other electronic devices.

Let us compare the content of the precious metal in the Soviet TV sets "Horizon", "Vityaz", etc. For imported equipment, it should be noted that the equipment of the Japanese company "Funaj" and the Chinese, Taiwanese or Korean assembly contains only 0.1474 g of gold and 2.4859 g of silver.

We recommend that you familiarize yourself with the data on the content of precious metals in some computers and televisions. Weight is also indicated in grams per device.

TABLE I. WEIGHT ELEMENTS OF NON-FERROUS METALS IN ELECTRICAL ENGINEERING

Model	Au (gold)	Ag (silver)	Pt (platinum)	Pd (palladium)
Elbrus-1-KB	2668	7737.4	259	639
Electronics-60	17.93353	29.85809	6.46067	5.86536
Personal computer	10.972	5.84	0.082	0.267
Knight	0.3412	7.4606	0.622	0.3199
Horizon-Ts355 (Ts355D)	0.68	3.7443	0.43	0.318

Thus, it has been determined that the processing of waste to extract gold, silver, platinum and palladium is a priority area in modern metallurgy, and the cost of secondary precious metals is an order of magnitude cheaper than when extracting the same metals from ore. Electronic scrap makes the most significant contribution, since electronic products quickly become obsolete and go for recycling or simply lie in the closets and bedside tables of the country's population. The analysis of the sales and turnover rate of cell phones in Russia and in the world showed that the economic efficiency of such processing has been determined.

IV. CONCLUSION

From the presented material it becomes clear that the content of gold and other precious metals in products of the period of developed socialism is many times higher than in refrigerators, telephones and other devices produced in our time.

However, there is a weighty "but": over the past 12 years of the last century and a slightly longer period of the new century, the hunters for devices produced in the USSR have thoroughly destroyed the raw material base - it is becoming more and more difficult to look for the source material to obtain it.

In general, the problem is solvable - you can always switch to modern equipment or foreign equipment. more units must be disposed of to obtain the same amount of "degraded" VDM as when disposing of Soviet units.

The presence of various highly toxic materials and heavy metals makes landfills or incineration unacceptable methods of disposal of such waste. Therefore, optimal disposal of e-waste is recycling [8].

Prospects for the development of non-ferrous metallurgy in Russia are associated with meeting the demand for non-ferrous metals in the domestic market in the entire spectrum required for the implementation of major investment projects, development strategies for economic sectors and regions; with the strengthening of Russia's positions in the world market of non-ferrous metals, the CIS market and the Customs Union; increasing the competitiveness of non-ferrous metal products in the domestic and foreign markets, reducing their resource and energy intensity, reducing imports by protecting domestic exporters in these markets; rational use of the raw material base: innovative improvement and creation of new types of equipment and technologies for the production of non-ferrous metals.

One of such innovative directions for the extraction of non-ferrous metals may be the project "metals from telephones and other electrical equipment."

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Harnessing the Potential of Localized Infrastructure Systems to Economic Management Based on Targeted Regional Programs

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Abstract—The article studies the management of imports dependence impeding the economic growth of territories and the ways to mitigate the negative effects of imports dependence on the balanced functioning and development of the regions in the Russian Federation. The sustainability of economic functioning and development of the territories is quite amenable to limitation, regulation and reduction within the framework of safe and innovatively open operation based on targeted regional programs which involve all the subjects and beneficiaries of the regional economic activities in the corresponding long-term total-system process. Since import dependence causes significant limitations of the current regional economic activities, there arises a need for scientific research into regional instruments for managing the dynamics of import dependence and their improvement. These goals can be achieved by increasing the level of stability and autonomy of local economic systems and the economic capacity of the main regional beneficiaries as well as by targeted, systemic and complex measures taken for problem areas. As the existing international experience of accelerated territorial development shows, the factors of “the new economic geography” of the second order base on the independent territorial strategy are the key to the solution of the problem.

Keywords—import dependence, import substitution, potential, self-sufficiency, localized infrastructure systems, targeted regional programs.

I. INTRODUCTION

In the context of increased geopolitical tension and confrontations between TNCs and individual states, the growing influence of non-resident institutions on the national economies along with the accelerated economic globalization, allows external threats to penetrate the economic systems of countries deeper and deeper. It was the use of economic levers as a political tool that renewed the need for import substitution in the neo-modern era and again made self-sufficiency one of the main advantages on the world stage.

The growing frequency between emerging crises and shocks has also become one of the aspects that force the developed countries to again adjust the vector of their development towards self-sufficiency, rather than the country diversification. The logic of these aspirations is quite clear and obvious: those countries that mainly import products are dependent on the exporting countries and in case of even a slight increase in the cost or a change in the volume of production of the imported goods, the economy of the importing country will be seriously affected.

As practice shows, import dependence is aggravated by such economic phenomena as: the lack of own production capabilities for the production of the necessary commodities or analogue goods; the underdeveloped processing industries; high wear and tear; the low level of technology. As a result of import substitution under the indicated conditions, the importing state could manage to reduce the share of imports in the domestic market, however, the domestic products are unlikely to withstand the competition, which will only lead to a decrease in the quality of life of the population, due to the low physical and economic availability of goods or their low quality. However, in this forecast, it is necessary to take into account the fact that the right to choose the final product remains with the consumer, which with the growth in the number of e stores and the increasing possibility of purchasing goods online directly from overseas retailers minimizes the efficiency and relevance of the conventional tool – the policy of protectionism. It is the growth of economic globalization

through digitalization processes that force the catching-up economies to change the development vector to the planned switch to self-sufficiency.

For the Russian Federation, the consequences of geopolitical tensions, namely the imposed sanctions and the counter-sanctions, determined the strategy of socio-economic development based on self-sufficiency to be achieved by aggregate measures in terms of the policy of import substitution and stimulation of small and medium-sized businesses.

II.METHODS

In April 2014, the Government approved a new version of the state program of the Russian Federation “Development of Industry and Increasing its Competitiveness” (Resolution No. 328 dated April 15, 2014), one of the main tasks of which was to reduce the share of imported of products by 2020.

In August 2014, a ban was imposed on the import into the Russian Federation of agricultural products, raw materials and foodstuffs, the country of origin of which is the United States of America, the countries of the European Union, Canada, Australia, the Kingdom of Norway, Ukraine, the Republic of Albania, Montenegro, the Republic of Iceland and Principality of Liechtenstein [1]. The following categories of goods were banned: meat and by-products, fish, milk and dairy products, fruit and vegetables. Until 2019, the list was annually revised.

The import substitution measures were called forth by the reduction of certain types of imports, such as:

manufacturing goods (foundry equipment, metal-working centres, lathes, etc.) [2];

machinery and vehicles (fire engines, ambulances and medical complexes, vehicles for servicing oil and gas wells and for transporting oil products, trucks, etc.) [3];

consumer goods (leather clothing, overalls, fire-resistant protective clothing, technical textiles, footwear, etc.) [4];

medical devices (gamma cameras, ultrasound scanners, inhalation anesthesia devices, artificial lung ventilation devices and consumables for them, endoprostheses for limb joints, devices for blood transfusion and containers for blood and plasma transportation and storage, consumables for heart-lung machines, etc.) [5].

In the pharmaceutical industry, in accordance with Order № 656 of the Ministry of Industry and Trade of the Russian Federation of March 31, 2015 “On Approval of the Sectoral Action Plan for Import Substitution in the Pharmaceutical Industry of the Russian Federation by 2020”, a full or partial replacement of 602 imported pharmaceutical products was made. 81 items from the list shall be completely substituted by domestic products. For the other 173 items, the share of imports shall be reduced from 100% to 10 %, and for the next 82 pharmaceutical products with an import share of 50-99 % , the import shall decrease to 10 % [6].

In October 2014, a program was adopted to support investment projects implemented in Russia on the basis of project financing (Resolution № 1044 of the Government of the Russian Federation of October 11, 2014). This program was designed to increase the volume of providing loans on easy terms for businesses and was aimed at developing the following sectors: agriculture; manufacturing industry; chemical industry; mechanical engineering; housing construction; transport; communications and telecommunications; the power system.

The Government also took significant measures to finance the import substitution program. In particular, one of the measures of financial support for import substitution was the allocation by the government, at the expense of the federal budget, of targeted loans to enterprises implementing import substitution projects. The Industrial Development Fund has been operating since August 2014, whose tasks include financing projects at the pre-production stage. State support for business entities was aimed at reducing import dependence through the development of domestic enterprises. However, financial support is given to investment projects which are worth from 1 billion to 20 billion rubles, and 20 % of the cost must be paid by the business entity. The proposed conditions

discriminated many projects with a lower cost. On the other hand, the high cost of the entry border (of 1 billion) against the background of the decrease in investment activities significantly increased the overall payback period and thereby reduced the investment attractiveness of the project for investors. As a result, the vast majority of projects launched under this program were of social nature and did not actually allow the implementation of the import substitution policy.

The analysis of the interim results of the import substitution policy in 2018 showed the weak points, and there were launched a number of programs and national projects aimed at the development of small and medium-sized businesses. In particular, these programs included the national project “Small and Medium Enterprises and Support for Individual Entrepreneurial Initiatives”, the creation of the “My Business” platform, and the provision of property support, concessional lending and subsidies. Thus, since 2018, the Business Development Fund and the Industrial Development Fund have been providing small and medium-sized enterprises (SMEs) with targeted loans at 5-9 % per annum for amounts from 1 million to 5 million rubles for all entities that meet the requirements and loans from 5 million to 30 million rubles for representatives of the industrial sector of the economy.

The stimulation of SMEs led to an increase in competitiveness of domestic goods and services, which had a positive effect on the current import substitution policy. However, target programs do not affect all sectors of the economy that are of national economic importance. Besides, these programs are not fully implemented in a number of regions of the country which significantly reduces the existing potential of the import substitution policy. It is also necessary to take into account the fact that, despite the significant quality of goods and services provided by representatives of small and medium-sized businesses, it is not possible at the moment to compete with imported TNC products in the price range in the regional markets.

The conducted research was based on the system and synergetic approach to the processes and objects under study. In the course of research we used the system analysis method, methods of economic statistics and the experimental method. The application of each method was conditioned by its functional capacity which ensured the validity of the results obtained.

III. RESULTS

The current policy of import substitution has led to a decrease in import volumes (Fig. 1) both in the country as a whole by 45.35 % and in certain regions (in particular, in the regions of the Southern Federal District by 41.89 % and the Krasnodar Territory by 40.72 %) [7]

According to the Ministry of Agriculture of the Russian Federation, the results of food import substitution are considered successful. Thus, from 2013 to 2018, food imports decreased to USD 29.8 billion, or by 31.2 %, and therefore the share of domestic products in the domestic market exceeded the planned indicators for many key food products. In particular, by the end of 2018, the share of domestic grain, sugar, butter, meat and meat products increased to 80-99 % [8].

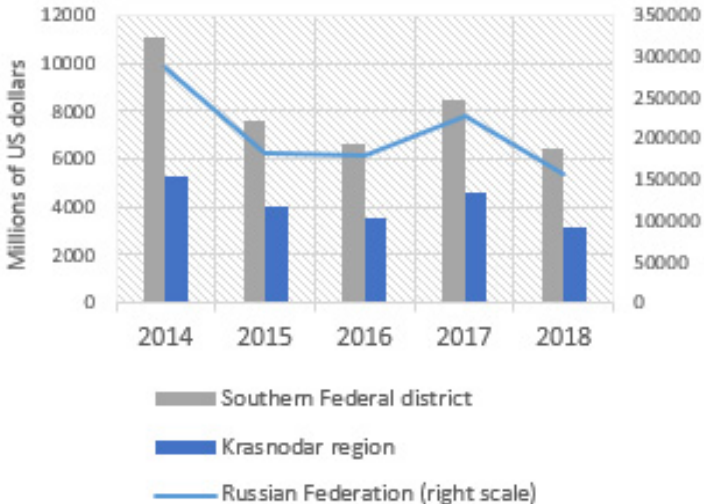


Fig. 1. Dynamics of import indicators for 2014-2018

However, as part of a study by the Russian Academy of National Economy and Public Administration (RANEPA), the level of import substitution of 15 food product groups was assessed, of which pork, poultry and tomatoes can be considered the only three groups of goods where import substitution took place. The growth of the domestic market for the indicated categories of goods ensured a decrease in prices to a level below the pre-sanction level. For the remaining 12 items, import substitution either did not take place due to rising prices and the decrease in consumption, or the increase in prices did not lead to a change in demand. Also, the authors of the RANEPA study stated a general negative result from counter-sanctions for the consumer, which amounted to 445 billion rubles (about \$14 billion) per year [9].

In 2013-2018, the greatest increase in prices was for such products as: butter (by 79 %), frozen fish (by 68 %) and cabbage (by 62 %). Also, an increase in prices was observed for the categories of goods that were produced in large quantities before the food embargo, namely: pasta, flour, sunflower oil (by 25-35 %). Thus, an increase in the share of domestic products in the domestic market cannot be considered a determining criterion for a successful import substitution policy, since the substitution of imported products with domestic counterparts led to a significant increase in prices, which in most cases exceeded the pre-sanction period.

The share of machinery and equipment in the commodity structure of imports remained practically unchanged: according to the Office of the Federal State Statistics Service, in 2013 it was 48.6 %, and in 2018 - 47.3 %. At the same time, according to a quarterly survey of directors of industrial enterprises conducted by the Gaidar Economic Policy Institute in 2015-2018, in fact, no more than 30% of enterprises were engaged in buying of machinery and equipment for production of imports replacing goods, and 22% of the total number of businesses were engaged in the replacement of imported raw materials and materials. However, by 2018, the share of enterprises purchasing machinery and equipment, as well as raw materials and materials from domestic producers had decreased to 8-9 % [9].

In 2016-2018, the share of enterprises purchasing imported cars increased by 5 % – from 32 % in 2016 to 38 % in 2018. In addition, every fifth domestic enterprise continued to exploit used imported machinery, equipment and transport. In other words, domestic manufacturers continue to buy imported equipment from the stock on the domestic market or prefer second-hand imported products to domestic ones. The indicated trend against the background of physical wear and tear of equipment led to the growth of the number of industrial enterprises increasing the share of imported machinery and equipment used in their own production from 37 % in 2018 to 53 % in 2019.

The scale of import substitution in 2015-2018 was not significant, which led to the reduction of import-substitution projects. In addition, at the end of 2018, the countries of Western Europe retained their leadership as suppliers of equipment, while India and China became the main beneficiaries of the Russian import substitution policy providing alternatives to the sanctioned imports. This trend proves that the main obstacles to the successful implementation of the import substitution policy were the insufficient domestic production of necessary equipment, components and raw materials and the low quality of domestic products.

According to the Center for Macroeconomic Analysis and Short-Term Forecasting, a significant import substitution took place exclusively in the production of meat and meat products (where the share of imports in added value decreased by 15.4 %), in pharmaceutical products (decreased by 10.3 %), as well as in metallurgical engineering (by 8.8 %). To an insignificant extent, the share of imports in added value declined in crop production, dairy production, agrochemistry and the production of equipment for construction and mining, the decline was 1-3 %. In some areas, import dependence, on the contrary, tended to increase: in the processing of fruit and vegetables by 12 % and in the production of general-purpose equipment by 11.2 % [10].

According to the Decree of the Government of the Russian Federation of February 5, 2015, a ban was introduced on the import of 608 drugs, of which only 282 were produced in Russia, and restrictions were imposed on the import of 602 medical drugs in accordance with Order № 656 of the Ministry of Industry and Trade of the Russian Federation of March 31, 2015. In the period from 2015 to 2016, about 75 import-substituting medical products were introduced to the domestic

market, 36 of which had not been previously produced in the Russian Federation. However, the narrowing of the market for potential suppliers of pharmaceutical goods and medical devices has led to an increase in crime, namely the collusion among the manufacturers, suppliers and customers. So, in 2017, the Federal Antimonopoly Service announced a 50 % share of purchases in which there was collusion, and in April 2019 the collusion was revealed among 11 companies supplying pharmaceutical goods [11].

Due to the change in the legislation on public procurement, it became unprofitable for a significant number of foreign manufactures to supply products to the Russian market, since the final cost exceeded the maximum purchase price of the product, formed by medical institutions in their procurement documentation. Thus, some medical products that were not included in the list of replaceable ones and did not have domestic analogues were no longer supplied to the country.

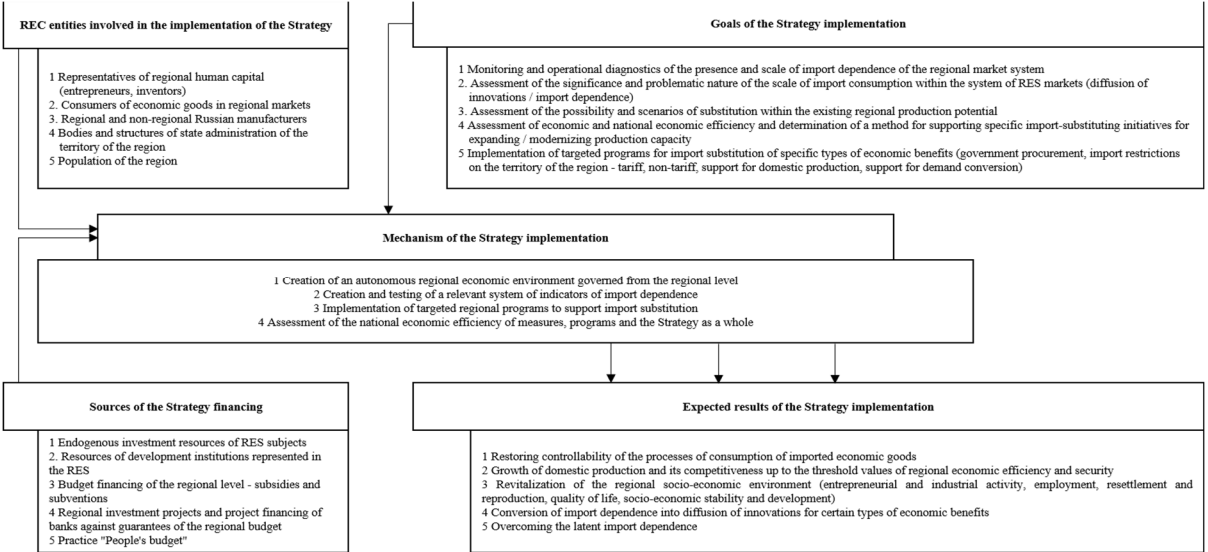
For example, antibiotics Fortum and Tienam (the producing countries are Great Britain and the United States), which formed the basis of treatment for such a hereditary disease as cystic fibrosis, have completely disappeared from the Russian market: in Russia, more than three thousand people, mostly children, suffer from this disease. It should be noted that it is not possible to radically change the situation in the short term, since the production of medicines is an investment-intensive process and is often not investment-attractive for private investments. The long payback period and high risks of projects in the field of medicine coupled with the narrowing of investment flows to Russia and against the background of investment differentiation (every fifth ruble is invested in Moscow), has an extremely negative effect on the prospects for real import substitution.

Based on the results of the import substitution policy, we may conclude that the qualitative component was not taken into account in the formation of the policy, and it is also quite obvious that the policy itself was effective since it was aimed at reducing imports but not at creating domestic competitive analogues.

IV. DISCUSSION

Obviously, in pursuing the import substitution policy the subjects coordinating its implementation were regional authorities. It was at the level of each region that the regional infrastructure of the import substitution policy was to be built, taking into account the potential, industry specialization and competitive advantages of the region.

It should also be emphasized that regional economic import dependence as a total-system phenomenon is an anomaly in terms of autonomous and sustainable territorial economic functioning and development. It is quite amenable to limitation, regulation and reduction to the framework of safe and innovatively open functioning of the regional economic system (Fig. 2).



Strategy of regional imports substitution (subjects, goals, mechanism and expected results), suggested by the author.

At the same time, we are supporters of a strategic approach and advocate the need to independently strategize regional import-substituting conditions with the involvement of all subjects and beneficiaries of regional economic activity in the corresponding long-term systemic process [12].

The strategic format of regional import substitution is associated with limiting the spontaneous and predatory access of participants in regional foreign economic activity to the economic environment of a particular region, approbation of the corresponding monitoring and diagnostic subsystem and regional information system, and the possibility of correcting the dependence on the basis of targeted regional programs.

Awareness and formulation of the problem of regional economic import dependence and the implementation of targeted corrective efforts make it possible [13]:

- to ensure compliance with the threshold norms for the consumption of imported economic benefits in regional / local markets, without prejudice to regional socio-economic and reproduction processes;
- to use regional foreign economic activities as an incentive, and not as a 'phlegmatizer' of regional economic activities and competitiveness;
- to implement the reserves of innovative development associated with the diffusion of innovations of various types and functionality into the regional economic environment based on the implementation of the principle of harmonizing the interests of all subjects and beneficiaries of the regional economic space;
- to organize the reduction of import dependence to the safe level and ensure its use as a motivation for local and regional producers;
- to prevent the formation and implementation of latent scenarios of import dependence associated with the formal localization of foreign manufacturers in the territory of certain regions on the basis of fictitious overestimation of indicators of the level of localization and the structure of owners of the respective business units and independent structural units.

IV. CONCLUSION

Thus, to provide a scientific foundation in the implementation of a specific direction of the state function of managing the development of specific territories, increasing the level of stability and autonomy of spatially localized economic systems, increasing the subjectivity of the main beneficiaries of the regional level, targeted, systemic and complex impact on problem areas which, as the existing international experience of accelerated territorial development, can and should be leveled out due to factors of "new economic geography" of the second order on the basis of an independent direction of the territorial strategy, which has an appropriate scientific justification and indicators of implementation efficiency, both from the standpoint of regional competitiveness and in the reproduction (long-term) aspect.

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Benefits and Potential of Using Foreign Private Capital to Supply Innovation and Investment Needs in Russia

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Abstract—Nowadays the innovation and investment activities of Russian enterprises often acquire distinct international characteristics. The most important innovation and investment projects relevant for the dynamic socio-economic development of the country, in some cases, are carried out with the participation of foreign private capital. In the course of the study, the characteristics of the potential for using foreign private capital in national innovation and investment projects were clarified. Existing information about investments in the Russian economy has been studied. The necessity of development and implementation of methodological approaches to determine the potential of using foreign private capital in the domestic economy has been substantiated. The perspective directions of realizing the potential of foreign private capital for financing innovations are characterized. Authors identify scientific and methodological tasks for attracting foreign private capital to Russia, including distinguishing between ownership of capital when establishing an enterprise and ownership of capital when obtaining debt financing, giving a quantitative assessment of the potential of foreign private capital, and the problem of the efficiency of IIP with the use of foreign funding.

Keywords—innovations, investments, national innovation and investment projects, foreign private capital, the potential for using foreign private capital, directions for realizing the potential of foreign private capital, financing innovation.

I. INTRODUCTION

The dynamically developing processes in the national and world economic system force theorists and practitioners to constantly revise and correct their views and approaches to various aspects of economic development. So, today, the processes of import substitution have intensified in the domestic economy, the production of the most important types of industrial and agricultural products that guarantee economic security is growing, original innovative technologies are being created and introduced, laying the foundation for development in the 21st century. The participation of foreign private capital in the implementation of innovation and investment projects (IIP) in the country reflects the realities of the modern world economy, strengthens the economy of participants in international economic activity, and increases its efficiency. Despite the attempts of some Western countries to economically isolate Russia, its role in such integration structures as APEC, CIS, BSEC, BRICS, EurAsEC and others is growing. [1]. At the same time, the potential of using private foreign capital, including capital from countries belonging to the aforementioned associations, is far from fully realized, although this potential directly affects the competitiveness of both the economy as a whole and individual enterprises. [2]. We may say about a certain connection between the potential for using foreign private capital and innovation potential as an essential element that determines the future of the country. [3]. That is why it is necessary to intensify the participation of foreign private capital in the implementation of IIP in the domestic economy.

II. METHODOLOGY

The development of the Russian economy requires full satisfaction of the innovation and investment needs of national economic complexes, which can be ensured in the process of realizing the potential of foreign private capital. A deep study of the problems of foreign financing of the domestic national economy is associated with the study of the features of the international division of labor and its impact on the development of the country. The works of domestic and foreign

scientists are devoted to this problem, which are based on specific international and domestic economic practice. It has been proved that the dynamic innovation and investment development of any national economy is based on a balanced approach to the use of national and foreign capital, which contributes to the solution of national and regional tasks of economic growth. The analysis shows that attracting foreign private capital can realize a number of advantages over using only national capital. Therefore, it is necessary to develop and concretize the scientific and theoretical provisions that reveal the significance of the potential of using foreign private capital to solve the problems of the country's innovative and investment development.

III. MAIN PART

The focus of modern innovation and investment science is the most significant problems of economic development, such as investment analysis and investment management, economic justification of investments, etc. [4, 5, 6, 7, 8]. At the same time, ensuring the innovation and investment needs of national economic complexes requires the disclosure of the potential of the capital used for this. Understanding capital as "funds", "resources", "sources of financing", etc., and from the position of the owner of the capital, we singled out state capital, formed by investing state resources and private capital, created when the authorized capital is paid by individuals, their group or a business they own. It is known that in a market economy, innovation and investment development is often carried out at the expense of private capital [9]. Therefore, an important place in the financing of national IIPs is played by foreign capital in the form of foreign private capital. Various forms of mixed capital also seem promising, the most balanced version of which is national private capital with the participation of foreign private capital, which allows you to effectively invest in the innovation and investment activities of enterprises.

It should be noted that total investment in domestic industry in recent years has grown regardless of the economic crisis and economic sanctions of Western countries, although there were certain differences in terms of investment in fixed assets by types of economic activity. (table 1) [10]. The study of the tabulars allows us to conclude that the total value of the corresponding investments as a whole increased from 2015 to 2019 by 1.5 times and reached the value of 6890.1 billion rubles, this is their maximum value for the entire period. In 2015-2019, investments in the extraction of mineral resources increased by 1.7 times and amounted to 2810.8 billion rubles. Manufacturing industries gave an increase of 1.6 times (2,496.3 billion rubles), investments in the production and distribution of electricity, gas and water increased in 2019 compared to 2015 by 1.2 times (1201.3 billion rubles).

TABLE I. FIXED CAPITAL INVESTMENTS BY TYPE OF THE ECONOMIC ACTIVITY, MILLION RUBLES

	2015	2016	2017	2018	2019
Total for industry:	5970.1	6113.1	6436.9	6717.6	6890.1
including by type of economic activity:					
- mining	2694.4	2710.5	2784.0	2794.8	2810.8
- manufacturing industries	2285.2	2338.5	2145.3	2384.6	2493.6
- production and distribution of electricity, gas and water	990.5	1187.6	1507.6	1538.2	1585.7

Thus, investments in fixed assets in industry and in certain types of economic activity have shown steady growth. The structure of investments in fixed assets in industry is given in Table. 2.

TABLE II. FIXED CAPITAL INVESTMENTS BY TYPE OF ECONOMIC ACTIVITY,
AS A PERCENTAGE OF THE TOTAL

	2015	2016	2017	2018	2019
Total for industry:	100	100	100	100	100
including by type of economic activity:					
- mining	38.7	43.8	43.3	41.6	40.8
- manufacturing industries	35.7	37.9	33.3	35.5	36.2
- production and distribution of electricity, gas and water	25.6	18.3	23.4	22.9	23.0

The considered structure of investments in 2015-2019 changed as follows - the share of investments in mining and manufacturing increased, which reflects the reform of the structure of investment activity in industry in terms of investment attractiveness of certain types of economic activity. The study of investments in fixed assets of organizations with the participation of foreign capital is of great importance for the purposes of our research. Table 3 shows data illustrating the parameters of this process [10]. As can be seen in 2014-2018, investments in fixed assets of organizations with the participation of foreign capital grew in industry as a whole by 1.4 times, in mining - by 1.2 times, in manufacturing - by 1.5 times, in production and distribution of electricity, gas and water - 1.7 times.

TABLE III. INVESTMENTS IN FIXED CAPITAL OF ORGANIZATIONS WITH FOREIGN
CAPITAL BY TYPE OF ECONOMIC ACTIVITY,
IN ACTUAL PRICES, MILLION RUBLES

	2015	2016	2017	2018	2019
Total for industry:	1069309	1071798	1156230	1149810	1148527
including by type of economic activity:					
- mining	354253	354309	421383	420531	410073
- manu-facturing industries	552091	554098	570831	556221	560231
- produc-tion and distribu- tion of electricity, gas and water	162965	163391	164016	173058	178223

The greatest investment activity was shown by joint ventures in the production and distribution of electricity, gas and water, in second place are economic entities operating in the extraction of minerals, in third - manufacturing enterprises.

The importance of organizations with the participation of foreign capital in the implementation of national IIP is due to the fact that there is a lack of direct foreign investment in the domestic economy. Further we will designate approaches to determine the potential for using private foreign capital in order to meet the innovation and investment needs of national economic complexes.

It should be emphasized that in the modern economic literature there are various definitions of economic potential in general. Without analyzing in detail all these definitions, we note that the most reasonable is the point of view, according to which the foundation of economic potential is made up of funds, reserves, sources available, which can be mobilized, put into action, used to achieve a certain goal. In this regard, the definition of the economic potential of one of the well-known authors seems to be succinct and meaningful, who believes that the economic potential is the total ability of available economic resources to ensure the production of the maximum possible amount of utilities that meet the needs of society at this stage of its development. The magnitude of the economic potential is determined by the quantity and quality of economic resources that are available and can be involved in social production, as well as the conditions that ensure their most efficient use. [11]. Based on this definition, it is convenient to develop approaches to determine the potential for using private foreign capital in order to meet the innovation and investment needs of national economic complexes. In our opinion, this potential is a combination of those opportunities, means and tools that appear at the enterprise with the emergence of private foreign capital. In our opinion, the potential for using private foreign capital includes the following components:

- 1) the potential of the underlying equity structure;
- 2) organizational potential;
- 3) the potential for the formation of a balanced structure of borrowed capital;
- 4) the potential for investment attractiveness of innovative projects;
- 5) the potential of the company's reputation.

Base capital structure potential (Пбсак) means the ability to form a balanced structure of share capital with the participation of foreign capital at the time of the organization of the enterprise. The initial presence of a foreign investor in the equity capital creates favorable opportunities for attracting foreign borrowed capital in the future. Organizational capacity (Пор), represents the potential of corporate governance, which can change in one direction or another and be implemented in different directions. Potential for the formation of a balanced structure of debt capital (Пфссзк) is the ability of an enterprise to increase cash flows of a borrowed type in accordance with the concept of the most preferred structure of borrowed capital. The build-up of these flows is the increase Пфссзк and vice versa. Potential for investment attractiveness of innovative projects (Пипип) assumes the ability of an economic entity to generate highly profitable IP, with an increase in the number of these projects, an increase in potential is recorded, Пипип decreasing. Enterprise reputation potential (Прп) can be quantified through goodwill and fixed as part of the intangible assets of the enterprise, depending on a positive image, the presence of stable business relationships, the popularity of the brand name and brand name. It depends on the attitude towards the enterprise on the part of buyers, clients, partners, management bodies. It is also associated with the assessment of the quality and reliability of the company's products, the assessment of its trademark, the assessment of management, etc.

Thus, the potential of using private foreign capital to meet the investment needs of national economic complexes can be formally expressed as follows:

$$\text{Пичик} = (\text{Пбсак} + \text{Пор} + \text{Пфссзк} + \text{Пипип} + \text{Прп}) \quad (1)$$

where Пичик – the potential of using private foreign capital to meet the investment needs of national economic complexes;

Пбсак - base capital structure potential;

Пор - organizational capacity;

Пфссзк - potential for the formation of a balanced structure of debt capital;

Пипип - potential of investment attractiveness of innovative projects;

Прп - enterprise reputation potential;

M – multiplier of the synergistic effect from pooling potentials affecting the use of foreign private capital.

It is known that the general principle of combining any potentials is to achieve the overall performance. If $M > 1$, This consolidation is efficient and effective. It is also possible to evaluate by comparing the potentials for different options for structuring the capital of an enterprise. The above formula characterizes Пичик from the qualitative point of view, it shows that each of the individual potentials (Пбсак, Пор, Пфссзк, Пипип, Прп) contributes to the creation of a synergistic effect, a synergistic effect multiplier (M) determines the degree of growth in the potential for using foreign private capital in order to meet the investment needs of national economic complexes. Among specialists using the potentialist approach in economic research, there are different opinions about the generation of a multiplier effect by intermediate potentials. It seems that the formation of the potential for using foreign private capital in order to meet the investment needs of economic complexes is associated with the multiplier effect arising on the basis of all the considered potentials.

IV. CONCLUSIONS

In our opinion, the potentialist approach to the study of the use of foreign private capital in order to meet the innovation and investment needs of economic complexes is quite productive and allows us to reveal the essential aspects of this use. At the same time, it is necessary to solve the following scientific and methodological problems to attract foreign private capital in Russia.

First, to distinguish between ownership of capital when establishing an enterprise and ownership of capital when obtaining debt financing, which will make it possible to comprehend the potential of using foreign private capital.

Secondly, to give a quantitative assessment of the potential of foreign private capital in order to meet the investment needs of national economic complexes, taking into account the assessment of all the potentials that form it.

Thirdly, to outline, in a first approximation, the problem of the efficiency of IIP with the use of foreign funding within the framework of the potentialist approach.

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Network Forms of Organization as Management Innovation

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Abstract—In the article, the authors analyzed the problems of networkization (theoretical category, and development factors), sectoral situations in the formation of partnerships and networks in the field of higher education, extrapolation of positive effects and promising development scenarios was carried out. The networking of the education system has principles of voluntary cooperation and social significance. The article examines the positive network effects of the parties' interaction with the aim of developing and strengthening the position of competitiveness at the international level. The levels are described (preparatory - the exchange of resources; initial - joint actions to develop individual elements of educational programs and scientific research; in-depth - the network implementation of individual modules of educational programs; advanced - network learning) and models (horizontal interactions, partner network, resource centers) of network interaction in education based on horizontal interactions and voluntary partnerships. The effective externalities of networkization in the field of education are generalized (network partnership leads to an increase in the scale of production; expansion of the network motivates potential consumers and thereby increases its usefulness; creates the potential for increasing the share of value added with an increase in production volumes and reducing unit costs. The necessity of forming an institutional field (regulatory and legal factors, regulations and standards, etc.) is shown, which is studied fragmentarily and does not reflect the conditions of network interaction.

Keywords—network business, co-production, consumer value, educational organizations, partner network, externalities.

I. INTRODUCTION

The modern practice of the functioning of world markets and the activities of market entities, complicated by the conditions of significant restrictions of the COVID-19 pandemic, has required fundamental changes and restructuring of many internal and external business processes of companies. The informatization of production processes and the provision of products and services has made the boundaries of businesses more permeable and in some cases conditional. The production of consumer values for clients emerged in various fields of activity, industries, submarkets. This fact gave rise to the network effects of partnerships (both positive and negative), and also required the development of a new management methodology in networked forms of business.

The purpose of this article is to reveal the main theoretical and empirical prerequisites for the netting of relations between the subjects of the market system and to consider the main directions of the development of these relations in the field of education using the example of Russian universities.

The main objectives of this study are:

- the formulation of the problem of netting as a theoretical category and the determination of the factors of its development;
- analysis of the industry situation on the formation of partnerships and networks among Russian universities in the crisis conditions of the COVID-19 pandemic;
- extrapolation of positive effects and description of promising scenarios for strengthening network forms of organizing activities in the industry.

II. METHODOLOGY

The methodology and research methods are based on a monographic analysis of scientific literature, the study of the points of view of the journalistic and expert communities on the issues under consideration and the study of materials from specific cases, containing the information about educational organizations' experience. The methods of detailing and generalization, expert assessments and surveys were used.

The theoretical concept of the authors' position is based on the views of outstanding Russian scientists V.I. Vernadsky [1] and N.N. Moiseeva [2]. They talk about the similarities of the processes of development of material and biological objects. This means the fundamental possibility of the emergence in the economic world, among economic subjects of interconnection and interaction based on natural attraction to each other. It can be explained by the fact that the result of such relations is a decrease in transaction costs, which means an increase in the profitability of business results [3]. In the economic space of the partnership of companies with their production and marketing technologies, modern communication tools, it is the level and quality of information interactions that determine the freedom of exchange, the availability of consumer value flows, the benefits and losses of the business. In this way, netting is a path to noospheric space, which is an environment of existence in a broad sense, an environment, a holistic form of being [2].

The phenomenon of interfirm network relations, which has become so widespread in recent years, attracts numerous researchers trying to explain the reasons for its emergence and growth. A generalizing picture of the development of theoretical views on interfirm networks as a new phenomenon of business organization should be analyzed from the point of view of Russian authors in recent years. So, O.A. Tretyak [4] paid attention, first of all, to the effects of building network relationships in the marketing processes of companies. V.S. Katkalo wrote that the network can be represented in the form of a «net», having different density in different places. Where the density of the «net» is higher, economic integrations of various types are formed – «hard» (holdings, concerns, conglomerates), «soft» (associations, unions, alliances) [5].

Another very interesting interpretation of the network was the date by the Russian author of books on management A.N. Prokhorov: the net is like a bunch of grapes, in his figurative expression [6]. Each individual berry retains its internal structure, and only the stalk, through its elite (top management – author), is attached to the network management system. A bunch of grapes is a visual model of a network control system. Power in it is built on the principle of a bunch of grapes – from top to bottom and in clusters (whole closed groups). Although there are certain informational and other connections between them, the integrity of each individual group is clearly expressed. That is, being embedded in a network allows an organization to use socialized resources and innovations (knowledge flow), maintaining legal independence and socio-cultural uniqueness.

At the same time, one of the most difficult issues in substantiating the nature of network relations is the question of the boundaries and barriers of netting. After all, the network forms of organization of economic systems are based on modern communications and information technologies. Because of this they acquire the ability to generate, incorporate and disseminate knowledge, use them to

increase the consumer value of their products and attractiveness to the market. The high information level that accompanies relations and integrates business processes allows combining information flows of individual economic entities. However, only trust relationships reinforces this with social interactions and create a single powerful information «field». Explaining the phenomenon of trust and its role as the basis of networking is one of the unsolved parts of the general problem.

III. RESULTS AND DISCUSSION

Eventually, the network is based on the coordination of the activities of individual cluster structures (integrated enterprises, franchising firms, individual companies) by a developed set of formal and informal tools (standards, communication channels, information systems, etc.), which allows regulating the processes of creating and providing consumer values for customers, optimizing the ratio of price and quality of goods.

Networked forms of organization of activities demonstrate their economic advantages over traditional ones due to the localization of transactions. In traditional market structures, the formation of the economic landscape takes place by building relationships based on the optimal location of production points, taking into account minimizing costs and maximizing profits, a short-term planning period prevails. In the network realities, the institutional (in terms of culture, standards, leadership, and other institutions) closeness of the participants becomes an essential condition, which makes it possible to count on maximizing profits in the long term. Socio-economic relations of their market become long-term, trusting and uninterrupted. Spatial characteristics (architectonics, configuration, concentration) become secondary. The obvious markers of their manifestation is the emergence of marketing relationship, where the «philosophy of sales» is replaced by the «philosophy of long-term contractual relations». In addition tactical management tools appear that allow you to build joint platforms for managing costs, quality standards, and personnel motivation on the basis of trusting relationships, relationship with customers and so on.

Such relationships allow us to speak about the emergence of co-production effects - mutual penetration of network participants into each other's business processes, which creates new utility for companies, industries, various groups of stakeholders and generates both positive and negative externalities. In turn, the synergy of companies' activities allows increasing consumer value for customers, giving it new properties. The more space covers the area of influence of the network, the greater the consumer value and the stronger the impact. Innovation or value created in this space is transforming the economic sphere.

As an example, let us consider the practice of introducing online technologies and forms of education based on them. Nowadays they have become a large part of the educational and scientific processes at universities throughout the world. The development of mass online education, the emergence of massive open online courses, an abundance of information in open sources lead to the loss of monopoly by universities on the results of intellectual activity. The target audience of such products can be millions of people, anywhere in the world. The resulting network effect of knowledge flow, on the one hand, makes products available to millions of people in a very wide market. On the other hand, it contains the potential to satisfy the need for personalized learning, because it makes it possible to adapt education taking into account the interests of a particular student. Furthermore, online technologies in force majeure conditions associated with force majeure circumstances (it was most clearly manifested during the COVID-19 coronavirus pandemic) is becoming the only possible form of building all business processes in the sphere of education.

Netting is a promising development path for the entire Russian economy and, in particular, for educational organizations that are subjects of the market for public goods. Due to this, their activity as independent business entities requires great flexibility and ability to cooperate within the industry environment with various stakeholders, on which the quality and standard of living of people depends. Therefore, the aims of educational organizations are primarily tasks to create public goods in such a volume and quality that ensure their availability to all segments of consumers and acceptability from the standpoint of the requirements of many customers (government, employers, households, individuals). To ensure such a balance of interests, it is necessary to build business processes for creating benefits based on horizontal interactions and voluntary cooperation.

Organizational structures created according to the unitary and holding type (U-form and X-form) are less effective in the market of public goods, since they are based on closeness and hinder the diffusion of innovations [7].

TABLE I. LEVELS AND MODELS OF NETWORKING IN EDUCATION

Level	Model	Form	Feasibility	Conditions
Preparatory – resource exchange	Horizontal interactions	Free of charge / reimbursable Online / offline	Mutual aid when resources are scarce	Formal agreements
Initial – joint actions to develop individual elements of educational programs and scientific research	Horizontal interactions	Academic mobility of teachers and students	Establishment of competence centers in universities for selected areas	Formal agreements
In-depth – network implementation of individual modules of educational programs	Partner network	Academic mobility of students and teachers	Creation of individual trajectories	Coordinated curricula in terms of individual training modules
Advanced – network learning	Resource centers and partner networks	Academic mobility of students. Virtual mobility	Formation of unique competencies within individual trajectories	Fully coherent curricula

Source: [8]

From the standpoint of network theory, the market for public goods is a collection of independent educational, scientific and industrial organizations that, through close interaction, create long-term ties with consumers of public goods, suppliers, partners. Formally, educational networks are nodes (links) and links between them, which determine some of the rules for their work in the industry under consideration. Economically, it looks like this: nodes in the network are universities and other organizations, and connections are interaction between them (informational, personnel, financial, resource, social). Links can disintegrate, new ones can be created, due to the dynamics of the market – in segments where the demand is higher and the profitability of the resources used is higher, cooperative ties grow. Where there is no effect, the network becomes less frequent. These ties are characterized by the presence of mutual trust, allow to reduce transaction costs and create the basis for joint efficient use of resources. A kind of crowdsourcing models are emerging in the network. These models are based on the attraction of external resources (funds, people, ideas, etc.) for the implementation of business processes – the introduction of innovations, product development, their creation, marketing and distribution [9]. These opportunities are especially relevant in the context of the global digitalization of the economy, all spheres of public life.

At the same time, being part of one network, educational organizations continue to compete for more advantageous positions in the served segment and for access to resources and information.

Positive externalities of netting in education are generated by the following reasons:

- network partnership of universities and other educational organizations leads to an increase in the scale of production (an increase in the volume and types of educational products);
- expansion of the network motivates potential consumers to connect to it and to thereby increases its usefulness (increased motivation to use educational products throughout life);

- leads to the dominance of information products as results of activities (corresponds to the characteristics of the digital economy, information society);
- creates the potential for increasing the share of added value with a growth of production volumes and reducing unit costs (contributes to a rise in the availability of public goods for all members of society).

In our opinion, the effect of consumer motivation and their involvement in lifelong learning through participation in network programs is the mostly measurable quantity. There are several reasons for this: the possibility of diversity in choosing a teacher; gaining access to the content, which people are interested in; domination of information products in teaching and so on. Let us consider a case on the influence of the online-learning on the results and progress of students. Here you can see the data on the development of a set of disciplines in a network format by students of two universities – NRU «BelSU» and NRU «Higher School of Economics».

TABLE II. DATA ON THE PROGRESS OF STUDENT GROUPS OF TWO UNIVERSITIES (AVERAGE SCORE)

Groups	The traditional form of learning		The network form of learning
	<i>1st term</i>	<i>2nd term</i>	
Group A	4,1	3,7	2,9
Group B	4,25	3,8	4,92
Group C	4,24	3,9	4,6
Group D	3,8	4,1	4,3

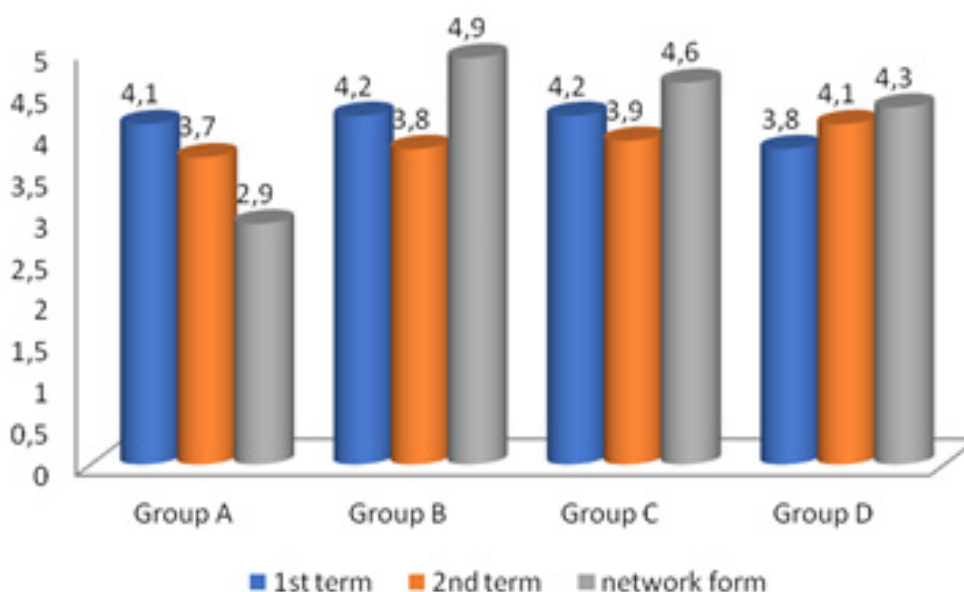


Fig. 1. Comparative analysis of student performance in the traditional and network format

With the soft integration of educational organizations in a network form, formal ties can arise based on information, resource dependence, property ties. However, informal social and institutional ties play a much greater role in this. Informal ties play a special role in the functioning of the educational network, because they act as a component of the social environment and of the result of non-market interaction of subjects in the market of public goods.

Currently, in Russia, the practice of formation and development of educational networks is obvious: for example, the already familiar network forms of implementing educational programs of higher education, as well as relatively new initiatives to create educational complexes as a form of social partnership, including organizations at all levels of the educational system - from preschool to high school.

IV. CONCLUSIONS

Thus, the study of the processes and results of netting in the sphere of education is a complex theoretical and applied problem. On the one hand, networks have a number of common prerequisites and principles of origin, among which the economic advantages of voluntary, trust-based cooperation dominate. On the other hand, educational network forms contain in their nature the features of social benefits, the production and provision of which is determined not so much by economic effects as by social significance. Netting in the sphere of education allows to reduce the costs of production of goods and increases their availability for different segments of the population and segments of the education market. This, in turn, increases the attractiveness and value of the educational benefit in the eyes of consumers, strengthening the trends of lifelong education, improving professional competencies on a continuous basis. Understanding the problems and opportunities of networks will make it possible to form a list of possible priority areas for the development of the Russian education sector, «growth points», the support of which will be implemented through joint efforts of government and business institutions. The implementation of the network effects of the interaction of the parties interested in the development of this socially significant industry will allow to overcome the negative and consolidate the positive tendencies of social development and to maintain competitiveness in the world market.

In this way, network forms of organizing educational activities in Russia are becoming more and more common, because they allow solving multiple problems of various educational organizations associated with a lack of personnel, research and other resources to focus on providing opportunities for individual educational trajectories. Individual trajectories are the path to training personnel who have unique competencies, which is the most relevant trend in the digital economy of the 21st century. Network interactions make it possible to train not only a competent specialist, but also to align levels of partner universities through their interaction with stronger network partners. The objective prerequisites of networks are theoretically confirmed, the effects of networks are obvious and achievable, however, in the applied aspect, the modern practice of the functioning of the public sector in Russia, including the education sector, requires an appropriate institutional field (regulatory legal factors, regulations and standards and so on), which is still fragmentary and does not reflect the conditions of network interaction.

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Neuromarketing Approach to Assessing Tourism Products

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Abstract—The article presents the possibilities and features of using neuromarketing research in the evaluation of tourism products. Initially, the role and importance of the neuromarketing approach in tourism and its advantages over classical research methods were defined. It has been shown that conducting neuromarketing research during the formation of a tourist product will make it possible to obtain an objective picture of consumer preferences. At the same time, it is advisable to find analytical focus through morphological analysis before conducting neuromarketing research, and to evaluate more accurately. Using morphological analysis, reference points were selected, for which it is advisable to conduct a deeper neuromarketing analysis in the future. Special attention is paid to theoretical calculations concerning the issues of neuromarketing research. Currently, there are some issues that have been investigated on pricing and advertising in the tourism sector. In particular, the conducted studies by foreign authors on the analysis of unconscious factors that impact on advertising when choosing hotels on the basis of electroencephalography. Most of the research is fragmentary, so there is a need to study the most significant issues in the field of tourism. The algorithm for conducting neuromarketing research depends not only on the types of tourist products, but also on how information is presented.

Keywords—neuromarketing research, tourist product, tourism, morphological analysis, tour.

I. INTRODUCTION

Changes in the external environment due to crises and pandemics have a significant impact on the further development and transformation of the tourism sector. The future of the tourism market in the Republic of Kazakhstan is justified by the presence of picturesque nature, monuments and historical treasures, and all this will provide opportunities despite the high competition in the global tourism market. At present, new approaches to the development and formation of both the tourism sector and tourist products are required. One of these approaches is the use of neuromarketing research, which will determine the unconscious needs in the development of tourist products [18].

Neuromarketing is a type of research that involves an interdisciplinary approach that provides a comprehensive and more objective picture of consumer behavior. The use of neuromarketing tools in tourism will expand the range of understanding of consumer needs, their desires and way of thinking when creating tourist products. Neuromarketing in Kazakhstan is in its infancy, so the issues of its study and adaptation to tourist activities are being updated.

II. THE PURPOSE OF THE STUDY

The purpose of the study: to determine the possibilities and directions of application of neuromarketing technologies in the field of tourism.

III. RESEARCH OBJECTIVE

Research objective: assessment of the possibilities of neuromarketing research in tourism, analysis of optimal variants of neuromarketing research when evaluating tourist products, selection of objects of neuromarketing research.

IV. METHODS AND ORGANIZATION OF RESEARCH

Methods and organization of research: analysis of scientific and educational literature, articles on the research problem, marketing research in the form of morphological analysis, which allows you to determine behavioral features and priorities in the formation of a tourist product.

V. RESEARCH RESULTS

Neuromarketing as a field of science has a variety of definitions, but all interpretations emphasize that it is a symbiosis of marketing, psychology, neurobiology, neurophysics and other scientific fields [17].

The founders of neuromarketing theory currently include David Lewis (2015), Martin Lindstrom (2009), and Douglas van Praet (2014). Among the scientists engaged in research on the use of neuromarketing in the tourism sector, it is necessary to distinguish foreign scientists Hakan boza, Aitug Arslanb, Erdogan Kots (2016), Khramov and Likhanov (2016), Praet van (2014), Kiselev (2018) , in the Kazakh works of Akynov (2018), Ilyas and Muzdubekov (2019), and others. It should be noted that in Kazakhstan there is no conceptual in-depth scientific research on the possibilities of using neuromarketing to develop new types of tourism.

Of particular interest for this study is the work of Hakan Boz, Aitug Arslanb and erdoğan Kotz on the neuromarketing aspect of pricing psychology in tourism (2017).

Also interesting methodological approach of the study of subliminal advertising when choosing hotels on the basis of electroencephalography (EEG) was studied livey Hsu Yen Chun Chen. Their research aims to understand how hotel videos, with a built-in subconscious message, affect consumers ' choice of hotels, and their brain activity is measured and collected while watching the video. The results of the study show that participants ' choice of hotels will significantly depend on subconscious stimuli. Meanwhile, neurobiological data reveal significant differences between two (theta and beta) of the participants ' five brainwave ranges when they viewed a hotel video with and without a subliminal message [12].

Among the scientists who are engaged in research on the problems of tourism development, it is necessary to distinguish: Kotler (2013), Lewis (2000), Walker (2001), Brymer (2010), Janjugazova (2005), etc.

At the same time, we can emphasize that using neuromarketing in applied activities, it primarily allows you to identify neuromarketing incentives for marketing stimuli, such as advertising, product concept and features, price, etc. In the process of neuromarketing research, the reaction of consumers is determined using the consumer's sensory organs, namely touch, sight, taste, and smell. Neuromarketing assessment is more objective because it uses the results of consumer responses and allows for a deeper understanding of the motivations or incentives when making a purchase decision [9].

The transformation of the tourism sector and the changes associated with the pandemic emphasize the feasibility of developing new tourism products and adjusting existing ones to take into account the neuromarketing research being conducted.

Neuromarketing technologies are aimed at forming a balanced model of tourism development in the post-pandemic period.

The neuromarketing approach will determine which travel products are attractive given the current market situation. At the moment, the task is to implement the process of integrating

neuromarketing research in the tourism sector, which leaves a number of issues related to the development of agreed concepts, methods, and tools.

Testing of neuromarketing research will provide a complete picture for tourists, determine the trajectory of tourism development and the possibility of creating new tourist products.

The main tool of the methodology is neuromarketing research with the use of special equipment adapted to the peculiarities of tourist activity. It can be used to determine the most attractive types of tourist products, taking into account the influence of consumer preferences, tourist behavior, their desires, and motives for making purchases [6].

It should be noted that with the help of neuromarketing, you can understand in which directions to use this approach. At the same time, there are several main areas of research, namely:

- identification of consumer reactions to various historical sites and natural resources;
- determining the attitude of consumers to the type and design of the hotel;
- emotional perception of tours and tourist routes;
- reaction to advertising and other marketing stimuli.

Neuromarketing research when making decisions about purchasing tourist products will focus on the following important elements:

- expectations;
- experience;
- emotions;
- the perception of signals;
- evaluation of information [3].

The presented elements depend on the type of personality and perception of features, motivations, preferences, and commitment. At the same time, for the tourism sector and taking into account the types of tourist products, it is possible to determine in which direction it is appropriate to conduct neuromarketing research. Let's consider the main types of tourist products and their features (table 1).

TABLE I. TYPES OF TOURIST PRODUCTS AND THEIR FEATURES

Types of travel products	Types	Directions of neuromarketing research
1. Excursion (educational)	Historical, archaeological, cultural and educational, natural.	Assessment of the perception of recreation places, landmarks, and natural resources
2. Beach tour	Sea, cruise, river, lake.	Unconscious reactions to water resources, beaches, hotel design
3. Extreme	Hang Gliding; paragliding; skydiving; hot air balloon rides; flying sports planes	Study the brain's response to a variety of extreme situations
4. Health and Wellness	Spa, Wellness (preservation and promotion of health), health and Wellness, Spa tours.	Assessment of unconscious processes for various treatment and relaxation options
5. Mountain tours	Skiing, mountaineering, trekking, rock climbing	Assessment of priority places, routes
6. Water tourism products	Rafting, surfing, wakeboarding or wakeboarding, water skiing, diving	Evaluation of options for tourism products with the use of natural resources

When classifying types of tourism, it is important to understand the reasons for making a decision to buy a tourist product and consumer preferences.

The presented types and varieties of tourism are grouped based on the purpose of travel, the resources used, and the types of sports and entertainment events held [16].

As a result of the analysis, the emphasis is placed on possible options for conducting neuromarketing research. They are General and limited, but the possibilities of neuromarketing are more diverse, it all depends on the goal and objectives of the study.

However, if you select the objects of neuromarketing research, they can be divided into three groups and the approaches to research will differ. Let's consider the main research objects and the expected result from the neuromarketing research (figure 1).

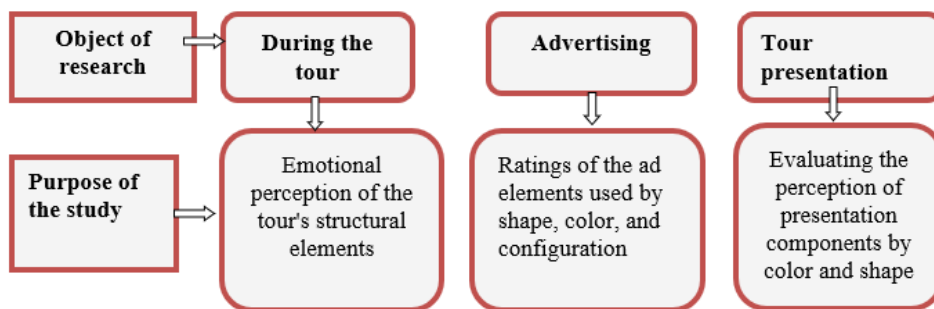


Fig. 1. Directions of neuromarketing research on the objects of analysis

In general, the results of analysis using neuromarketing are more accurate, exclude subjectivism, because they are recorded using special equipment. The main goal of neuromarketing research on types of tourism is to increase the level of tourists' confidence in the offered tourist products, increase tour attendance and frequency of use [16].

Before conducting neuromarketing research, to pinpoint what you need to focus on when organizing and conducting tourist trips, you can conduct a morphological analysis. Morphological analysis will allow you to select different combinations of tourist products and choose the most attractive types of tourism from the tourist's point of view.

To evaluate the tour product, a classic excursion tour was selected, the analysis of which was carried out using morphological analysis and as a result, the most significant indicators and characteristics of the excursion tour were determined [4]. When evaluating the main characteristics of the excursion product, a survey of middle-aged consumers with average income indicators who prefer sightseeing trips was conducted. Experts in the field of tourism in the number of 9 people, including representatives of the Kazakhstan Tourism Association and managers of travel companies, were involved in the study. The results of the morphological analysis are presented in table 2.

TABLE II. EVALUATION OF ALTERNATIVE OPTIONS WHEN CREATING A TOURIST PRODUCT

	Alternative solution			
	Characteristics of the tourist product	Possible solution		
	Objects of the tour	Historical sight	Natural wealth	Combined natural and historical resources
Hotel type	Classic (convenience and comfort)	Camping (minimum basic set of services)	Hostel (cheap accommodation)	
Location	By the sea (different formats of water resources)	In the mountains	In the forest	
Image of the region	Famous	Touristic	Unknown, wild	
Mode of transport	Air transport	Railway	Car (bus)	
Animation	Sports	Entertaining	Combined	

The selected trajectory shows consumer preferences for each parameter of the tourist product.

The analysis made it possible to identify in which areas it is advisable to conduct research:

1. Use of various objects of the tour and conduct neuromarketing research in the given direction, paying attention primarily to the combination of tours, namely including both natural and historical and archaeological sites, taking into account their attractiveness.

2. Assessment of the hotel type using neuromarketing research, taking into account quality indicators such as the design of the room Fund and the hotel, the variety and representation of the menu, convenience and comfort in the provision of basic and additional services;

3. The choice of mode of transport depends on the location of the recreation center and therefore, for long distances, air transport is used, but most often a tourist needs several types of transport. Therefore, it is advisable to use neuromarketing to investigate which types of transport are most relevant, under which conditions, to determine their design solutions, approaches to price indicators, and other factors.

4. When conducting neuromarketing research of animation events, you need to take into account the target audience and select a set of animation tracks that can be combined and combined, in particular sports and entertainment events.

Initial research in the form of morphological analysis makes it possible to understand which areas can be used for final neuromarketing research. Point-based neuromarketing studies aimed at analyzing individual attributes or characteristics of a tourist product will allow you to identify unconscious behavioral factors that affect the decision-making process and attitude to the elements of the tour.

VI. CONCLUSION

Neuromarketing technologies have certain advantages over classical methods of analysis, which are associated with the fact that the most objective data is obtained, based on the unconscious needs of tourists. In General, it can be noted that in order to evaluate tourist resources or products, it is important for the consumer to determine the reaction, motives and incentives for choosing individual elements. As a result of the analysis, the following main conclusions are made:

initially, to use neuromarketing research, to conduct a structural analysis of the types of tourism and the most significant elements of the tour;

in order to create the most attractive tourist product, it is advisable to use neuromarketing research, which is aimed at the influence of feelings and emotions when making a purchase decision from consumers;

before conducting neuromarketing research, it is possible to conduct an Express survey using morphological analysis, which will allow you to more accurately understand which directions and in which variant to conduct neuromarketing research;

when conducting neuromarketing research, you need to select the most significant elements, the analysis of which will allow you to form an optimal attraction tour, while combining its individual elements.

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Balance Between Business and Government in Purpose of Ensuring Economic Security to Innovation Development

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Abstract—In this article, digital platforms are viewed as the leading instrument for digitalizing the economy. The role of business and the state in ensuring the effective functioning of the economic sector by creating innovative products and systems is shown. The features of the digital environment that contribute to the successful development and timely implementation of innovative products are identified. The role of the digital platform in terms of solving modern problems in the field of national interests and the global market is described. The definition of digitalization is given and its role in modern business is revealed. Effective data management has been proven to be the key to a successful business process. The features of the digital economy are considered: the degree of provision of the company with intellectual assets, the organizational structure based on the network, the Internet of things as the basis of the foundations in business, the particular importance of data storage in the business sector. It was found that China and the United States are at the forefront of the digital environment, with over 75% of their funding and 90% of the market value of the 70 largest platforms in the world. It is shown what is the role of the state in the field of cyber security.

Keywords—digital platform, digitalization, government, business, innovation, economic security.

I. INTRODUCTION

Digital technologies today are the engine and the main locomotive of the effective functioning of the economy and business in general. The digital space is being complemented by new innovative products that interact with various online structures and act as a link between the parties to the market. Companies are forced to quickly adapt to changes in the overall global digitalization and predict all possible threats and challenges from the digital world. At the same time, the creation of a favorable "ecosystem" and ensuring the safety of the participants in the process falls on the shoulders of the state, which is also interested in the development of global digital platforms and participates in the struggle for international leadership in the market. So how does business and government function successfully in the era of global digitalization?

Digitalization is the transition of business to a digital form, within which a technological environment is formed, aimed at the efficient use of business resources, at improving the quality of life of the population and at solving production problems. Interposes data integration takes place, a flexible corporate culture and predictive control of production processes are created [1]. And effective data management is a key guarantee of successful business entities and a decisive advantage in the competition. Two parties are interested in this process: business and government, on the close and successful interaction of which depends on the rapid construction of a digital infrastructure with the maximum possible provision of economic security [2].

II. METHODOLOGY

The author considered digital platforms as a locomotive to ensure the competitiveness of the country and business. The features of the digital economy were analyzed, which helps in assessing the economic potential and the degree of protection from the authorities. The degree of cooperation between government and business was assessed and recommendations were given for successful mutually beneficial cooperation [10].

To solve this problem, operating large companies were studied, a summary of data on the effectiveness of their activities was evaluated, and the "thinking paradigm" was analyzed from the point of view of the economic security of databases. The world rankings have been revised to assess the impact of digital platforms on business-government cooperation.

III. RESULTS AND DISCUSSION

In order to correctly implement digital platforms in the life of society, it is necessary to take into account the peculiarities of the digital economy: [3]

1. Provision of the company with intellectual assets

The priority today is given to businesses with a significant amount of intellectual resources. These are companies that are digital platforms with no physical assets and whose share of capitalization is higher than that of industrial giants.

2. Increasing the importance of data in the economic sector

Most of the operations of economic activity are supported by cloud technology, which saves on services and time. They allow you to reduce the cost of creating and maintaining digital infrastructure. The speed of service delivery is increasing, and services are becoming more flexible. But it is important not to forget about ensuring their safety, and here the state plays an essential role.

3. The organizational structure is based on a network

The networking of business participants leads to innovative idea generation, to which various experts are connected online. The boundaries between departments are blurred, and many tasks are outsourced, which reduces the cost of production costs, and leads to high business efficiency. Therefore, industrial policy is aimed at developing network structures.

4. Internet - "the basis of all foundations"

Today the Internet unites business, government and the population. It is a connecting thread between all participants in the economic process. The Internet is a necessity, a resource that promotes monetization and a fast communication process.

5. The global nature of data exchange

The functioning of a business is often not limited to the local market and enters the global space. Economic agents without access to the global network are always inferior in competition [9].

6. The main approach to management is self-organization

Network structures are successfully created in an economy based on globalization and decentralization [8]. Bureaucratic structures, in turn, are moving into flexible work formats.

The digital economy is based on digital platforms that drive economic growth. This is a complex information system that ensures the performance of the functions of interconnection between market participants, an open format for customers and partners. It is a hardware and application integrator. Platforms allow you to structure solutions for industry problems and competently organize the interactions of all ecosystem participants [4].

According to research by PricewaterhouseCoopers, the market capitalization of the top 100 companies in the world in 2019 exceeded \$ 21 trillion. The indicator increased by 5%. For example, Microsoft's capitalization was \$ 905 billion. That is, at the forefront are companies that have managed to build an ecosystem that anyone can access if they wish. Moreover, all services are actively adapted to the needs of society in an accessible and convenient format. All this is impossible without creating platforms.

There is a classification of digital platforms that was presented at the UN conference:

Operating platforms - multilateral markets with infrastructure (Amazon, Alibaba);

Innovative platforms - an environment in which IT creates codes and content in the form of applications and software (Android, MPEG).

Important aspects of creating a digital platform are:

- Structure;
- Classification;
- Technology;
- Life cycle;
- Benefits and risks;
- Monetization.

They are completely dependent on strategy, competencies, transactions, IT and business model. All these become the basis for the formation of an ecosystem that is built on network partnerships, cross-border, security, global competition, dynamics of growth and integration.

A business, occupying its own "niche", begins to monetize at the expense of low costs for an advertising campaign. He invests in platforms that attract investment and win the consumer. The chain of market conquest is as follows: "search for a consumer in the region - in the neighboring regions - throughout the country - then export". In this case, the lack of an appropriate regulatory and legal framework becomes a scaling problem. The way out of this situation is seen: the creation of projects within the framework of public-private partnerships or the transformation of "regulators" into more favorable conditions for business.

IV. CONCLUSIONS

China and the United States are at the forefront of the digital environment, with over 75% of patents in the blockchain, 50% of the Internet of Things market, 90% of the market value of the 70 largest platforms in the world. It is important to note that global platforms are constantly expanding their spheres of influence. Thus, Microsoft bought LinkedIn and Nokia. Business pays special attention to the field of R&D and concludes contracts with "leaders" - companies in the traditional sector of the economy. The platform opens up new opportunities for increasing added value and improves the quality of goods and services.

In this context, the role of the state, which deals with the issue of ensuring cybersecurity, is increasing. The power is focused on sponsoring research and development in technology and platforms. First of all, SMEs are supported, as well as start-ups and entrepreneurship. They are the ones who integrate innovations into the digital environment and accumulate innovations in the form of ready-made software products. They form the basis and are the transfer of technology and digital transformation. And to speed up this process, private-public co-financing mechanisms are used. The state stimulates by providing tax incentives and by simplifying public procurement of digital platforms [5].

In recent years, the paradigm of thinking in the field of information security has changed. The growing demand for highly intelligent protection equipment is increasing. These are systems of the class security information and event management (SIEM), network traffic analysis (NTA), complex antiAPT solutions. There is a transformation "ability to detect", because the amount of losses depends on how quickly an attack and threat are detected. The state in the next year set a course for the elaboration of laws, in which ambiguous terms and wording will be clarified and corrected. Shifts in this area are already being observed: from January 1, 2020, financial institutions must use software that has either a FSTEC certificate or a certificate of passing a vulnerability analysis.

"The Digital Economy 2024" program in Russia provides for the creation of domestic platforms in every sector of the economy. Successful operation is possible with the introduction of at least 10 such "sites" for subject areas. This is achieved through targeted programs and grants. But not all platforms in practice are created with direct support, as the world experience shows. State aid will

only strengthen and significantly speed up the process of testing such platforms [6]. How can this be achieved?

On the part of the state, provide access to the necessary data from the lists, registers (for example, interaction with the SMEV or the NSUD). By creating preferential terms and rates, as well as “preferential sandboxes,” because the price of transaction costs is quite high. Through the development of a regulatory and legal framework, where there will be access for all market participants, mechanisms for resolving disputes and providing state guarantees through this platform have been thought out. In approximately 5 years, almost all Russian business will switch to large digital platforms oriented to the global market, not limited only by national interests. But for this, it is necessary to develop uniform rules of the game, otherwise only Western cases will be introduced and control over the economic situation will be reduced.

Thus, the digital platform is the driving force and engine of progress. This is not "know-how", but the need for the successful functioning of business, which, in close cooperation with the authorities, is able to solve the global problems of our time, covering all sectors [7]. The development of artificial intelligence gives rise to a large number of cyber threats, which are regulated by the state. The speed of implementation of developments and the innovative provision of resources that will allow companies to become more competitive in the international arena and enter new sales markets depend on the competent construction of interaction between business and the state.

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The Innovative Instruments for Implementing the Strategy of Social and Economic Development of the Depressed Region

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Abstract—This article reveals the issues of substantiation of strategic priorities and tasks of socio-economic development of the Republic of Adyghea, which belongs to the group of regions of the depressive type. The features of strategic management of socio-economic development of the Republic of Adyghea, problems of implementation of the strategy of social and economic development of this region are highlighted. Innovative instruments for implementing the strategy of socio-economic development of a depressed region are presented. They are: cluster structures, regional projects, technological platforms for introducing innovations, innovative forms of state support for social projects (including a specialized technology platform, crowdsourcing in the region), forms of infrastructure for social entrepreneurship and civil interaction (including co-working platforms for interaction between public institutions and business), a regional crowdfunding platform for the implementation of socially significant and socially useful projects, comprehensive state programs for solving cross-sectoral problems of strategic development of the region, forms of public-private partnership, project development institutions, etc.

Keywords—strategic priorities, instruments, strategy, socio-economic development, depressed region, the Republic of Adyghea, organizational and managerial innovations.

I. INTRODUCTION

The problem of strategic management of territorial development of the Russian Federation is actualized in the context of the impact of crisis factors, reduction of regional budget opportunities and the growth of Russian regions differentiation by the level of socio-economic development. Strategic planning of territorial development determines the general directions of development and long-term development of individual industries, sectors, clusters of regions in contemporary Russia. At the same time, the effectiveness of the strategy for socio-economic development of the region

largely depends on the level of scientific and practical validity of the mechanisms and instruments for its implementation.

One of the key elements of regional strategic management system is the instruments for regulating socio-economic processes, which are a set of ways, methods and forms of regulatory impact of state authorities on the processes of socio-economic development of territories to achieve their goals and objectives. At the same time, a set of institutions and instruments forms the economic mechanism of state regulation of the development of territories.

II. METHODOLOGY

The instrumental and methodological apparatus for investigating the stated problem includes various cognitive instruments of the system-functional approach to the analysis of the processes of strategic management of regional economic systems. The methods of institutional and strategic analysis were used to determine the specific features of strategic management of socio-economic development of the depressed regions. The methods of strategic and instrumental design were used for justifying the forms and instruments of strategic management of regional economic development.

The solving problems of strategic management of territorial development is widely presented in the domestic and foreign economic literature. In particular, in the Russian economic science we should highlight the theory of regional strategizing (Granberg A. G.) [1], the theory of advanced development strategy (Glazyev S. Yu.) [2], the theory of integrative strategizing (Tatarkin A. I.) [3], the theory of strategic competitiveness (Fatkhutdinov R. A.) [4], which form the conceptual basis for the development and implementation of strategies for regional socio-economic development. Foreign schools of strategic management include the theory of strategic foresight (Schumpeter Y.) [5], the theory of strategic understanding (Andrews K.) [6], the theory of strategic planning (Ansoff I.) [7], the theory of strategic transformation (Mintzberg G., Chandler A.) [8]. Such scientists and economists as G. B. Kleiner, I. D. Turgel, M. Porter, I. Ansoff, and A. J. Strickland made a great contribution to the formation and development of the theoretical foundations of strategic management at the meso-level [9].

III. RESULTS AND DISCUSSION

A. Strategic Priorities and Tasks of Socio-Economic Development of the Republic of Adygea as a Depressed Region

The specifics of the Republic of Adygea as a depressed (problematic) region in the South of Russia affect the system of strategic management of the territorial economy. Characteristic features of the depressed region are: deformed structure of production; long-term lack of solutions for the structural organization of the economy, effective state regulation of the proportions of inter-industry exchange, competitive environment of local markets; weak development of the region's production infrastructure; extensive reproduction in the agricultural and food industries; deficit of budget sources of project financing with a low level of investment activity [10]. At the same time, the regional specifics of the socio-economic complex of the Republic of Adygea are determined by the enclave positioning within the Krasnodar territory and significant natural resource potential [11].

Depressive regions are characterized by significant structural imbalances, uneven territorial and sectoral development due to systemic problems associated with ill-conceived economic policies at the macro-and meso-levels, and the consequences of the transformation of property relations against the background of a decrease in the budget security of the regions and the growth of interregional competition for resources and capital. Also, depressed regions are characterized by a low level of investment in fixed assets, a significant proportion of the population with incomes below the subsistence minimum.

Reproduction processes in the Republic of Adygea are characterized by unstable dynamics due to both the macroeconomic situation, reduced budget security, and regional specifics. The key factors limiting the development of reproduction processes in the Republic of Adygea are: structural imbalances in the development of territorial and industrial complexes, sectors of the economy; low

level of development of production infrastructure; lack of qualified personnel; insufficient level of state subsidies to producers of priority sectors of the economy.

Sustainable development of economic processes at the macro– and meso– levels involves the use of both traditional and innovative mechanisms and strategic management instruments (including forecast-analytical and institutional ones) that take into account the problems, strategic directions and tasks of territorial development. The main document of strategic planning for the development of the Republic of Adygea is the strategy of socio-economic development of the Republic of Adygea until 2030. (hereinafter – the Strategy), which regulates priority directions, a set of organizational and economic measures and instruments for state regulation of economic processes [12].

Strategic priorities of socio-economic development of the Republic of Adygea within the Strategy are: creation of a favourable regional investment environment, increase investment activity in the region; stimulating the development of innovation infrastructure; creating comfortable environment for living of the population and the development of engineering, resort infrastructure, etc [13].

A set of tasks and activities for the implementation of the Strategy are disclosed in the action plan, indicating the deadlines, responsible performers and expected results. Based on the action plan for the implementation of the Strategy, it is planned to make changes to the implemented state programs, as well as develop new state programs in the region. In this context, it is necessary to ensure the interconnection and regular coordinated updates Of the strategy, action plan And state programs for the socio-economic development of the region.

In accordance with the action plan for the implementation of the strategy of socio-economic development of the Republic of Adygea until 2030, the key strategic objectives of the region's development are:

- increasing the level of investment attractiveness of the Republic of Adygea; establishing the Republic of Adygea as a region characterized by an effective investment environment, a balanced development budget, and low dependency on the Federal budget;
- modernization of production assets in priority sectors of the region's economy;
- formation of a rational, competitive agro-industrial production based on the use of modern technologies at all stages of production and marketing of its own products;
- formation of the region as an all-season center of active, ecological, educational, event, medical and health tourism, children, youth and family recreation, one of the centers of tourism in the Russian Federation and an important element of the tourist and recreational cluster of the South pole.;
- formation of an effectively used living space for the local population and guests of the Republic of Adygea and the Krasnodar territory with a high capitalization and permeability of the territory;
- creating an institutional environment for the development of small and medium-sized businesses and export-oriented production in the region;
- increasing the level of foreign economic activity in the region;
- formation of the Republic of Adygea as a region with its own developed electric power industry and an efficient electric grid economy that provides the needs of the economy and population with energy based on a combination of innovative development of traditional energy and intensive introduction of “green energy” technologies;
- development of scientific, technological and innovative infrastructure that ensures the competitiveness of the Republic of Adygea;
- formation of a balanced system of public and private institutions, a developed entrepreneurial

culture; formation of optimal business conditions in the region, development of horizontal and vertical links between business structures of different scales; creation of comfortable conditions for the development of civil society in the region.

In accordance with the strategy, enlarged tasks and organizational and economic measures for the development of key territorial production complexes (TPC) of the Republic of Adygea are highlighted (table I).

TABLE I. KEY STRATEGIC OBJECTIVES AND MEASURES OF SOCIO-ECONOMIC DEVELOPMENT OF THE ADYGEA REPUBLIC'S INDUSTRIAL COMPLEXES (IN ACCORDANCE WITH THE STRATEGY BEING IMPLEMENTED)

Strategic objectives of development of the TIC	Measures for the implementation of objectives
Agro-industrial complex (AIC)	
Increasing in the production volume and improving the quality of livestock and crop production	stimulating the development of agribusiness industries under the sub-program "development of agribusiness industries"
Developing of the cooperation and integration processes in the agro-industrial complex; forming the territorial clusters	ensuring awareness of small and medium-sized businesses and the population of rural areas about state support measures for agribusiness
Modernization of the material and technical base of the agro-industrial complex	state stimulation of purchase of agricultural machinery and equipment by agricultural producers
Increasing of capacities for storage and primary processing of agricultural product; trade and logistics centers developing	implementation of the subprogram "Stimulating investment activity in the agro-industrial complex" of the Republic of Adygea;
Improving the quality of rural land improvement	integrated improvement of rural settlements, development of social and engineering infrastructure; implementation of the sub-program "Creating conditions for providing affordable and comfortable housing" of the program "Integrated rural development"
Ensuring rational use of natural resources, environmental friendliness of production	ensuring phytosanitary well-being in the Republic within the framework of the subprogram "development of agricultural industries"; providing production and investment sites with engineering infrastructure
Industrial complex (IC)	
Creating conditions for deep processing of raw materials by organizations in the IC	Measures to create a system of innovative development of a complex of industries, interaction of science with production
Improving the product competitiveness in the IC; creating an effective promotion system in the IC	Implementation of regional projects "Industrial exports in the Republic of Adygea", "System measures to increase labor productivity", "Targeted support for improving labor productivity at enterprises";
Implementation of flagship industrial projects focused on the development needs of the agro-industrial complex, tourist and recreational complex in Adygea and neighboring regions	Selection and support of effective projects, attraction of corporate investors, application of state support and PPP mechanisms in project implementation
Creating conditions for the implementation of PPP projects in the IC	preparation of infrastructure for implementation on investment projects in the IC
Creating conditions for the development of financial and industrial integration in the region	Training of management personnel for the organizations of the regional IC;
Tourist and recreational complex (TRC)	
Creating and developing of "growth points" in priority tourism development zones	Increasing the level of transport accessibility of the region and its recreational areas; holding event events; reducing the share of the shadow sector
Attracting investments for the implementation of development projects in the TRC	Promotion of investment proposals for the creation of tourist facilities and infrastructure
Integrated development, improvement of transport accessibility of recreational areas of the Republic of Adygea	Improvement of rural areas; development of transport links to recreational areas
Creating a tourist information center	Implementation of the subprogram "promotion of a tourist product" in the territory of the Republic of Adygea
Formation of an effective institutional system for the development of the region's TRC	Formation and development of a tourist and recreational cluster in the region; development of tourism business in priority tourism development zones

The priority tasks of the socio-economic development of the Republic of Adygea are also to build institutions of interregional and inter-municipal cooperation, to realize the potential of public-private partnership in the leading sectors of the region's economy.

B. The Features of Strategic Management of Socio-Economic Development of the Republic of Adygea

Federal support for the development of reproduction processes in the Republic of Adygea is provided by state programs, state development institutions, investment infrastructure, territorial development zones, and natural monopolies.

In accordance with the Federal law of 28.07.2014 No. 172–FZ “On strategic planning in the Russian Federation” and the law of the Republic of Adygea of 06.08.2015 No. 455 “On strategic planning in the Republic of Adygea”, the main instruments for implementing the strategy are strategic planning and programming documents:

- action plan for the implementation of the Strategy;
- forecast of socio-economic development of the Republic of Adygea for the long-term period up to 2030;
- forecast of the labor market needs of the Republic of Adygea for specialists in various fields;
- medium-term forecast of socio–economic development of the Republic of Adygea (including for 2019, 2020 and the planning period 2021-2022);
- state programs of socio-economic development of the region.

However, the territorial planning scheme of the Republic of Adygea, the General plan and the territorial planning scheme of municipalities of the Republic of Adygea remain undeveloped.

The key instruments for implementing the Strategy are the plan of organizational and economic measures and the flagship projects being implemented. At the same time, flagship projects are catalysts for promising changes in the economy of the Republic of Adygea, as they are based on priority directions of strategic development, contributing to the growth of investment attractiveness of the region and the standard of living of the population.

Strategic management of reproduction processes in the Republic of Adygea is based on the use of traditional instruments of state regulation (state programs, territorial development plans, “road maps”), and innovative instruments in strategic planning documents are declarative in nature without specification to the institutional and economic conditions of the region. The process of program and target regulation of the economy of the Republic of Adygea is characterized by insufficient system and strategic orientation, which prevents the full realization of the region's competitive potential. Measures of program and target state support for the region's economy do not reflect current trends in digitalization and greening of reproduction at the meso-level, as well as the transition to an innovative model of regional economic development.

The structural division that performs strategic planning and implementation of strategic planning documents is the Department of strategic planning and state programs of the Ministry of economic development and trade of the Republic of Adygea, whose key functions are:

- making proposals for the development and implementation of state policy in the field of strategic management;
- organization of development and adjustment of the Strategy, as well as its implementation plan;
- organization of monitoring and control over the implementation of the Strategy and the Strategy implementation plan; identification of priorities for socio–economic development of the region in the context of changing global and macroeconomic factors;
- coordination of draft master plans for the development of territories and existing territorial planning schemes.

Thus, the features of strategic management of socio-economic development of the Republic of Adygea are:

- the lack of theoretical and methodological developments in forecasting the territorial development of reproduction processes in the region in the long term, taking into account the key factors of modern development;
- the absence of regional strategies for the development of priority industries, territorial and industrial complexes of the Republic of Adygea; the regional economic sectors in the conditions of adaptation to the market, the development of globalization processes operate without effective, clearly expressed state support from regional governmental authorities;
- orientation of the system of state support for the economy of the region of the depressed type at the expense of Federal target programs;
- the lack of innovative instruments in the strategy aimed at structural changes in industries, territorial and industrial complexes of the Republic of Adygea.

C. Specifics of State Programs as the Instrument for Implementing Strategic Priorities for the Development of the Depressed Region

The program–target approach of state regulation of the regional economy provides for the use of three instruments: the state target program (Federal, subject of the Russian Federation), the departmental target program, and the municipal program. The transition of the state regulation system of the Russian economy to a program–oriented budget increases the importance of municipal development programs. In 2019, 20 state programs of the Republic of Adygea were implemented in the Republic of Adygea in accordance with the list approved by the order of the Cabinet of Ministers of the Republic of Adygea dated 13.08.2013 No. 202-R “On the list of state programs of the Republic of Adygea”. The state programs of the Republic of Adygea in 2018-2019 were characterized by a high level of implementation efficiency in terms of the level of target indicators (indicators) (figure 1).

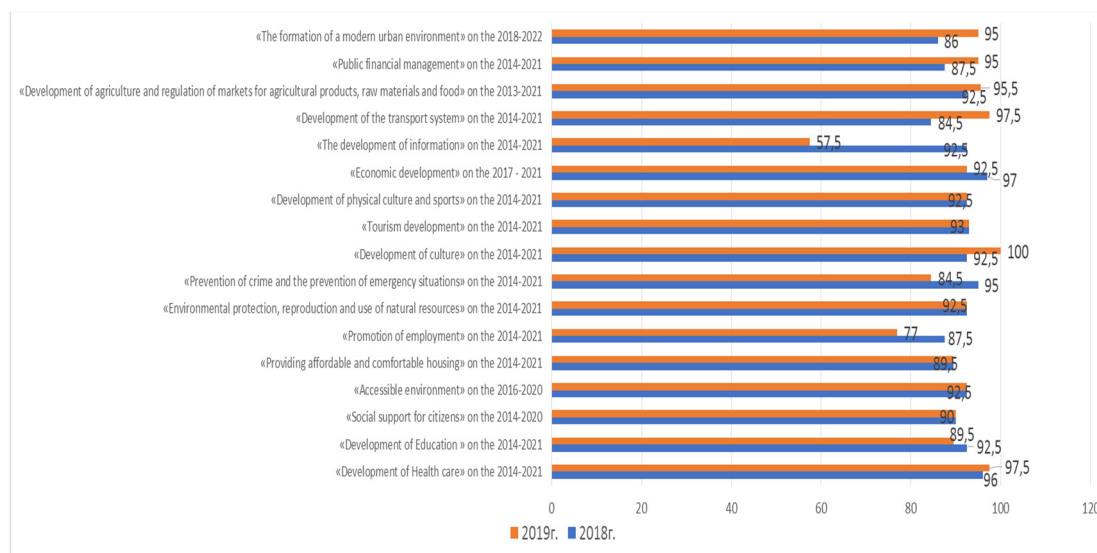


Fig. 1. Results of the integrated assessment of the effectiveness of state programs of the Republic of Adygea in 2018-2019, %

Under the domination of agricultural production in GRP of the Republic of Adygea the special significance for the development of this depressed region is a state program “Development of agriculture and regulation of markets of agricultural products, raw materials and food” for the years 2013-2021, which includes 5 routines designed to increase production and competitiveness of agricultural products, provision of investment attractiveness of the industry, creation of the comfortable living conditions in the rural areas [14].

- development of horticulture and fruit growing in the region (increased reimbursement of costs for laying and caring for perennial fruit and berry plantations);
- development of the Institute of farming as a condition for the formation of agricultural cooperation (the share of state support costs for novice farmers in the cost structure of the sub-program increased in 2018-2019 from 13.8% to 20.4%);
- development of family livestock farms based on K(f)X (the share of expenditures on state-owned farms increased in 2018-2019 from 2.2% to 12.5%);
- reduction of risks in crop production in the Republic of Adygea by introducing the practice of subsidizing insurance costs of agricultural producers from hail.

However, implementation of target indicators of the state program does not reflect the key issues of development of agriculture of the Republic of Adygea, including the preservation of structural imbalances in the development of complex, low level of development of agricultural cooperatives and vertical integration, innovation infrastructure development and agribusiness in the region.

The results of the analysis of program and target state support for economic sectors of the Republic of Adygea indicate the presence of organizational and methodological problems in the development and implementation of target programs [10]:

- insufficient level of integration of state programs in the budget process of the region;
- lack of indicators for evaluating the implementation of state target programs;
- non-compliance with the requirements for the content of state programs of the Republic of Adygea; shortcomings in the formation of reports on state target programs;
- sharp fluctuations in the dynamics of funding for subprograms aimed at state support for industries and sectors of the regional economy; difficulties in comparing and evaluating the effectiveness of subprograms when changing their list, as well as the main activities;
- General orientation of organizational and financial support for agricultural producers without division of activities, irregular use of its individual forms, reduced level of funding;
- lack of sufficient experience in programming the development of regional economic sectors; gaps in the regulatory framework for program and target planning in the region.

In addition, the widespread following issues of programme-targeted regulatory regions of depressed-type:

- failure to reach the planned values of target indicators due to the increase in cost and loss of individual plants, adverse climatic factors; limitations of indicators of assessment of implementation of target programs; changing approaches to subsidies on the macro-level; inadequate level of mainstreaming of programme activities in accordance with the strategic documents of development planning of the Republic of Adygea;
- the failure of planned funding program activities separate industries due to insufficient funding from the Federal budget for subsidies for co-financing, lack of applicants, eligible subsidy, and non-compliance by the borrower of conditions of the grant.

In the context of growing budget constraints in the depressed regions of modern Russia, the institutional factor of small business development is becoming increasingly important in ensuring their socio-economic stability, which has a key impact on regional competitiveness, reducing the unemployment rate, and increasing the real monetary income of the population [15]. However, the system of program and target regulation of the economy of the Republic of Adygea is characterized by an insufficient level of state support for small businesses, and does not reflect the specifics and problems of small businesses. At the level of the Republic of Adygea, state support for small and

medium-sized businesses is regulated by the sub-program of the state program “economic development”, and indicators for evaluating its effectiveness do not reflect the real increase in the competitiveness of small businesses; municipal programs to support small and medium-sized businesses are implemented only in some regions of the Republic of Adygea.

D. Innovative Instruments for Strategic Management of the Development of a Depressed Region

As innovative instruments for strategic management of the region's development, we should highlight:

1) Cluster structures (including a catalytic cluster, a regional cluster of small enterprises): creating of a catalytic cluster for the production of goat's milk and fermented milk products, the core of which is the agricultural holding “Mirny”; creating of a tourist and recreational cluster.

2) Technological platforms for innovation implementation. Technological platforms are a form of cooperation between commercial structures, the state, scientific and educational organizations and are intended for the formation of state innovation policy in the region, expert support of innovative projects, promotion of domestic products in foreign markets.

3) Innovative forms of state support for social projects, including a specialized technology platform and crowdsourcing mechanism in the region.

4) Forms of infrastructure for social entrepreneurship and civil interaction, including coworking platforms for interaction between public institutions and business.

5) Regional crowdfunding platform for the implementation of socially significant and socially useful projects aimed at increasing the volume of social investment by businesses in the development of local communities without being included in the state program.

6) Regional projects, including “Promoting entrepreneurship in the Republic of Adygea”, “Acceleration of small and medium entrepreneurship”, “Digital public administration” (providing citizens access to public services, services under the state program “Digital development”), “Expansion of access of subjects of small and average business to financial support, including concessional financing” (including creation and development of regional guarantee, the development of microfinance institutions).

The current regional projects in the Republic of Adygea are the projects “Digital educational environment”, “Modern school”, “teacher of the future”, “Young professionals (Improving the competitiveness of professional education)” within the national project “Education”, as well as the projects “formation of a comfortable urban environment (Republic of Adygea)” and “Road network”.

Promising regional projects socio-economic development of the Republic of Adygea are “Promoting entrepreneurship in the Republic of Adygea”, “Acceleration of small and medium entrepreneurship”, “Digital public administration”, “improving the conditions of doing business”, “Expansion of access of subjects of small and average business to financial support”; task, departmental program of development of branches, sectors of economy (including “Development of cooperation in agriculture of the Republic of Adygea”, “Development of the export potential of the Republic of Adygea”, etc.).

7) The complex state programs of solving cross-sectoral issues of strategic development of Republic of Adygea (including target program “Development of small and medium entrepreneurship in the Republic of Adygea”, “Development of export potential of the Republic of Adygea”, etc.). Appropriate development of the subprogrammes of state programs to the level of individual programs (regional, local levels).

8) Institutions of project development, created for the formation, expansion and strengthening of interregional socio-economic relations in order to implement innovative projects of interregional and international levels.

9) non-Governmental socially oriented non-profit organizations (SONKO) in the health and education system of the Republic of Adygea.

10) the Mechanism of venture financing. A special role is given to small businesses that implement venture projects, as well as their targeted state support. For effective use of venture financing, it is advisable to create an “investment and venture Fund of the Republic of Adygea”. The purpose of this Fund is to ensure the growth of the innovative potential of the Republic of Adygea, the development of high – tech industries, as well as the introduction of innovations in production. At the same time, the organization of venture financing should be carried out with a well-developed regulatory framework.

11) forms of public-private partnership (PPP) in priority sectors of the economy of the Republic of Adygea.

Realization of the potential of innovative clustering mechanisms and public-private partnership is in demand for the development of reproduction processes in the economy of a depressed region. However, the focus on the resources of Federal target programs and projects levels the motives, the lack of corporate co-financing of project activities levels the motives, stimulating regional management to diversify, innovativeness, increase the competitiveness and adaptability of economic sectors, while maintaining the region's subsidized nature and the practice of economic dependency. Moreover, holding centralization and registration of large corporate businesses in Federal centers reduces the volume of budget revenues and the regularity of inter-industry proportions on the part of state authorities and the population of the region [16].

Innovative forms of strategic management of reproduction processes in the region are Project offices that perform a coordinating role at the interdepartmental level in implementing priority investment projects (in accordance with the Priorities of the strategy), creating and expanding investment platforms, attracting corporate investors, supporting investment projects, state support for export operations, and participating in the construction of logistics channels. The key functions of the Project office are: managing the implementation of investment projects in accordance with the priorities of territorial planning; efficient allocation of resources for the creation and development of infrastructure in the region; creation and expansion of investment sites in the region; support of social development projects in the region; comprehensive work to attract corporate investors, prepare investment projects, prepare infrastructure; development and implementation of cluster projects in the region; support of investment projects that involve interaction of investors with state authorities, state support for export operations, and participation in the construction of logistics channels.

IV. CONCLUSIONS

The key instruments of the state regulation of the economy of the Republic of Adygea remain Federal target programs, regional projects for the development of economic sectors against the background of the lack of experience in the use of innovative tools, their declarative nature is mentioned in the strategy of socio-economic development of the Republic of Adygea until 2030. At the same time, the process of program and target regulation of the economy of the Republic of Adygea is characterized by insufficient system and strategic orientation, which prevents the full realization of the region's competitive potential. Measures of program and target state support for the region's economy do not reflect current trends in digitalization and greening of reproduction at the meso-level, as well as the transition to an innovative model of regional economic development. At the same time, the specification of innovative tools for state regulation of the economy of the Republic of Adygea in relation to the institutional and economic conditions of the region is in demand.

The directions of improvement of strategic management of reproduction processes in the Republic of Adygea are: updating of strategic directions of development; implementation of system transformations; expansion and adaptation of the strategic management tools to the territorial, sectoral, institutional and economic conditions of the region's economy of a depressive type. Of particular importance is the implementation of infrastructure PPP projects, regional projects, the creation of cluster structures in the agro-industrial, tourist and recreational complexes and in the wood-processing industry of the Republic of Adygea.

Innovative tools for implementing the strategy of socio-economic development of a depressed region are: cluster structures, regional projects, technological platforms for introducing innovations, innovative forms of state support for social projects (including a specialized technology platform, crowdsourcing in the region), forms of infrastructure for social entrepreneurship and civil interaction (including co-working platforms for interaction between public institutions and business), a regional crowdfunding platform for the implementation of socially significant and socially useful projects, comprehensive state programs for solving cross-sectoral problems of strategic development of the region, forms of public-private partnership, project development institutions, etc.

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Priority Areas of Spatial Development in the Context of Ensuring the Sustainability of the Economic Security System of the Russian Federation

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Abstract—Achieving the priority national goals and strategic objectives of the Russian Federation is impossible without a stable system of economic security of the state that can withstand modern challenges and threats. The article reveals the importance of the strategic planning system in the system of measures to ensure the sustainability of the state economic security system. Priority directions for the implementation of the balanced spatial development of the Russian Federation in the context of key strategic planning documents are considered. The main threats, tasks, priorities of spatial development, as well as indicators reflecting the level of their achievement are considered. An assessment of the differentiation of the socio-economic development of the regions of the Russian Federation is given on the basis of the life quality index. The authors substantiate the necessity of solutions to the problem of consistency of all instruments of federal financing of the economic development of regions and the transition to a new model of budgetary federalism - a model that guarantees a higher level of provision of regional budgets, which actively stimulates each link of the country's fiscal system.

Keywords—economic security, spatial development, quality of life, strategic planning, strategy.

I. INTRODUCTION

Achieving priority national goals and strategic objectives aimed at the breakthrough scientific, technological and socio-economic development of the Russian Federation is impossible without a stable system of economic security of the state capable of withstanding modern challenges and threats. Inequality of the spatial development of the Russian Federation, increase of regional differentiation in terms of the level and pace of socio-economic development are key threats to the economic security that impede the achievement of strategic national priorities and significantly affect the stability of the economic security system. Spatial development in the system of economic security is a priority strategic direction for achieving the main targets of innovative development of the Russian economy. This will predetermine the need for consistent development and integration of the strategic planning system and policy of ensuring the economic security of the state in the sphere of regulating the spatial aspects of the development of the national economy.

II. DISCUSSION

The Strategy for the Spatial Development of the Russian Federation for the period up to 2025, approved by the Government of the Russian Federation in February 2019, is an important step in the formation of a qualitatively new level of ensuring sustainable and balanced spatial development, aimed primarily at reducing the regional differentiation in terms of socio-economic development, accelerating the pace of economic growth and innovative development of the state [1].

The strategy is a strategic planning document which is developed in accordance with national priorities and strategic objectives for the development of the Russian Federation until 2024,

formulated by the President of the Russian Federation in May 2018, and also takes into account and specifies the main provisions of the National Security Strategy of the Russian Federation dated December 31, 2015 [2] and Economic security strategies of the Russian Federation for the period up to 2030 [3]. The strategy of spatial development of the Russian Federation is a fundamentally new document that combines the approaches of strategic and territorial planning.

The importance of the strategic planning system for solving the problems of ensuring the stability of all spheres of the economic security system of the state lies, first of all, in the fact that all of the above Strategies are interrelated documents that reveal national priorities and key goals of strategic planning at all levels of management. The strategic planning system makes it possible to ensure the key requirements of the national and economic security of the state in close interconnection for solving problems in the sphere of spatial development of the Russian Federation [12]. The practice of strategic planning makes it possible to significantly increase the level and quality of state and municipal administration, as well as to achieve target points of the development of the state's economic security system. In this regard, a very important aspect is the degree of coherence and consistency of implementation of key national priorities. We will assess the main threats, priorities and indicators for the implementation of a balanced spatial and regional development of the Russian Federation, as well as strengthening the unity of the economic space (Table 1).

TABLE I. PRIORITY DIRECTIONS FOR THE IMPLEMENTATION OF BALANCED SPATIAL DEVELOPMENT OF THE RUSSIAN FEDERATION IN THE CONTEXT OF KEY STRATEGIC PLANNING DOCUMENTS

Threats	Objectives and priorities	Main indicators
National Security Strategy of the Russian Federation		
<ol style="list-style-type: none"> 1. Low competitiveness 2. Maintaining the export-raw material development model. 3. Lagging behind in the development and implementation of promising technologies 4. Progressive labor deficiency. 5. Uneven development of regions. 6. Decrease in the sustainability of the national settlement system. 	<ol style="list-style-type: none"> 1. Elimination of imbalances in the economy and in the territorial development, 2. Development of the labor market, transport, information, social and educational infrastructures. 3. Formation of a new geography of economic growth, new sectors of the economy, centers of industry, science and education. 	<ol style="list-style-type: none"> 1. GDP per capita. 2. Share of expenses in gross domestic product for the development of science, technology and education.
Economic security strategies of the Russian Federation for the period up to 2030		
<ol style="list-style-type: none"> 1. Uneven spatial development of the Russian Federation. 2. Strengthening of the differentiation of regions and municipalities in terms of the level and pace of socio-economic development. 	<ol style="list-style-type: none"> 1. Improvement of the territorial planning system taking into account the challenges and threats to the national security of the Russian Federation. 2. Improving the settlement system, creating conditions for the development of urban agglomerations. 3. Reducing the level of interregional differentiation in the socio-economic development of the Russian Federation subjects. 4. Expansion and strengthening of economic ties between the subjects of the Russian Federation. 5. Creation of interregional production and infrastructure clusters. 6. Priority development of the economic potential of Eastern Siberia, the Far North, the Far East, the North Caucasus, Crimea and the Kaliningrad region, and others. 	<ol style="list-style-type: none"> 1. The level of economic integration of the subjects of the Russian Federation. 2. Coefficient of tension on the labor market.
The Strategy for the Spatial Development of the Russian Federation for the period up to 2025		
<ol style="list-style-type: none"> 1. High level of interregional socio-economic inequality. 2. Insufficient number of centers of economic growth to ensure accelerating economic growth in the Russian Federation. 3. An increase of the demographic burden on the able-bodied population. 4. The threat of a worsening demographic situation due to a decrease in the birth rate and a decrease in the migration inflow of population from neighboring countries. 	<ol style="list-style-type: none"> 1. Elimination of infrastructural restrictions of federal significance and increasing the availability and quality of the main transport, energy, information and telecommunications infrastructure. 2. Reducing the level of interregional differentiation in the socio-economic development of the subjects of the Russian Federation, and reducing intraregional socio-economic disparities. 3. Ensuring expansion of geography and acceleration of economic growth, scientific, 	<ol style="list-style-type: none"> 1. Average annual growth rates of the gross regional product of the Russian Federation subjects, in which the promising large centers of economic growth of the Russian Federation are located. 2. The ratio of the per capita gross regional product of the subjects of the Russian Federation belonging to the priority geostrategic territories (except for the Arctic zone), to the average Russian level. 3. Interregional differentiation of the human development index in relation to the level of 2017. 4. Growth of transport mobility of the population in relation to the level of 2017

Threats	Objectives and priorities	Main indicators
5. Significant lag in key socio-economic indicators from the average Russian level of some of the subjects of the Russian Federation that have geostrategic importance, including a number of subjects of the Russian Federation located in the Far East, from which a significant migration outflow of the population continues, and others.	<p>technological and innovative development of the Russian Federation due to the socio-economic development of promising centers of economic growth.</p> <p>4. Ensuring the national security of the Russian Federation through the socio-economic development of the geostrategic territories of the Russian Federation.</p>	5. Growth in the export services from transit traffic in relation to the level of 2017

III. RESULTS

The assessment of the level of differentiation of regional development will be carried out on the basis of the data of the Life Quality Index of the subjects of the Russian Federation. Figure 1 shows the regions that are leaders in quality of life in 2019 in accordance with the consolidated rating score. Among the leading regions are mainly financial and economic centers, or regions with developed industry. The regions of the top ten ranking account for about half of the total GRP of the regions of the Russian Federation, 40% of the retail trade turnover in the Russian Federation, and about 40% of investments in fixed assets.

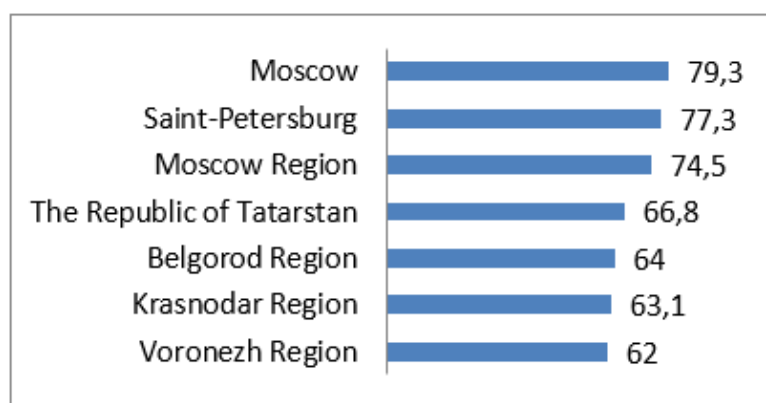


Fig. 1. Regions – leaders in quality of life in 2019 [4]

The bottom lines in the ranking are occupied by regions that do not have a stable economic base for successful development and do not have sufficient income of their own, which, in turn, does not allow them to provide favorable conditions for the life of citizens living in these regions (Figure 2).

The level of dependence of the budgets of these regions on the federal center remains quite high, so the sustainability of their development is exposed to higher risks than most other regions in the country [5].

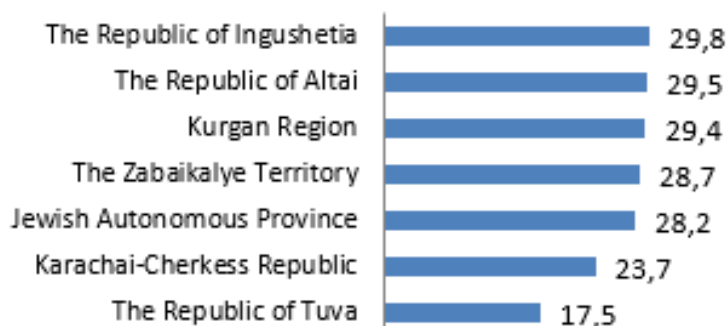


Fig. 2. Regions – outsiders in quality of life in 2019 [4]

The regions at the bottom of the rating are lagging behind in a number of indicators from other regions participating in the assessment, including they are characterized by: a low level of income of residents, a high proportion of the population with incomes below the subsistence level, the volume of citizens' savings placed on personal bank accounts are below the national average, and

high unemployment rates. Based on the presented data, we can see a significant differentiation of regions in terms of the level of socio-economic development. Analytical data confirm the presence of such problems of spatial development of the Russian Federation as [6]:

- a) an increase of the demographic burden on the able-bodied population in the most part of subjects of the Russian Federation;
- b) a significant level of socio-economic inequality;
- c) the threat of a worsening demographic situation due to a decrease in the birth rate and a decrease in the migration inflow of the population from neighboring countries.
- d) a significant lag of interregional and intraregional migration mobility of the population from the average values typical for developed countries, which leads to problems in regional and intraregional labor markets [11].

Thus, it can be noted that the level of regional differentiation does not increase, but the concentration of economic activity in the country remains very high. Top 10 regions - economic leaders form about the half of the country's GDP [7]. This necessitates powerful redistributive processes in the country's budget system. The problem of economic differentiation of regions remains essential, which predetermines the need for an adequate projection of this problem and ways of solving it on such leading strategic planning documents as the «Spatial Development Strategy» and «Fundamentals of Regional Development Policy» [8].

The balanced spatial development of the Russian Federation, as one of the key conditions for its economic security, cannot be the result of one or another separate program, or the activities of one or several specialized funds or other institutions. This process in significant parameters is possible only as a result of profound changes in the driving factors of the Russian economy, in the reduction of its dependence on raw materials in favor of the outstripping growth of high-tech industries [9].

IV. CONCLUSION

Thus, the balanced spatial development of the Russian Federation should not only be defined as one of the main strategic priorities, but also moved into specific quantitative parameters and indicators. It is necessary to solve the problem of strategic coordination of all instruments of federal financing of the socio-economic development of regions [10]. At the same time, it seems expedient that the transition to the practice of strategic planning requires a new model of budgetary federalism - a model that guarantees a higher level of provision of regional budgets, which is actively stimulating for each link of the country's fiscal system, and also takes into account the promising economic specializations of the Russian Federation subjects, identified in the Spatial Development Strategy. This approach will allow flexible interaction of traditional instruments of inter-budget relations with measures of federal support for the socio-economic development of regions by means of state programs, the activity of various institutions of territorial development. This will make it possible to implement one of the principles of the spatial development of the Russian Federation - a differentiated approach to the directions and measures of state support for the socio-economic development of territories.

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Theoretical and Methodological Approaches and Stages of Formation Concept Geomarketing

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Abstract—The paper describes the development stages of classical marketing (market demand exceeds supply, improving the production process; formation of the concept of marketing and approaches to marketing activities, understanding marketing as an integral system, maintaining the concepts of "consumer marketing", "managerial marketing", "organization image"; system analysis of strategic marketing as a general management theory; developing branding and marketing culture; the use of modeling consumer behavior, market segmentation based on a marketing tool - geomarketing as a combination of the use of marketing, geographic and information technologies) in the framework of the modern period – a geomarketing tool as a combination of the triad “geographical - geoinformation - marketing” research. Foreign and domestic author's scientific positions, views in the field of geomarketing are systematized, which prevailing a geographical representation as visual, detailed maps with the results of marketing research. The areas of applied adaptation application of geographical results in analytical practice and managerial business decisions are generalized. The stages and geographical reach of geomarketing are analyzed from the position of the evolution theory of the classical marketing (Arising, formation, popularization, spread), the author’s process of transforming the main characteristics of geomarketing is proposed, the dominant approaches are identified (managerial – information gathering; project and analytical – management and planning of trading network; geoinformational – optimal location search using the tools of geoinformation systems).

Keywords—geomarketing, geoinformation technologies, marketing research, classic marketing, marketing maps, location, evolution

I. INTRODUCTION

The origin of traditional marketing is related with the works of scientists of the classical and neoclassical economics theory of A. Smith, A. Marshall. The core of this theory is the understanding of value as a material category build up in the production process, and in the future serves need

gratification of the client / company. The evolution of marketing theory takes into account the following socio-economic processes:

- internationalization and globalization of the market;
- the appearance of new requirements, change in the pace and quality of life;
- development of extensive informatization and means of communication;
- development of modern educational technologies.
- We will give a few explanations of the formation of the geomarketing tool in the development of the evolutionary theory of marketing. The following stages of classical marketing are distinguished:
- 1860-1950 XX century – market demand exceeds supply, improvement of the production process; ubiquitous concentration of production; the marketing function was used as a specific management problem;
- 1950-1980 XX century – the formation of the marketing concept and marketing activity approaches: functional, product, institutional; understanding marketing as an integrated system, introduction the concepts of "consumer marketing", "managerial marketing", "image of the organization"; the functional role of market segmentation based on a consumer behavior model;
- beginning of the XXI century – a systematic analysis of strategic marketing as a general theory of management; development of branding and marketing culture; the use of consumer behavior modeling;
- 2020s XXI century – the modern stage: market segmentation based on the marketing tool – geomarketing as a combination of the use of marketing, geographical and information technologies.

II. METHODOLOGY

A new scientific direction – geomarketing has methodologically formed in foreign and domestic scientific knowledge, the purpose is a detailed examination of the territorial features of market formation, consolidating both marketing and geography tools. Initially it referred as a term of “market geography”, “geography of sales markets”, in European scientific terminology – “geomarketing” [3].

The genesis of geomarketing represented in the 1930s XX century in the United States in the context of the scientific works of Applebaum W. The role of the location factor in the study of the development of remote nodal points from the center under conditions of the retail trade sector of the economy was proved by the author in 1931 (studies were conducted in Cincinnati). Subsequently the author’s ideas were practically applied in choice substantiating of alternatives the most profitable placement of «The Kroger Co» supermarkets, thereby confirming the author’s theoretical hypothesis.

Commercial companies in this period most frequently used the capabilities of the consulting business and the scientific community to research and monitor business opportunities in expanding product sales markets [4]. In the United States, as well as in selected European countries, a group of specialists in the field of geography has been created, specializing in the use and generalization of marketing issues. Demand for a complex of marketing and geographical skills is growing in this period.

Applebaum W. identified the following problem set of geomarketing tasks [6]:

- synthesis of empirical data on sales markets and sales operations;
- assessment of markets, allocation of service and trade zones;
- selection of distribution channels and locations for wholesale, retail trade and enterprises for service to the public;

- mapping of the results and marketing cartography.

Generalizing the scientific views of James P. and Martin J. in the field of geomarketing research (the 1950s), the main ideas and states were point out:

- geographical research has grown significantly, as a rule, to analyze the activities of a commercial business [7];
- geographical studies of possible alternatives are dominated to expand the potential opportunities of additional markets of wide assortment line goods.

In the 1950s in the opinion of James P. and Martin J., geographic research to analyze the activities of commercial business prevailed. During this period the role of geographical studies of potential alternatives to create additional markets of wide range of products increased. Since detailed, visual maps are the result of geographical research, the skills of specialists in the field of geography have made a significant contribution to the study of the markets of a certain territory. The scientific fact is documentarily approved in a special issue of the journal «Economic Geography» (1961). In 1952, the fundamental publication «American Geography: Current State and Prospects» was published, printed in the Russian translation in 1954 [8]. In the scientific work generalizes the attempt to systematize geographical work to show the main areas of applied application of geographical results in analytical practice and managerial decisions. Geomarketing (marketing geography, according to geographers) was noted among the priority areas, as well as its outline positions were formulated.

III. RESULTS AND DISCUSSION

Geomarketing was earmarked as a scientific field, primarily engaged in establishing the geographical boundaries of markets and determining their capacity, as well as those distribution channels through which goods move from producer to consumer.

The main conceptual and essential researches in the geomarketing field are shown in table 1 [9].

TABLE I. AUTHOR'S COPYRIGHT CHARACTERISTICS
IN THE FIELD OF GEOMARKETING

Authors/professional affiliation	Geographic boundary	Key Points in the field of geomarketing
Applebaum W., Harris C. (geographer)	USA	Placement analysis of actual and potential companies
Flippono M. (geographer)	France	<ul style="list-style-type: none"> • typology of territories (commercial enterprises) • improvement distribution networks
Grimmean I.-P., Roelandts M. (geographer)	Belgium	
Afonso P., Gomes M., Abrantes M. (marketers)	Portugal	Author's methodology of marketing cartography
Berezovich I. (marketer)	Russia	Formation of assortment policy and investigation of regional markets.
Golubkova E.P., Orlova G.M. (marketers)	Russia	Marketing communications and their role in regional markets
Pankrukhina A.P. (marketer)	Russia	Territorial Marketing Research
Balabanova G.V. (marketer)	Russia	Territorial segmentation of the food market
Golikova A.P., Chernomaz P.A. (marketer)	Russia	Spatial analysis of the world market sales market

Simultaneously with the geographical research, within the American school of regional economics, a similar kind of scientific pilot research was initiated, which aimed at:

1. Research and monitoring of the territorial markets of individual enterprises/groups of companies from the position of marketing conditions of the products sale;
2. Identification of perspective trends in products demand.

The foundations of this theory laid by Shaw A., Weld L., later were advanced in the works of Frederick J., Duncan S., Cherington P. These scientific ideas were transformed into the theory of market management by J. Howard and McCarthy E., the core condition of which is determination of the optimal choice of the enterprise location, thereby enables the minimization of transaction costs [10].

Replication of geographical technologies and methods in the early 1960s XX century to scale marketing problems has grown significantly, including elements of a modern mathematical apparatus. An increasing interest in the results of marketing research is most pronounced by business structures and entrepreneurs. Geographical disciplines, including geomarketing, are attracting attention of the representative of educational institutions; teaching is conducted in individual business schools that train professionals in the field of entrepreneurship and management. Geomarketing research paid special attention of large companies, in particular: General Foods, Western Electric, Dupont de Nemours, U.S. Steel and others. The industry specificity during this period is has distinguished by the following: banking sector – monitoring of regional investment policy depending on the explication of geographical and economic factors; transport sector – study of routes and locations of cargo traffic, adjustment of tourist guides; trade sector – choice verification of the most efficient trade point.

Scientific views in the field of geomarketing geographically expand beyond the scientific and geographical boundaries of the United States. According to Flippono M. the fundamental ideas of French geographers were actively used by the business environment for practical purposes, but geomarketing remained exclusively in the form of framework private research and had not formed as a separate scientific research area. In the second half of the 1970 XX century, attempts to theoretical research in the field of geomarketing were taken by the British Market Research Society in the UK.

According to Grimmean I.-P., Roelandts M. [12], the basis of geomarketing consists in combining geography methods with sale products thematics. This scientific direction is aimed at study of the regional and territorial products sales markets, including placement real and potentially perspective clients, distribution channels and analysis the competitive environment. The authors highlighted the tasks of geomarketing: the location of advertising, improving distribution channels, placing new objects. The result of the study is the systematization of regional markets typologies according to criteria groups, the design and verification of geomarketing maps. A trial typology of geomarketing maps was realized in 1979 by British Market Research Society. On its basis the entire territory of Great Britain is divided into 18 thousand districts and region according by 36 group criteria, including customer characteristics of consumers. The technique was called “Classification of residential areas” and then spread to the United States (1981), France (1984), Switzerland (1987), Belgium (1989), and was used in the practice of developing transnational companies.

Thus, the following stages should be marked out in the development of geomarketing:

- 1930s - early 1950 XX century – stage of arising: the formation of geomarketing ideas (mainly in the USA), the definition of the geomarketing concept and the range of issues that can be solved using its methods. The main focus of the study was the location analysis of real and potential mercantile establishment. The works of Applebaum W., Cohen S., Goodman V., Ristow V.U. belong to this period.
- 1950s - early 1970s XX century – the stage of formation: the use of geographical research and methods in marketing research, an increase of the combination of these methods, the use of the mathematical apparatus; educational technologies of the geomarketing art (academic discipline); teaching an educational course at special courses (at large mercantile establishment) and individual business schools.

If the demand for geomarketing research was formed mainly in the field of trade before, the social order has spread to transport, banking and production activities now. New aspects of research appeared – the study of sales zones, service areas, their configuration and size, as well as their mapping. This was reflected in the works of Christaller W. and Lesch A., Bracey P., Berry B.J. L., Harrison W., Haggett P. and others.

- Since early 1970s XX century – stage of popularization. The ideas of geomarketing began to develop in Europe, especially in the UK. Research on advertising, improving distribution networks and territory typologization for commercial needs deserved particular consideration, as well as using GIS technologies as a basis for geomarketing analysis.

Since the mid-1990s XX century in the CIS countries, especially in Russia and Ukraine, in studies of regional markets began to appear some aspects of geomarketing research. This type of research was initially sent at economic and geographical analysis of the territory, which further led to the formation of the territorial marketing concept, aimed at increasing the attractiveness of the territories in terms of investment activity. The key aspects are the purposeful formation, positive development and promotion of the determined territory image. Until recently, the concept of geomarketing was quite narrow; it meant a special tool in traditional (business) marketing, aimed at geographical segmentation (geosegmentation) of the market and geographical positioning (geo-positioning) of goods / services. In the mid-1990s the concept of “place marketing” (P. Kotler, D. Haider, I. Rein, 1994) was developed as a reaction to significant changes in company strategies and public policies caused by globalization and regionalization processes (these two processes are synergistic and interdependent). The generalized results of the stages of the geomarketing scientific direction development as a tool for the stages of classical marketing are presented in table 2.

TABLE II. COMPARISON AND STAGES OF DEVELOPMENT OF MARKETING AND GEOMARKETING AS A SCIENCE (COMPILED BY THE AUTHORS)

Years	The name of the marketing stage	The evolution of marketing theory	Main authors	Geomarketing Stage	Geographic boundaries of geomarketing	Key features of Geomarketing	Leading researchers
1930s - early 1950s XX century	«Integration»	<ul style="list-style-type: none"> • functional marketing: production of goods, development of marketing institutions to ensure the goods delivery (set of activities) • use of marketing tools to grow the manufacturing business 	Breyer, 1934; Duddy and Revzan, 1953; McGarry, 1950; Weld, 1917	«Arising»	USA	<ul style="list-style-type: none"> • study of the concept and methods of geomarketing • location analysis of the real and potential mercantile establishment • the use of geomarketing tools mainly in the field of trade 	Applebaum W., Cohen S., Goodman V., Ristow V.U.
1950s - early 1970s XX century	«Reconceptualization»	<ul style="list-style-type: none"> • managerial approach to marketing (the emergence of marketing management). Marketing as a business function • the origination of quantitative research in marketing 	Alderson, 1957; Davis, 1961; Howard, 1957; Kotler, 1967; Levitt, 1960; McKitterick 1957; McCarthy, 1960	«Formation»	European countries (France), USA	<ul style="list-style-type: none"> • a modern mathematical apparatus appeared • new areas of research: the study of sales zones, service areas, their configuration and size, as well as their mapping. • application in transport, banking and production activities 	Christaller W. and Lesch A., Bracey P., Berry B.J. L., Harrison W., Haggett P., Shaw A., Weld L., Howard J., McCarthy E., Göttmann A.

Years	The name of the marketing stage	The evolution of marketing theory	Main authors	Geomarketing Stage	Geographic boundaries of geomarketing	Key features of Geomarketing	Leading researchers
early 1970s XX century	«Socialization»	<ul style="list-style-type: none"> marketing management: business orientation on the consumer - value is determined in the market. The marketing function is the adoption of strategic and operational solution in the use of enterprise material resources by means the marketing complex (4P) expansion of the managerial approach: marketing as an element of the decision-making process 	Hofer and Schendel 1978; Bartels, 1976; PIMS; Houghton, 1989	«Popularization»	European countries, UK, USA	<ul style="list-style-type: none"> territory typologization in the view of consulting services implementation of geomarketing maps use of GIS technologies as a basis for geomarketing analysis advertising research tool, improving distribution networks 	Grimmean I.-P., Roelands M.
the mid-1990s XX century	«Informational»	<ul style="list-style-type: none"> relationship marketing: the socio-economic process of need gratification on the base of competencies joint use of interacting market entities communicative (relational) approach in marketing and consumer involvement marketing in interaction. From product marketing to service marketing establishment and maintenance of long-term relationships with customers and partners, as well as internal marketing activities aimed at employees of organizations 	Vargo S.L., Lush R.F. 2004, Webster, Malter and Ganesan, 2005; Kotler, 2008	«Spread»	European countries, USA, Russia, Ukraine	economic and geographical analysis of the territory, formation of the territorial marketing concept within geomarketing	Kotler P., Haider D., Rein I., Berezovich I., Golubkova E.P., Orlova G.M., Pankrukhina A.P., Balabanova G.V., Golikova A.P., Chernomaz P.A.

In general, several approaches to geomarketing developed in Russian science, among which the most common are the following (table 3).

TABLE III. DESCRIPTION OF GEOMARKETING APPROACHES
(COMPILED BY THE AUTHORS)

Dominant approach	Tasks	Author's commentary on the approach to the geomarketing evolution	Instrumental apparatus
Spatial, design and analytical [10, 13, 14, 15]	operational gathering, visual representation of market information	<ul style="list-style-type: none"> marketing research technology presentation of market analysis and customer behavior criteria increase in KPI business (spatio-temporal study of heterogeneous data) 	Geographical (<i>use of geographic data</i>)

Dominant approach	Tasks	Author's commentary on the approach to the geomarketing evolution	Instrumental apparatus
Management [16, 17, 18, 19, 20, 21]	<ul style="list-style-type: none"> product offer management, assortment policy positioning of regional markets promotion of geoproducts planning of trade and retail networks, service 	the result of geographical and marketing tools combination to effective strategic business management	Geographical (<i>vernacular zoning</i>) Marketing (<i>use of territorial marketing elements</i>)
Geoinformation [22, 23]	<ul style="list-style-type: none"> planning of construction objects (social, commercial) search of optimum locations variant forecast and assessment, visualization of the "client portrait", determination of the territorial features of clients 	<ul style="list-style-type: none"> integration of geoinformation and marketing data thematic mapping use of analytical business analysis tools to optimize business tasks 	Geographical (<i>elements of territory mapping</i>) Marketing (<i>analytical apparatus tools of management marketing</i>) Geoinformational (<i>GIS technology, methods of geoinformatics</i>)

Modern geomarketing applies spatial analysis and visual modeling. It enables to carry out an integrated study of global and local spatial and economic processes. This makes it an irreplaceable tool for a spatial economy. The geomarketing uniqueness is in the integration of geographical research functions evolve to solve the socio-economic and political problems of regional development in the context of digitization of marketing knowledge.

IV. CONCLUSIONS

1. The problem of the geomarketing development as a fundamental scientific direction considered in this article is largely due to the socio-economic conditions of the enterprises existence and the possibility of a detailed and illustrative research of the market formation territorial features, consolidating both marketing tools and information technologies, geography. Geomarketing is a tool of classic marketing evolving from the socialization phase using a tool complex of marketing-mix (4P).

2. Initiation of scientific research within the business school of the regional economy, using the specialists skills in the field of geography, which consist in the regional markets study in terms of marketing criteria and conditions, the presence of potential business trends, verification of geomarketing maps.

3. The formation of the territorial marketing concept focused on improvement the territories attractiveness in terms of investment policy. The framework use of geomarketing as a special tool in traditional marketing aimed at geographic segmentation (geosegmentation) of the market and geographic positioning (geopositioning) of goods and services.

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Motivative Tools for Increasing Labor Productivity in a Complexed Branch Network of Organizations

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Abstract—The system of motivational tools, being one of the most important elements of the organization's personnel policy, solves the urgent tasks of attracting and retaining highly qualified personnel, forming competitive production behavior and increasing labor productivity. The subject of the research is socio-economic and managerial relations that determine the effectiveness of motivational tools in a complex branch network of organizations. The proposed recommendations can be applied in the development of projects and programs aimed at forming a motivational mechanism that increases the efficiency of labor activity and forms a stable basis for achieving the strategic goals of the organization and ensuring its competitive advantages, which are the absence of the need for additional material, financial, labor costs, while simultaneously saving obtained by reducing staff turnover and, as a result, increasing labor productivity. The implementation of the proposed measures will make it possible to form a highly effective system of labor motivation, ensure efficient spending of funds for social programs and social incentives for personnel, as well as increase the investment attractiveness of a complex branch network of organizations.

Keywords—motivation, incentives, personnel, labor productivity.

I. INTRODUCTION

To ensure the positive dynamics of sustainable development of complex economic systems, it is necessary to assess the efficiency of its structural divisions, based on indicators reflecting the main aspects of their work, which most characterize the achievement of the Company's strategic goals [5, 7, 10].

II. METHODOLOGY

The choice for a comparative study was dictated by the similarity of performance indicators (the share of services provided and the average headcount within the company), which means, with similar (presumably) performance results.

The proposed indicators for evaluating the work of branches exclude the use in the analysis of financial and economic results (revenue, cost of sales, net profit, volume of services), as well as the labor indicators that depend on them (labor productivity), due to objective reasons associated with the problem of biased assessment of financial results different branches due to incomparability.

Despite the seeming minimalism in the choice of indicators, indicators, their analysis in dynamics (or the ratio between branches) allows tracing the main directions of development of branches in the field of motivation, as well as identifying and assessing their stability in this area [6, 3]. The proposed ranking method presupposes ordering of data by branches as follows: by types of estimated parameters with assignment of a rank (weight) to the achieved value for the analyzed position: 1 - maximum value; 2 - average value; 3 is the minimum value. It should be borne in mind that the proposed comparative analysis is based not on comparing the values of the estimated indicators for the studied branch in its pure form (assessment of its absolute value), but on the observed trend (direction of development) [2,8].

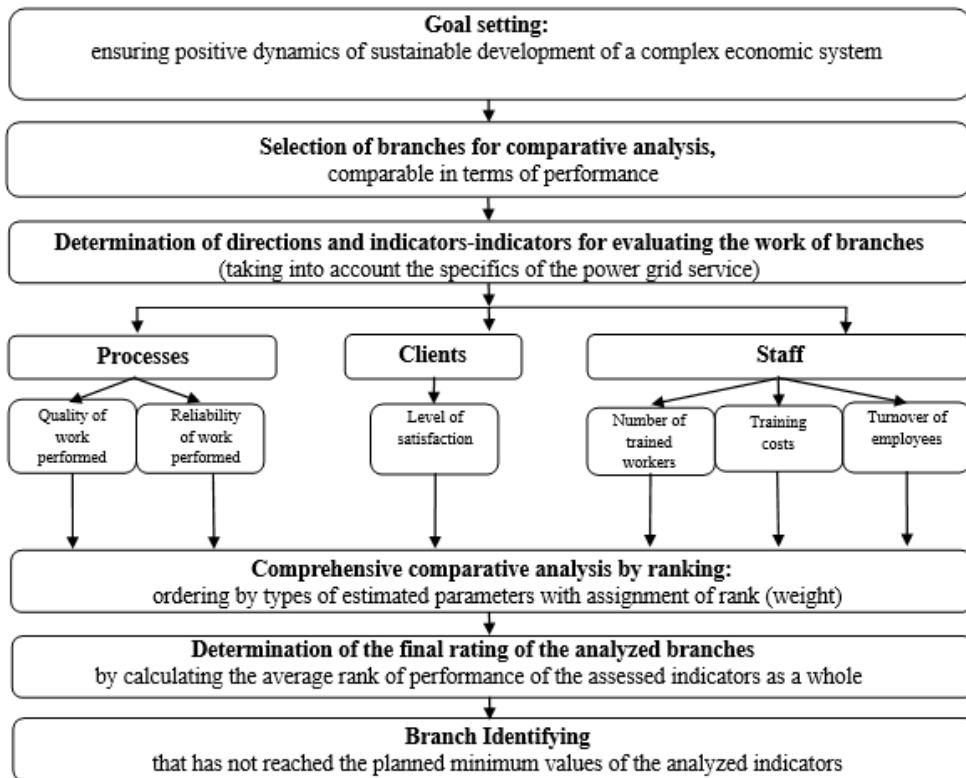


Fig. 1. The sequence of stages of assessing a complex branch network based on a comparison of branches

III. RESULTS AND DISCUSSION

To identify the needs and opportunities for improving personnel activities in the field of motivation and stimulation of labor of a complexly organized branch network of organizations, the following sequence of analysis can be used (Fig. 2).

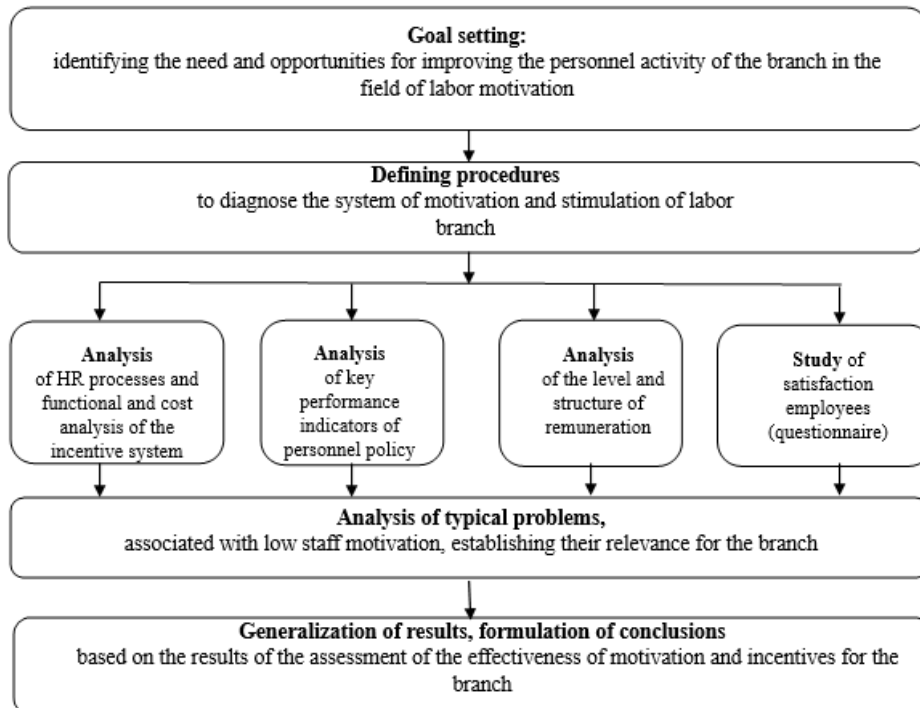


Fig. 2. The sequence of stages of assessing the effectiveness of the system

Problems indicative of low labor motivation in the organization directly affect the level of labor productivity, staff satisfaction, which affects both the individual efficiency of employees and the overall efficiency of the organization (Table 1).

TABLE I. TYPICAL PROBLEMS ASSOCIATED WITH LOW PERSONNEL MOTIVATION IN BRANCHES OF A COMPLEX BRANCH NETWORK OF ORGANIZATIONS

Issues	Notes
High staff turnover	-the growth trend of the indicator (without exceeding the critical value) hinders the sustainability of the branch's development.
High level of conflict, unsatisfactory moral and psychological climate	- the quality of labor relations in the team determines the dynamic development of the production environment.
Poor quality work	- the quality of the manufactured products, the provided service forms the image of the branch, determines the competitiveness.
Weak connection between the results of the work of performers and encouragement	- the level of wages does not depend on the volume and quality of products produced (services rendered),
Low professional level of staff	- the percentage of employees with professional education determines the competitive advantages of the branch.

Evaluation of the effectiveness of motivational tools in the branches of a complex branch network of organizations shows that economic systems of this level are characterized by a systemic and planned policy of motivational stimulation of labor productivity growth:

1. functional and cost analysis of the branch motivation system has determined the correct ratio of the importance of the incentive system functions and the costs of their implementation - which confirms the competent and rational organization of the labor incentive system;

2. the bonus payments in branches can be up to 75% of the tariff part, depending on the fulfillment of certain bonus conditions - a level that is quite stimulating (according to researchers in the field of motivation, the bonus system does not have a stimulating effect if the bonuses are too low : less than 7-10% of the tariff rate, official salary);

3. The level of wages of employees throughout the branches of a complexly organized branch network of organizations not only remains competitive, but also exceeds the average level of income both in the regions of the location and among enterprises of a similar profile in the region.

Together with the three, despite the high-quality tools of labor motivation, there are a number of problems typical for the development of branches in the structure of a complex branch network of organizations: staff turnover, poor quality work; ineffective spending of funds allocated for social incentives of personnel [11].

To eliminate problems in the system of motivation and incentives, it is necessary to comprehensively use multidirectional measures to form effective motivational tools in order to increase labor productivity (Table 2).

TABLE II. THE LOGICAL STRUCTURE OF THE DEVELOPMENT OF MEASURES TO MAKE THE NECESSARY CHANGES IN THE MOTIVATION SYSTEM OF A COMPLEX BRANCH NETWORK OF ORGANIZATIONS

Stages of activity development	Result (Description)
Determination of the purpose of the planned activities	Optimization of the system of motivation and stimulation of the branch personnel, increasing its efficiency.
Identifying problems in the organization	Problems identified: <ul style="list-style-type: none"> - growth in the rate of employee turnover; - unsatisfactory level of service quality indicator (decreasing tendency); - ineffective spending of funds allocated for social support of personnel.
Determination of ways (activities) to achieve the goal	Suggested activities: <ul style="list-style-type: none"> - Providing staff with the opportunity to obtain professional education at the expense of the enterprise; - changing the conditions of bonuses through the use of such a tool for distributing remuneration as the labor contribution ratio (Labor Contribution Ratio); - changes in the formation of the system of benefits; - making changes to the operating mode for some categories of workers.
Identification of funding sources	Reallocation of funds within a single item of expenditure, or between items of expenditure when planning the company's budget for the coming year (changing the purpose of funds).
Identification of stakeholders in the process (users of the result)	Internal: employer, employer representatives (top management of the enterprise, managers of appropriate levels), enterprise personnel. External: consumers of the services provided by the branch, investors (potential owners of enterprise funds).
Identification of possible risks	Financial losses associated with the "Professional training" event: dismissal / expulsion of an employee, for whose training the enterprise funds were spent.
Predicted social outcome	<ul style="list-style-type: none"> - Decrease in staff turnover and associated financial losses; - improving the quality of work performed; - rational spending of funds for social support of personnel; - more complete customer satisfaction; - formation of a favorable image of the company.
Projected economic result	The final stage, characterizing the feasibility of implementing measures, based on an assessment of the economic effect by reducing turnover, as the difference between the results obtained and the costs incurred.

In a complexly organized branch network of organizations, in a comprehensive assessment of the economic and social effectiveness of the introduction of motivational tools to increase labor productivity, the following approach is used: at first, solutions are developed and considered from the standpoint of social goals, regardless of economic ones, and then their economic efficiency is determined [11, 4]. At the same time, taking into account the functioning of complex economic systems, in which the main resultant indicator is labor productivity, it is necessary to use the labor contribution coefficient (Labor Contribution Ratio), which has a number of differences from the labor participation rate, one of which is the following: Labor Contribution Ratio can be both decreasing and increasing. As a result, you can use two options for the redistribution of amounts within the planned payroll (in order to avoid a formal approach to this type of incentive) (Fig. 3).

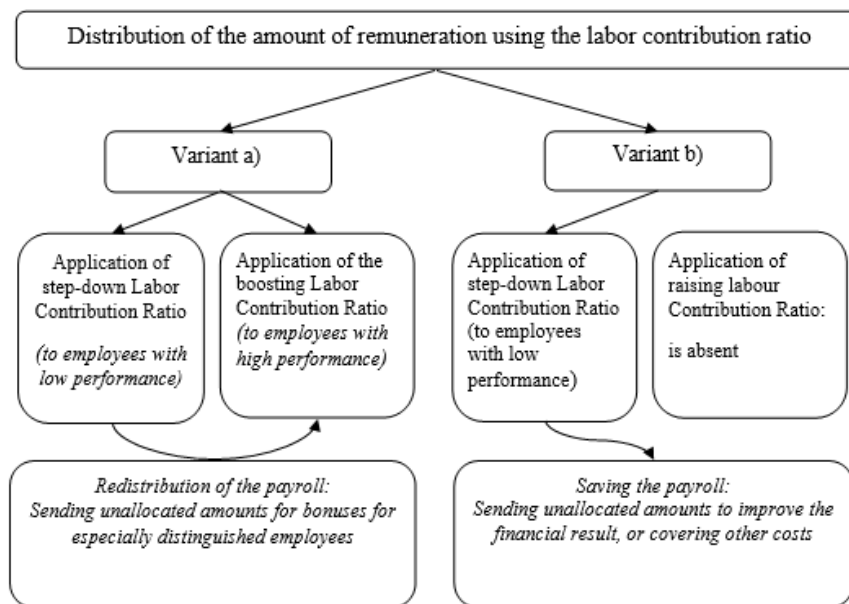


Fig. 3. Scheme of distribution of bonus pay using the labor contribution ratio

The introduction of systemic measures aimed at the formation of optimal motivational tools does not imply additional costs (financial, material, labor), but is carried out through the redistribution of funds within a single item of expenditure (between its constituent positions), or the redistribution of funds between cost items when planning the budget of the branch for the coming year. The term "redistribution", in this case, can be interpreted as a change in the targeted purpose of funds.

IV. CONCLUSION

The undoubted advantage of the proposed measures, from an economic point of view, is the absence of the need for additional material, financial, labor costs, while simultaneously saving obtained by reducing staff turnover and, as a result, increasing labor productivity. The implementation of the proposed measures will make it possible to form a highly effective system of labor motivation, ensure efficient spending of funds for social programs and social incentives for personnel, as well as increase the investment attractiveness of a complex branch network of organizations.

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Implementation of National Projects as the Main Instrument for Increasing the Economic Growth of Russia

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Abstract—The article deals with theoretical aspects of the implementation of the project-based approach in public administration. It considers prerequisites and features of the implementation of national projects developed following the Decree of the President of the Russian Federation dated May 7, 2018, No. 204 “On National Goals and Strategic Objectives of the Russian Federation through to 2024”. The life cycle of the project, the main documents for its implementation, depending on its level are presented. The distinctive differences between the execution of federal state programs carried out within the national projects of relevant ministries, and federal programs on the principle of project management are revealed. The goals of national implementation of projects are identified, a detailed list of them (including a comprehensive plan for the modernization and expansion of the main infrastructure) is provided, and the budget for their implementation in the period of 2019-2024 is analyzed. Moreover, the article gives an analysis of the main results of the implementation of national projects and identifies problems that had an impact on the implementation of these projects in 2019 and measures (including the author’s ones) aimed at eliminating them. The scientific novelty of the article lies in the implementation of a comprehensive analysis of the project approach in public administration through the system of national projects.

Keywords—state project management, national project, state program, target indicators, execution of expenditures on national projects, interactive map of national projects.

I. INTRODUCTION

The current economic conditions in the Russian Federation predetermine the need for the introduction of innovative methods of public administration and development of territories. Among such instruments of state and municipal management is the project-based approach, which has found its implementation in the form of high-priority national projects that are of strategic importance for the country's economy, since they are aimed at ensuring the growth of resource use efficiency, stimulating innovation, and modernizing all levels of state development.

The purpose of the study is to consider the implementation of national projects as a key factor in achieving economic growth of the national economy in the context of budget constraints.

Within the framework of this scientific work, we used such methods as the analysis of published special and subject studies, legislative and regulatory documents, as well as the statistical method and the method of data synthesis.

The key sources of research were official documents reflecting the most notable directions of the social and economic development of the Russian Federation: Main directions of activities of the Government of the Russian Federation through to 2024; Methodological guidelines for the development of national projects (programs); Instruction of the Government of the Russian Federation of February 13, 2019, No. 207-r "On Approval of the Spatial Development Strategy of the Russian Federation through to 2025"; Decree of the President of the Russian Federation dated May 7, 2018 No. 204 "On National Goals and Strategic Objectives of the Russian Federation through to 2024"; Passports of national projects.

II. RESULTS AND DISCUSSION

The project-based approach in public administration is a complex mechanism for the implementation of state goals and objectives under conditions of limited resources [16].

According to the Decree of the Government of the Russian Federation "On the Organization of Project Activities", the main objectives of the implementation of project management are: "compliance of the objectives of the implemented projects with the goals and directions of strategic development; transparency, validity and timeliness of decisions made at all management levels; reasonable and efficient use of resources, including investment provision of conditions to achieve the approved goals of projects in a timely manner, with the required quality and existing resource constraints; effective coordination of subjects" [5].

It shall be noted that at present, there is no generally accepted and well-established concept of a "national project". Nevertheless, the Book of the participant in the implementation of national projects gives the following definition: "A national project is a project to be developed following the Decree of the President of the Russian Federation dated May 7, 2018, No. 204 "On National Goals and Strategic Objectives of the Russian Federation through to 2024" [12].

The national project contains a system of interrelated goal-orienting instructions and the corresponding by-laws and regulations, united by a single concept and ultimate goal. In a sense, a national project represents the testing of a new economic and budgetary strategy for the development of the country for the long term [14].

The life cycle of a national project and the main documents for its implementation are presented in Figure 1 [4].

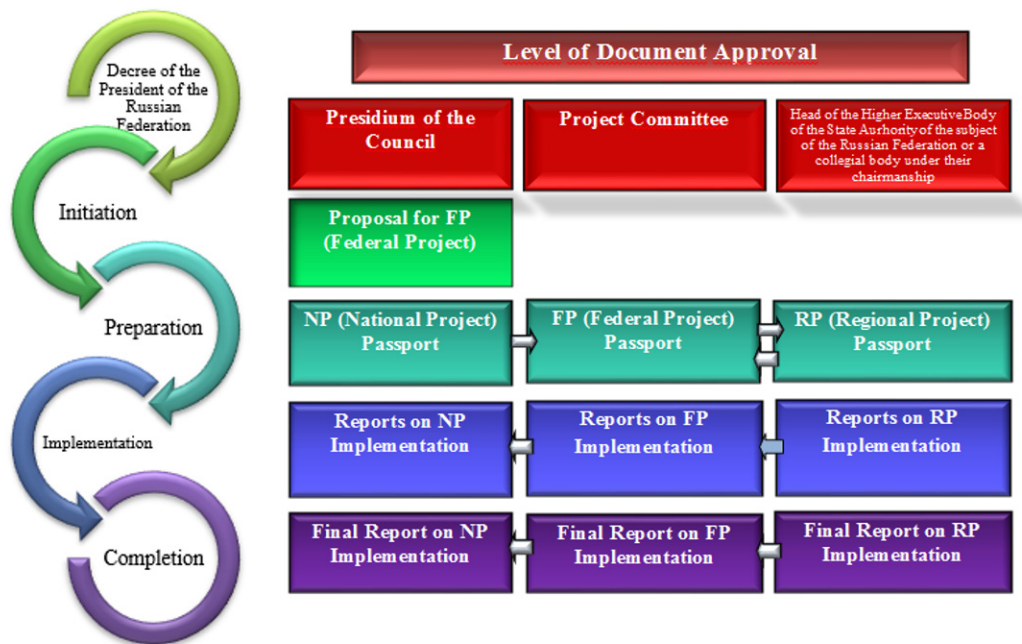


Fig. 1. Project life cycle, main documents

Of course, “national projects do not replace the system of state programs, since there are tremendous differences between these concepts. First, the implementation of the federal state program is carried out within the framework of activities of the relevant federal ministry or several ministries; and national priorities are based on the principle of project management and are implemented with the help of a specially created structure of the federal level using the method of end-to-end planning. Secondly, there are differences in legal regulation: a federal state goal-oriented program has a strictly defined form, which was previously established by a special Federal Law. For national projects, there is no such regulation at the legislative level” [10].

The full-scale implementation of project management in the authorities has started in 2016. The rationale for the implementation was confirmed by the President of the Russian Federation, who decided to ensure the achievement of the national development goals of the Russian Federation through the implementation of national projects. The foregoing is enshrined in the Decree of the President of the Russian Federation dated May 7, 2018, No. 204 “On National Goals and Strategic Objectives of the Russian Federation through to 2024” [2].

Thus, following this Decree, “the main goals include the achievement of the following indicators:

- a) Ensuring sustainable natural growth of the population of the Russian Federation;
- b) Increasing life expectancy to 78 years;
- c) Ensuring sustainable growth in real incomes of citizens, as well as an increase in the level of pension provision above the inflation rate;
- d) Halving the poverty level in the Russian Federation;
- e) Improving the living conditions of at least 5 million families annually;
- f) Acceleration of the technological development of the Russian Federation, increase in the number of organizations carrying out technological innovations up to 50 percent of their total number;
- g) Ensuring accelerated implementation of digital technologies in the economy and social sphere;

h) Entry of the Russian Federation into the list of the five largest economies in the world, ensuring economic growth rates higher than the world rates while maintaining macroeconomic stability, including inflation at a level not exceeding 4 percent;

i) Creation of a highly productive export-oriented sector, which develops based on modern technologies and is provided with highly qualified personnel, etc., in the basic sectors of the economy, primarily in the manufacturing industry and the agri-food industry”.

According to the May Decree, during the year, the Government of the Russian Federation prepared and started to implement 12 national projects in the following key areas: demography, health care, education, housing and urban environment, ecology, safe and high-quality roads, labor productivity and employment support, science, digital economy, culture, small and medium-sized businesses and support for individual entrepreneurial initiatives, international cooperation and export. Additionally, a comprehensive plan for the modernization and expansion of the main infrastructure was prepared, which is also regarded as one of the national projects.

Speaking about the budget of national projects in the period 2019 to 2024, the total amount for 13 national projects (including a comprehensive plan for the modernization and expansion of the main infrastructure) amounted to 25.7 trillion rubles (Fig.2).

Based on the data presented in Figure 2, it can be said that the largest national project in terms of financing is the plan of modernization of the main infrastructure, the total cost of which is 6.35 trillion rubles (excluding the budget of the energy part of the plan). As for the financing of the project, it can be noted that about 3 trillion rubles are to be provided from the federal budget, 58.7 billion rubles are to be provided by regions, and the remaining 3.3 trillion rubles are planned to be attracted from extrabudgetary funds.

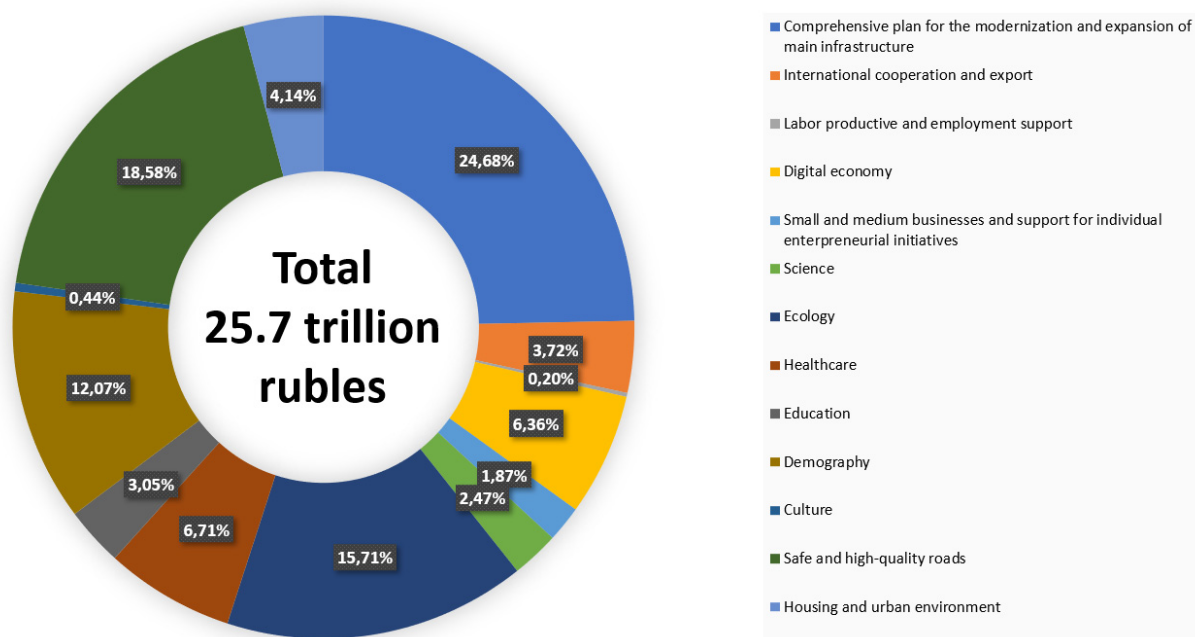


Fig. 2. The budget of national projects until 2024, %

The budget of the Safe and High-Quality Roads national project is 4.78 trillion rubles, Ecology amounts to 4.04 trillion rubles, Demography, which aims to increase the expected healthy life expectancy to 67 years and increase the birth rate, is estimated at 3.11 trillion rubles. In turn, the Digital Economy national project, which is particularly relevant at present, will cost 1.6 trillion rubles excluding alternative sources of funding.

The national projects aimed at labor productivity and employment support (52.1 billion rubles), culture (113.5 billion rubles) and small and medium-sized businesses support (481.5 billion rubles) bear a smaller budgetary burden.

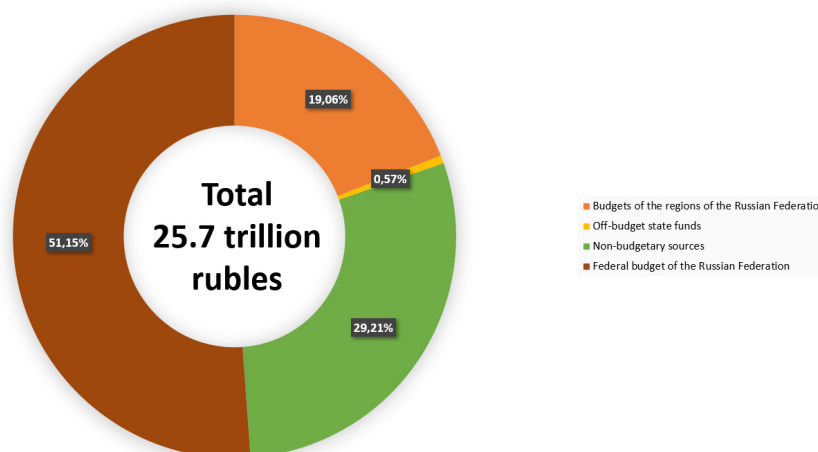


Fig. 3. Main sources of funding for national projects, %

In general, based on the data in Figure 3, it can be noted that for the implementation of all national projects, funds will be attracted from the following sources and in the following amounts [12]: 13.16 trillion rubles from the federal budget; 7.52 trillion rubles from other sources that are outside the framework of the available state budgets; 0.15 trillion rubles from off-budget state funds; 4.9 trillion rubles from the budgets of the regions of the Russian Federation.

Each national project is based on the principle of goal-setting, and each national project includes up to 11 federal projects. The deadlines for all national projects expire on December 31, 2024.

Today, domestic research in the field of national projects is based on two types of assessments of their implementation, i.e. critical and formally positive. The former is associated with the heterogeneity of national projects, unsuccessful experience in the implementation of national projects of past years, while the latter is based on confirmation of the effectiveness of national projects.

The first year of implementation of national projects posed serious tasks for federal and local authorities; some of the projects were not fully implemented, and others were overfulfilled. For example, the actual performance indicators of the Preservation of Unique Water Bodies federal project exceeded the planned ones, i.e. the area of the restored water bodies amounted to more than 3.3 thousand hectares (against the planned 2.7 thousand hectares), and the length of the cleaned coastal strip was more than 24 thousand kilometers (instead of the planned 1.5 thousand kilometers).

We will selectively consider the results of the implementation of national projects in their key areas.

As part of the Healthcare national project, by the end of 2019, the necessary equipment was installed in a unique oncology center, a surgical building and a polyclinic in Kursk, which allowed healthcare professionals to reduce the time to make a diagnosis to a minimum. At present, even large Moscow centers have no such capacity as this medical institution. Nevertheless, speaking about the overall results of the implementation of the Healthcare national project, it should be said that in 2019, all regions of the Russian Federation showed a negative trend associated with the lag in primary health care.

The Healthcare national project has much in common with the Demography national project. The regions are actively involved in the implementation of this national project. Moreover, according to the Decree of the President of the Russian Federation, which entered into force on January 1, 2020, the Maternity Capital was increased by 150 thousand rubles with the birth of the second child, and the total amount of payments to families with two children was increased to 616 thousand rubles. In general, it is planned that the Maternity Capital program will last until at least December 31, 2026.

Besides, within the framework of the President's Demographic Package, a program was implemented to pay monthly Maternity Capital benefits for low-income families starting from January 18, 2020, and this payment amounted to 11 thousand rubles on average. Moreover, earlier, the payments were provided until the child reaches one and a half years, while from January 2020, this period has been increased until the child reaches the age of three. For young families, single-parent families and multiple children families, this is significant support, since, according to statistics, most of these families invest in improving their living conditions.

Some regions of the Russian Federation face an urgent need to relocate people from dilapidated housing. Thus, in 2019, almost 25 thousand people were been resettled successfully; however, in general, the program has not been fully implemented, since there is an urgent need to select a land plot and the necessary infrastructure, as well as construction companies in advance. Taking into account the gradual implementation of the national project, it is planned to relocate about 530 thousand people by 2024. An important part in this process is assigned to the reduction of rates on mortgage loans; according to the federal project, the Central Bank of the Russian Federation plans to reduce the rate on it to below 8% by 2024. Among the key results of 2019 for the Housing and Urban Environment national project, it is necessary to emphasize the reduction of the risk level of money invested in housing through the use of the so-called escrow accounts, which have become a full-fledged new standard for working in the market thanks to the national project.

At the end of 2019, as part of the implementation of the Ecology national project, many regions did not manage to establish work with the federal operator, as a result of which the overall cash execution of the national project amounted to 39.8%. However, funding has already begun for the construction of four waste treatment plants, with a particular focus on volunteering. In 2019, more than 900 thousand Russians took part in actions to clean up the banks of rivers and lakes from garbage and clean up the territories of national parks. By 2024, due to the implementation of the national project, 191 large waste burials among those that are now assigned to large cities will be eliminated.

As for the Digital Economy national project, it should be said that in 2019, the State Duma of the Russian Federation failed to adopt a large package of documents on the digital economy, which in many ways served as a factor constraining the implementation of the national project [15]. At the end of 2019, cash execution was only 27.3%. Nevertheless, several experts note that after the adoption of this package of documents, the underachievement can be compensated for in just a few quarters.

The most underperforming programs are those related to road construction and increase of labor productivity of Russians, since last year, almost no funds were allocated for these programs. Specifically, the Increase of Labor Productivity and Employment Support project was not funded at all in the first quarter of 2019, despite the fact that according to the plan, it was intended to allocate about 7 billion for this project.

In accordance with the plan for the implementation of the Safe and High-Quality Roads project, the percent of roads in Russia that meet the standards of urban complexes should be doubled, and the percent of regional roads should increase by almost 8% by 2024. Additionally, it is necessary to eliminate 50% of the places of problematic, most damaged roads, as well as reduce by 10% the number of federal and regional routes operating in congestion mode. However, the ambitious plans for the road project are far from reality. According to the Accounts Chamber, the project was financed at the level of 0.1% in 2019. However, their positive aspects can also be noted, i.e. the road safety program is one of the most successful, the reduction in deaths from road traffic accidents in 2019 comprised 8.8% concerning the same indicator in 2018.

In general, according to the Ministry of Finance of the Russian Federation, which has analysed the results of the implementation of national projects in 2019, 1.6 trillion rubles were spent out of 1.75 trillion rubles budgeted for the implementation of national projects. Moreover, the most effective project management was achieved in the following regions: Belgorod, Leningrad, Ulyanovsk regions, the Republic of Tatarstan, Khanty-Mansi Autonomous Okrug and many other regions [13].

The main result of the implementation of national projects designed for the performance of the President's May Decree should have been in real changes for the better in the life of Russians, but Vladimir Putin himself on December 25, 2019, at the final meeting of the Council for Strategic Development and National Projects, noted that the goals set within the framework of national projects in 2019 were not fully achieved. In turn, Former Prime Minister of the Russian Federation Dmitry Medvedev, who was the direct curator of the implementation of federal programs until January 15, 2020, also officially recognized the disruption of national projects.

In our opinion, the key problems in the implementation of national projects were:

1. External (sanctions and trade wars; country's dependence on external restrictions);
2. Internal:
 - systemic (inability of the public administration system to work in the reconfiguration mode; insufficient quality of interaction between the federal center and the regions; lack of coordination of maps of national projects with regions);
 - problems with the use of funds allocated for national projects (lack of flexibility in financing; irregular spending (most of the budget execution is shifted to the end of the year); the insufficient level of conveyance of funding for national projects to the regions);
 - poor awareness of the population.

It should be noted that the presence of violations during the implementation also had a significant impact on national projects. At the end of 2019, inspections revealed violations, including those qualified as crimes, which fall under the Criminal Code. But mostly it was about suspicion of fraud, bribery, abuse of office, the conclusion of contracts with dubious executive agents. The majority of violations recorded by the inspection bodies involved the contract system. In some cases, customers split orders in order not to hold tenders, delay payment of work, and do not impose fines on unscrupulous suppliers. Such cases are noted in all regions of the country.

On January 16, 2020, the head of the Federal Tax Service Mikhail Mishustin was approved as the new Prime Minister. Among his first instructions were the clarification of national programs, taking into account the tasks set by the President in the message, adjusting the plan to implement the national goals of the Ministry of Economic Development of the Russian Federation, which will cost the Russian budget about 450 billion rubles, and this is only in 2020. Over the next three years, the amount will reach about 4 trillion rubles.

To overcome the problems identified by the results of the first year (2019) of the implementation of national projects, it is advisable to carry out the following activities:

- Conclusion of agreements with regions on subsidies from the federal budget for the entire period of implementation of national projects, which will allow regional authorities to think and plan for the future;
- Coordination of maps of the national projects with the regions by the departments in charge of national projects;
- Timely conveyance of financial resources to the performers as soon as possible, so that the results of national projects are completed on schedule;
- Improvement of the system of control over funds in order to spend them only for their immediate purpose and to obtain the maximum social and economic effect for the country as a whole and each region in particular;
- Early identification and prevention of risks of possible misuse of funds through closer interaction with structures such as the General Prosecutor's Office, the Federal Security Service, the Ministry of Internal Affairs, Rosfinmonitoring (Federal Financial Monitoring Service), etc.
- Allocation of separate funds for information support of national projects.

III. CONCLUSION

The analysis of modern domestic studies in the field of implementation of national projects has shown, that the greatest influence is focused on the mechanisms of financing, comparative analysis of the activity in the allocation of funds, comparison of the planned volumes of budgets, the risks of misallocation of money. However, one cannot but take into account that for each project, in addition to the economic and political effect related to the amount of funding or transparency of spending, specific measurable results and the willingness of society to notice and recognize the effects have a significant impact on the effectiveness of the implementation of a particular national project. Due to this, currently, the openness of national projects, the availability of the results of their implementation for the population of the country are of great importance. For this purpose, the characteristic of national projects by target indicators is included in the Federal Plan of Statistical Work.

As part of activities to raise awareness of the population about the implementation of national projects, in our opinion, it is necessary to consider the experience of Nizhny Novgorod Oblast and integrate its practice in all regions of the Russian Federation.

Thus, according to the instruction of Russian President Vladimir Putin on the openness of the results of the implementation of national projects at the end of 2019, the Governor of Nizhny Novgorod Oblast Gleb Nikitin presented an interactive map of national projects (Kapra52.pф). It shows in real time the objects, where the work is in progress, i.e. it gives the name of the object, its description, current status, amount of funding and technical and economic indicators. In total, more than 7.5 thousand objects are already placed on the map, information on them is regularly updated and supplemented.

Thus, by adopting the experience of Nizhny Novgorod Oblast by other regions of the Russian Federation in informing the population about the progress of the implementation of national projects, it will be possible to achieve a greater understanding on the part of the population of certain measures carried out by the state in various fields of activity. In the future, in our opinion, it will be reasonable to improve the interactive map and create a specialized unified platform that will allow citizens to get access to the information about national projects in all regions by opening the application on a mobile device. Here, Vladimir Putin's remark is on target: "People do not care what laws and regulations we have adopted, or what organizations we have established once again. They want to see the result."

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Research on the Impact of Macro-Region Development on the State Economy

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Abstract—The article is devoted to the study of the key parameters of the macro-region's development and their impact on the national economy. The country's macro-region is viewed as a modern instrument of economic policy and an integrated unit of state space. The following are proposed as the main indicators characterizing the development trends of the macro-region's territory: population dynamics, labor productivity index, creation and functioning of territorial clusters, the share of investments in fixed assets to GRP, and resource transfer. A methodology for analyzing the indicators of regions within the macro-region of the country is proposed, and its approbation is carried out on these territories of the Central Black Earth macro-region. A conclusion about the positive dynamics and stable state of indicators of the regions that are part of the macro-region is formulated. The positive effects of interaction between regions within the boundaries of the macro-region due to the mobility of labor resources, tools for creating production chains, and the development of regional clusters are revealed. The aspects of the influence of the development of macro-regions on the economy of the state are revealed, such as scientific, technological and innovative development, development of the resource base, transport and social infrastructure, increasing the efficiency of the economy based on expanding space.

Keywords—macro-region, development of the macro-region, development indicators of the macro-region, industrial cluster, index of labor productivity

I. INTRODUCTION

Transformation and development of macro-regions can be called one of the vectors of socio-economic growth of the national economy. The resources available in national economies are well studied, and their quality and efficiency need to be improved through synergy. The lack of interaction between regions and tools for creating production chains that unite territories are negative factors of economic development. The formation of macro-regions is a modern tool of economic policy, and the macro-region itself becomes an integrated unit of the Russian economy, forming its economic structure [1,2,3,4]. Currently, the study of aspects of indicators of

development of modern macro-regions of Russia and their impact on the country's economy has not been sufficiently developed.

II. METHODOLOGY

Based on the review and systematization of scientific and practical theories, the content of the categorical apparatus of the macro-region and indicators for assessing its development are presented.

Grouping, analysis, and tabular methods are used to study the dynamics of the main indicators that characterize the development trends of the Central Chernozem macro-region of Russia in 2014-2018.

On the basis of generalization, a set of effects from the impact of the development of macro-regions on the state economy is formed.

III. RESULTS AND DISCUSSION

The achievements of the country's economy are made up of the results of the functioning of territorial economies. A prerequisite for the effectiveness of the socio-economic system at any level is the availability of resources and their free movement [5,6,7].

It is possible to determine the results of the development of macro-regions based on the study of population dynamics, labor productivity, industrial clusters, investment in fixed assets [8].

It seems obvious to us that there is a direct correlation between the performance of macro-regional socio-economic systems and the development of the national economy.

The concentration of the population on the territory of macro-regions contributes to improving the efficiency of trade and industry, which contributes to the overall economic development of the country. According to Limonov L. E., "population growth in places where it is concentrated allows achieving more than proportional growth of economic activity" [9]. This indicates an increasing return on scale at the aggregate level of the macro-region. Consider the dynamics of population indicators in the Central Chernozem macro-region (table 1).

TABLE I. DYNAMICS OF POPULATION INDICATORS IN THE CENTRAL CHERNOZEM MACRO-REGION

Indicator	2014	2015	2016	2017	2018	2018/ 2014, %
Population by territory:						
Belgorod region, thousand people	1548	1550	1553	1550	1548	100.0
Voronezh region, thousand people	2331	2333	2335	2333	2328	99.9
Kursk region, thousand people	1117	1120	1123	1115	1107	99.1
Lipetsk region, thousand people	1158	1156	1156	1150	1144	98.8
Tambov region, thousand people	1062	1050	1040	1033	1016	95.7
Total Central Chernozem macro-region, thousand people	7216	7209	7207	7181	7143	99.0
Russian Federation, thousand people	1462 67	1465 45	1468 04	1468 80	1467 81	100.4
Share of the population of the Central Chernozem macro-region in the total population of the Russian Federation, %	4.93	4.92	4.91	4.89	4.87	98.8

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>

As can be seen from table 1, about five percent of the population of the Russian Federation lived in the Central Chernozem macro-region during the study period. There was a decrease in the population in the Kursk, Tambov and Lipetsk regions of the Central Chernozem macro-region, which is a negative factor for the development of industries in this territory.

The most important determinant of the development of a macro-region is population migration within its borders. Let's consider the dynamics of population movement indicators in the Central Chernozem macro-region (table 2).

TABLE II. DYNAMICS OF POPULATION MIGRATION INDICATORS IN THE CENTRAL CHERNOZEM MACRO-REGION

Region	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
	<i>Distribution of the number of arrivals by destination, in % of the total number of arrivals</i>									
	<i>Within the region</i>					<i>From other regions of Russia</i>				
<i>Russian Federation</i>	44,8	43,4	43,4	42,0	42,0	42,7	44,0	44,4	45,6	46,5
<i>Central Chernozem macro-region</i>	43,5	41,1	40,6	41,5	44,0	34,3	34,3	33,4	33,3	34,2
Belgorod region	41,7	40,4	39,9	41,2	43,0	39,5	38,1	38,3	37,2	36,0
Voronezh region	46,2	42,9	41,9	40,9	40,8	35,6	37,7	35,5	33,5	34,0
Kursk region	49,4	42,0	37,2	42,4	47,7	35,5	31,7	28,7	32,8	32,7
Lipetsk region	46,3	43,4	44,1	45,9	46,4	34,2	32,2	31,7	33,2	33,5
Tambov region	33,9	36,7	40,0	37,1	42,1	26,6	31,8	32,9	29,6	34,9
<i>Russian Federation</i>	47,5	45,7	45,9	43,9	43,1	45,4	46,4	47,0	47,8	47,7
<i>Central Chernozem macro-region</i>	48,8	45,4	45,6	42,7	43,2	41,2	42,3	39,8	39,2	38,3
Belgorod region	49,5	46,1	46,5	43,5	46,2	45,5	46,9	45,0	41,0	38,2
Voronezh region	55,3	50,5	49,4	46,3	44,3	36,9	39,7	37,6	38,0	36,7
Kursk region	55,2	51,6	45,8	41,4	46,3	43,0	46,2	40,6	39,3	39,0
Lipetsk region	49,9	46,5	49,5	45,1	46,0	43,6	43,8	40,0	39,3	39,9
Tambov region	34,2	32,5	36,8	37,1	33,1	37,1	34,9	35,9	38,6	37,6

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>

As can be seen from the data in table 2, in the regions of the Central Chernozem macro-region, more than a third of the number of arrivals and departures accounted for interregional movement. An even larger share in the structure of arrivals and departures is formed due to the movement of the population within the regions.

It should be emphasized that the active movement of citizens between regions stimulates the development of various sectors of the national economy.

Productivity of human, capital and natural resources is considered to be the most important macroeconomic indicators, as well as an indicator of the level of socio-economic development and competitiveness of macro-regions. The amount of productivity determines the amount of remuneration and profitability.

Let's consider the dynamics of the labor productivity index values in the Central Chernozem macro-region (table 3).

TABLE III. DYNAMICS OF THE LABOR PRODUCTIVITY INDEX OF THE CENTRAL CHERNOZEM MACRO-REGION, IN % COMPARED TO THE PREVIOUS YEAR

Region	2014	2015	2016	2017	2018
Belgorod region	102.8	103.2	102.3	103.0	102.8
Voronezh region	106.3	101.0	101.4	102.4	102.6
Kursk region	105.0	103.2	103.3	102.6	104.2
Lipetsk region	105.4	101.3	101.5	101.4	101.9
Tambov region	106.9	107.0	96.8	102.4	104.1
<i>Central Chernozem macro-region</i>	<i>105.3</i>	<i>103.1</i>	<i>101.1</i>	<i>102.4</i>	<i>103.1</i>
<i>Russian Federation</i>	<i>100.8</i>	<i>98.7</i>	<i>100.1</i>	<i>102.1</i>	<i>102.8</i>

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>.

As can be seen from table 3, in the regions of the Central Chernozem macro-region, the values of the labor productivity index increased annually. The growth rate of the labor productivity index in the macro-region exceeded the national level of this indicator, which indicates a favorable productivity environment and the attractiveness of this macro-region for business.

According to many economists, high productivity in the macro-regional economic system can be achieved through the functioning of clusters [10, 11, 12, 13]. Because combining the resources and capabilities of organizations in one or more neighboring regions makes it possible to implement incredible projects for each of them.

According to the register of the Ministry of industry and trade of Russia, four industrial clusters operate in the Central Chernozem macro-region (table 4).

TABLE IV. INDUSTRIAL CLUSTERS OF THE CENTRAL CHERNOZEM MACRO-REGION

The name of the cluster	Number of participating companies	The region of the location of the cluster
Electrical engineering cluster Kursk	10	Kursk region
Cluster of oil and gas and chemical equipment manufacturers in the Voronezh region	16	Voronezh region
Interregional pump-building cluster	10	Voronezh region, Lipetsk region
Cluster «Lipetskmash»	17	Lipetsk region

Source: Ministry of industry and trade of Russia, https://www.gisip.ru/reg_clusters.

As can be seen from table 4, resources and creative potential separated by intra - and inter-regional barriers are consolidated in the Central Chernozem macro-region in the form of industrial clusters. Existing macro-regional industrial clusters contribute to the modernization of the economic structure and accelerate the socio-economic development of the country.

One of the priority mechanisms for ensuring the development of all economic regions of the country is investment in fixed assets.

Consider the dynamics of investment in fixed assets in the Central Chernozem macro-region (table 5).

TABLE V. SHARE OF INVESTMENT IN FIXED ASSETS TO GRP
IN THE CENTRAL CHERNOZEM MACRO-REGION, %

Region	2014	2015	2016	2017	2018
Belgorod region	19.5	21.2	19.7	18.2	15.5
Voronezh region	33.5	32.8	33.2	32.7	29.3
Kursk region	24.7	21.9	25.8	26.1	28.2
Lipetsk region	26.5	25.9	26.4	28.1	22.1
Tambov region	38.7	37.1	35.3	37.2	32.0
Central Chernozem macro-region	28.6	27.8	28.1	28.5	25.4

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>.

As can be seen from table 5, in the regions of the Central Chernozem macro-region, real investments were made annually in different segments of the territorial economic complex, which represent an opportunity to expand production capacities.

When subjects interact in a macro-region, a synergistic effect and additional benefits arise from the complementarity of regional ones [14, 15, 16].

The influence of macro-regions on the country's economy is manifested on the basis of positive effects:

- overcoming heterogeneity in territorial development;
- transfer of territorial socio-economic systems to a qualitatively new state;
- improving the functioning of the interregional cooperation infrastructure;
- saving and rational combination of resources;
- the emergence of new conditions for production and economic activities based on complementarity;
- providing the economy with a sufficient number of high-quality labor resources;
- increasing the capitalization of territories;
- development of new technologies and innovations;
- development of social results of economic activity and replication of the best experience in creating a comfortable living environment for the population;
- improving the use of competitive advantages of territories;
- increments of cash flow due to the addition of cash flows of companies included in clusters [17];
- sharing of infrastructure objects.

IV. CONCLUSIONS

Spatial development can be the answer to modern global challenges for the economy. A very effective method of territorial development in this regard is economic zoning based on the creation of macro-regions.

The evolution of the spatial organization of the Russian Federation is based on the vector of strengthening cooperation between regional socio-economic systems.

The functioning of macro-regions should contribute to the further development of regional clusters that unite not only enterprises related to technological cooperation, but also other organizations on the basis of homogeneity.

The main areas of influence of the development of the macro-region on the state economy should include:

- favorable impact on the acceleration of economic growth, scientific, technological and innovative development;
- development of the resource base as the basis of social reproduction;
- development of transport and social infrastructure;
- improving the efficiency of the economy by expanding the space.

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