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Improvement of the Monitoring System of Socio-Economic Development of Municipality

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ABSTRACT

The article is devoted to improving the system of monitoring the socio-economic development of a municipality as one of the main management tools. The relevance is due to the lack of a unified approach to understanding the management of socio-economic development at the municipal level, the importance of monitoring in this process, as well as the insufficient level of its effectiveness and orientation to the implementation of strategic objectives. The **purpose** of the research is to develop a methodological approach to assessing the socio-economic development of a municipality to ensure effective monitoring in current and strategic management. The **methodological basis** of the article is the method of generalization and comparison, statistical analysis, sociological survey, economic and mathematical modeling and the method of expert assessments. The most common methods of assessing the effectiveness of the management of socio-economic development of municipalities are analyzed in the article, their features and disadvantages are highlighted. The author's approach is proposed, based on the analysis of existing approaches to understanding the category of "municipal formation" and based on the totality of the interaction of four macro-systems (social, economic, municipal establishments, management). In the article sections of the methodological approach to assessment are substantiated and developed, requirements for their implementation are formulated, and approbation is carried out on the example of the municipality "Kirov City". The novelty consists in the proposed methodological approach to assessing the socio-economic development of a municipality, which allows a comprehensive analysis of the results achieved over a long-term period in dynamics, including determining the level of competitiveness of the municipality and public assessment, and monitoring socio-economic development within the selected corridor of sustainable development in the long term. The results can be used by regional authorities and local governments to improve the effectiveness of management decisions, and by local stakeholders (business structures and the local population) to formulate development strategies taking into account trends and prospects for the development of the territory.

Keywords: municipal management; socio-economic development; monitoring system; municipality; assessment methodology; strategic management; macro-subsystems; public assessment

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INTRODUCTION

The system of management of socio-economic development (SED) of municipal entities (MEs), which has emerged as a result of numerous reforms, does not fully meet the requirements of the time and does not demonstrate sufficient efficiency, which has been repeatedly stated by public authorities at the federal and regional levels, by scientists and experts, as well as representatives of the municipal community [1]. Therefore, the improvement of management mechanisms and tools at the municipal level is a relevant research task.

Among the variety of existing tools, the authors believe that the monitoring system of socio-economic development of municipal entities is of particular importance, since the results of its application allow making effective management decisions both in the current and long-term periods, thus forming an institutional basis for managing socio-economic development of municipal entities as a whole.

The present study aims to form a methodological approach to the assessment of socio-economic development of municipal entities, which will ensure effective monitoring of activities in the implementation of current and strategic management.

PECULIARITIES OF EXISTING METHODOLOGIES FOR ASSESSING THE EFFICIENCY OF MANAGEMENT OF SOCIO-ECONOMIC DEVELOPMENT OF TERRITORIES

To date, science and practice have formed quite a significant number of methods for assessing the effectiveness of management of socio-economic development of territories, based on various approaches and principles. The following can be identified as the most common and relevant for the municipal level:

1. A method of statistical analysis that allows, through the use of various socio-economic indicators, to identify the degree of changes in the socio-economic development of municipal entities and trends in their dynamics [2], which has been used by Rosstat since 2006 in the formation of passports of municipal entities, which currently contain up to 370 indicators, organised into 18 groups.

2. Expert assessments, which mean that specialists in the field (experts) select and analyse criteria for the effectiveness of local self-government bodies' activities.

3. Public assessments representing the opinion of the population of the territory on the level of socio-economic development of municipalities, as well as on other topical issues [3, p. 61–63].

4. Efficiency assessment methodology approved by the Russian Government Resolution No. 1317 dated 17.12.2012, which provides a list of 14 basic and 27 additional quantitative and qualitative indicators of socio-economic development of municipal entities in the following sections: economic development, preschool education, general and additional education, culture, physical culture and sports, housing construction and provision of citizens with housing, utilities and communal services, organisation of municipal administration.[1]

5. The methodology for calculating the sustainable urban development index developed by the SGM rating agency (Sustainable Growth Management Agency, SGM), developed on the calculation of an integral indicator based on 43 statistics reflecting the development of five major socio-economic blocks: economic development, urban infrastructure, demography, social infrastructure, and ecology.[2]

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[1] Resolution of the Government of the Russian Federation of 17.12.2012 No 1317 "On measures to implement the Decree of the President of the Russian Federation of 28.04.2008 № 607 "On assessment of the effectiveness of local government of urban districts and municipal areas". URL: http://ivo.garant.ru/#/document/70286210 (accessed on 08.07.2023).

[2] S.G.M. Agency LLC (official website). URL: https://agencysgm.com/ratings/

6. The CAF methodology (Common Assessment Framework), or "Common Assessment Framework", which has proven itself in European countries and allows to assess changes in efficiency and quality with the help of the organisation's employees, service users and society as a whole through self-assessment and involvement of external experts [4, p. 83]. At the same time, the CAF structure is based on 28 indicators and 9 criteria divided into two groups (opportunities and results) [5].

7. EPUS ("Effective Public Service") methodology, which is an integrated assessment of the state and municipal service based on quantitative and qualitative performance indicators [6, p. 2039].

8. Key Performance Indicator (KPI) methodology, which provides for the development of tools for calculating performance indicators in accordance with the socio-economic development directions, as well as defining the system of responsibility of local self-government bodies for their achievement. [7].

9. The Municipal Governance Index (MGI) is a multi-criteria assessment of the quality of local government used for international comparison of municipalities. [8, p. 36].

All the presented methodologies have certain advantages and can be used to assess socio-economic development of municipal entities under certain assumptions. However, none of them can act as a universal one, because, on the one hand, each of the methodologies meets certain tasks, and on the other hand,— a municipal entity, being a complex socio-economic system, is characterised by the dynamism of development and a large array of indicators, which leads to the need for constant revision of efficiency criteria and the formation of additional evaluation techniques.

Thus, it seems quite reasonable to conclude not about the need for a specific unified methodology for assessing socio-economic development of municipal entities, but about the need to develop a certain methodological approach that takes into account the specifics of a municipality as a complex system, as well as the peculiarities of the development of a particular territory, taking into account the high level of differentiation inherent in Russia [9] and the interests of its key stakeholders, which are the business and the population.

In order to form this methodological approach, it is advisable to identify and systematise the key shortcomings (and features) of the reviewed efficiency assessment methodologies in order to offset their negative impact. Such shortcomings include:

- lack of a unified point of view on the management process of socio-economic development of municipal entities and their components;
- application of socio-economic indicators that characterise not the direct activity of local self-government bodies, but the results achieved at the expense of higher levels of government and initial conditions;
- high labour intensity of calculations due to a large number of statistical indicators (as well as the use of duplicating factors);
- complexity of objective use of expert and public assessments in monitoring socio-economic development of municipal entities;
- lack of orientation of the existing methodologies for strategic decision-making, as they mainly cover short-term periods of socio-economic development;
- insufficient level of motivation, responsibility, and professional culture in the current management system of socio-economic development of municipal entities, which formalises the monitoring procedure.

MUNICIPAL FORMATION AS A COMPLEX SOCIO-ECONOMIC SYSTEM: PECULIARITIES OF MANAGEMENT

Taking into account the above list of shortcomings of existing methodologies, as well as the goal-setting with regard to the formation of a methodological approach to the assessment of socio-economic development of munici-

pal entities, it seems necessary to clarify that a municipal entity is understood as a managed complex socio-economic system. This understanding directly affects the statistical base and the directions of assessment, which is a priority in monitoring.

The analysis of the works of domestic and foreign scientists, as well as the existing legal framework has shown that in theory and practice there are several approaches to the interpretation of the category of "municipal entity".

Within the framework of the first one, which is reflected in the normative-legal acts of the Russian Federation, a municipal entity is considered as an administrative entity with certain territorial characteristics.[3]

Representatives of the second approach V.B. Zotov [10, p. 95], A.E. Leshin, Yu.N. Lapygin [11, p. 6] emphasise the resource component of municipalities, while emphasising that human and financial capital is the system-forming resource.

The third approach, advocated by D.A. Gaynanov [12], V.V. Lukashov [13, p. 14], A.F. Khurmatullina [14], considers municipal entities as a set of socio-economic characteristics that are grouped according to certain characteristics within different spheres and subsystems.

This approach is of the greatest interest for the purposes of organising the monitoring of socio-economic development of municipal entities, as it focuses on the interconnectedness and interdependence of spheres within the system of municipal entities, however, it seems appropriate to consider macro-subsystems as constituent elements of municipal entities. This category is widely used in the implementation of strategic management, being a large constituent part of a complex socio-economic system, distinguished on a functional-subject basis. A macro subsystem is characterised by its own management process, goals, criteria, and the final result of its activity [15, p. 90–91]. In the context of application of monitoring over socio-economic development of municipal entities as a management tool, it is macro-subsystems with corresponding subsystems in their structure, distinguished in accordance with the subject of management (property, finance) or by sector (construction, industry, education), predetermine the specificity of socio-economic development and management of a particular territory on the basis of their interaction on the one hand, and through the allocation of targets, taking into account the existing conditions — on the other hand.

Within the framework of the formation of a methodological approach to the assessment of socio-economic development of municipal entities, it is necessary to consider the interaction of the four macro-systems:

- *social*, involving the formation of conditions for the comprehensive improvement of the social environment and the development of human capital;
- *economic*, which ensures macroeconomic proportions and covers material production sectors and individual spheres of activity;
- *municipal economy*, which includes infrastructural support for the life of local municipal entities;
- *managerial*, covering the interaction of local self-government bodies, as well as financial relations in the budgetary and property spheres.

The choice of these macro-subsystems is conditioned, on the one hand, by the analysis of the main powers granted to local authorities and the tasks they face, as well as their unification on the functional basis, and, on the other hand, by compliance with the principle of reasonable sufficiency, which, in the context of this study, implies the systematisation of a fairly wide list of powers of local self-govern-

[3] Federal Law of 06.10.2003 No. 131-FL (edited on 10.07.2023) "On General Principles of Organisation of Local Self-Government in the Russian Federation". URL: https://www.consultant.ru/document/cons_doc_LAW_44571/ (accessed on 12.07.2023).

ment bodies within the framework of macro-subsystems. The latter, as large units representing, in fact, the key strategic directions of development of any territory, in the context of a particular municipality, are supplemented by individual vectors of development within the framework of long-term planning, for example, an emphasis on ecology in the case of acute problems related to environmental protection in the municipality (in this case, the ecological direction is generally included in the macro-subsystem of the municipal economy within the framework of life safety), or additional emphasis on inter-municipal co-operation, which is especially important when a municipal entity is a potential core or part of an agglomeration and separate development of tools for effective inter-municipal interactions is required (with both inter-municipal co-operation and interaction with higher authorities being part of the management macro-subsystem).

The same applies to the economic specialisation of the territory, which is singled out as a separate direction in order to concentrate the management impact within the framework of strategic management. For example, agricultural, tourism, logistics or innovation components are often prioritised. Taking into account the fact that the proposed methodological approach is considered universal for any municipality, the allocation of other macro subsystems at the monitoring stage does not seem appropriate.

METHODOLOGICAL APPROACH TO THE ASSESSMENT OF SOCIO-ECONOMIC DEVELOPMENT OF A MUNICIPALITY: ESSENCE, STRUCTURE, AND SPECIFICS OF APPLICATION

Each macro-subsystem contains functional subsystems, which should be characterised by statistical indicators that meet the following requirements [16]:

- completeness and significance;
- internal controllability, which implies the possibility for local self-governments to apply means of influence to achieve the indicators;
- compatibility and reliability, which means the necessity and expediency of using information sources containing objective and unified values of indicators;
- economic feasibility, which means the use of indicators available in statistical and departmental reporting to minimise additional costs;
- strategic orientation, reflecting the need to analyse the socio-economic development of municipal entities over a long-term period (at least ten years).

The given set of requirements is not extensive, but it seems to be minimally sufficient for the formation of the municipal statistical base of the first section of the proposed methodological approach to the assessment of socio-economic development of municipal entities and the information basis for the others. The sources of data are the territorial bodies of the Federal State Statistics Service and the administration of the municipal entity under study. At the same time, statistical indicators are selected from 2 to 6 pieces (quantitative and qualitative) to characterise one subsystem in the context of a large macro-subsystem for a period of at least 10 years in accordance with the following list:

1. Social macro-subsystem:
1.1 Demographic development.
1.2 Health care.
1.3 Labour resources.
1.4. Education.
1.5. Culture, arts, and leisure.
1.7. Physical education and sport.
1.8. Youth and family policy.
2. Economic macro-subsystem:
2.1 Industry.
2.2 Investment activity.
2.3. Small and medium-sized enterprises.
2.4. Consumer market.
2.5. Tourism.

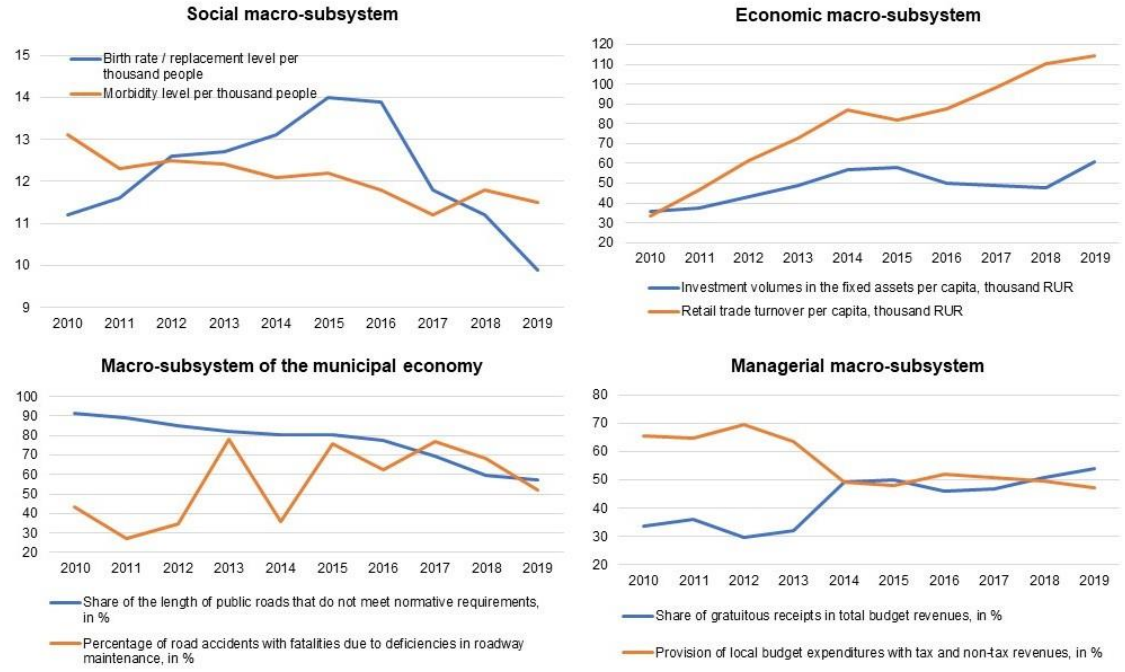

Fig. 1. **Fragment of the analysis of trends in the development of macro-subsystems of the municipality "Kirov City" for the period 2010–2019**

Source: compiled by the authors.

3. Macro-subsystem of the municipal economy:

3.1. Housing and public utilities complex.

3.2 Construction.

3.3. Road and transport infrastructure.

3.4. Life safety.

4. Managerial macro-subsystem:

4.1 Municipal finances.

4.2 Municipal property.

4.3 Organisation of Municipal Management.

A detailed list, including more than 65 indicators in the context of these functional subsystems, is presented in the study [17] and allows us to get a comprehensive view of socio-economic development over the long term, to identify key trends and problems.

Approbation of the first section of the proposed methodological approach was carried out on the example of the municipal entity "Kirov City" for the period from 2010 to 2019; some of its results are presented in *Fig. 1*.

The trends of socio-economic development of municipal entity "Kirov City" formed during the ten-year period allowed to identify the key problems presented in *Table 1*.

An effective monitoring system of socio-economic development of municipal entities should give an idea not only about problems and trends, but also about the position of a given municipal entity among others, which will make it possible to analyse the level of its competitiveness. For this purpose, it is advisable to use both expert and statistical assessments, which meets the requirements of comprehensiveness and complexness.

Expert assessment involves analysing the position of municipal entities in all-Russian ratings in certain areas of socio-economic development; in this case, the comparison of a particular municipality with other municipal entities of Russia is carried out without statistical (additional) analysis. In addition, it is especially important in monitor-

Table 1

Key problems of the municipality "Kirov City" based on the results of the analysis for 2010–2019

Name of the Macro sub-system	Problems
Social	1. Disproportions of the demographic environment (imbalance of sex and age structure, population decline). 2. Low level of average monthly nominal accrued wages. 3. Reduction in the number of officially employed population. 4. High workload of pre-school institutions for children. 5. Insufficient number of modern physical training and sports facilities. 6. The problem of stability of the family establishment
Economic	1. Relatively low volumes of shipments of own-produced goods and work performed by own forces. 2. Low growth rates of investments in fixed assets. 3. Insufficient level of innovation activity of small and medium-sized enterprises. 4. Disproportions in the location of trade and public catering enterprises in the city. 5. Insufficiently developed hotel service on the territory of the city
Municipal economy	1. Deterioration and obsolescence of the infrastructure of the housing and utilities complex. 2. Relatively low level of housing provision. 3. The problem of road surface quality. 4. Increase of crimes committed in urban public places. 5. Environmental problems (deterioration of air quality, handling of solid municipal waste, pollution of water bodies).
Managerial	1. Low level of financial independence of the municipal budget. 2. High level of municipal debt. 3. Comparatively low level of satisfaction of the population with the activities of local self-government bodies. 4. Low degree of digitalisation of municipal administration

Source: compiled by authors.

ing socio-economic development of municipal entities to compare the positions of a municipality in the same rating in dynamics, which makes it possible to see how far this territory of the Russian Federation is ahead of or behind others in terms of the pace of development. In order to correctly select and use all-Russian ratings, the proposed methodological approach should be guided by such requirements as the following:

- openness and comprehensibility of the rating compilation methodology, which implies its public nature;
- reliability and objectivity of the initial data, which implies the priority of choosing those ratings that are based on the materials of state and departmental statistical reporting, as well as official reports of enterprises and organisations, and not only on expert assessments;
- relevance and dynamic nature of rating assessments, which due to the variability of socio-economic processes is expressed in the expediency of using regular ratings;
- the level of reputation of the organisation compiling the rating.

In accordance with the above requirements, the ratings of Russian cities formed during the study period were selected for the assessment of the "Kirov City" Municipality (*Table 2*).

Based on the data contained in *Table 2*, the city lost positions in all ratings, except for one — the environmental one: in most of them the city of Kirov is in the second half of the list, so its position in general can be defined as "average" or "below average". It should also be noted that the lowest positions of the municipal entity "Kirov City" are observed in the ratings characterising the quality of management organisa-

tion of socio-economic development, which additionally actualises the need to improve management tools, including monitoring tools.

When analysing the competitiveness of a municipality, it is advisable to compare it with comparable ones, which will help to identify its strengths and weaknesses, assess the pace of development and the ability to create the most attractive socio-economic conditions for the population and business in relation to similar governments. At the same time, the number of population, which is the basis for the traditional hierarchical classification of municipal entities, should be used as a criterion of "comparability" [18].

The socio-economic development of municipal entities should also be considered in dynamics for the period similar to that used in the first section of the methodological approach (consisting in the assessment of quantitative and qualitative indicators of socio-economic development), in the main areas that characterise the key factors of the quality of life in the municipality: 1. Demographic processes (natural increase rate). 2. Migration attractiveness (migration growth rate ratio). 3. Housing conditions of the population (housing provision per capita). 4. Labour remuneration (average monthly nominal accrued salary of employees of organisations). 5. Investment attractiveness (volume of investments in fixed capital per capita). 6. Business environment (shipped goods of own production and works performed by own forces per capita; volume of retail trade per capita). 7. Budgetary capacity (budget revenues per capita; budget expenditures per capita).

When selecting indicators, the advantage was given to the average per capita indicators as they reflect to the greatest extent the change in socio-economic characteristics of the "aver-

Table 2

Position of the municipality "Kirov City" in the Russian ratings for the period 2010–2019

Name of the rating	Year of rating formation	Place of the municipality "Kirov City"	Total number of cities in the rating
Integral rating of the 100 largest Russian cities	2010	36	100
	2019	43	
Rating of sustainable development of Russian cities	2013	46	173
	2019	99	185
Rating of Russian cities by salary level	2018	68	100
	2019	70	
Environmental rating of Russian cities	2013	24	87
	2017	14	103
Rating of cities by quality of life	2018	24	78
	2019	70	
National rating of mayors of cities	2014	67	78
	2019	79	88

Source: compiled by the authors.

age" citizen in comparable municipal entities. In addition, taking into account the problem of information and statistical support of municipal entities, the proposed list seems to be optimal.

To assess the competitiveness of the municipal entity "City of Kirov", Russian cities with a population of 500–700 thousand people with the status of the administrative centre of the constituent entity of the Russian Federation (the city of Kirov belongs to this group) were selected. According to the results of the analyses carried out in 2010 and 2019, they were ranked in terms of each of the indicators under study. The final ranking by the sum of places is presented in *Table 3*.

The positions of the municipal entity "City of Kirov" among comparable cities for ten years decreased by four points in terms of average monthly nominal accrued wages (16th place by the results of 2019 is characterised as an

Table 3

The Results of the final competitiveness rating of cities-administrative centers with a population of 500–700 thousand people

Name of the city	Place in the final ranking	
	2010	2019
Lipetsk	4	1
Orenburg	6	2
Irkutsk	2	3
Vladivostok	15	4
Tomsk	9	5
Kemerovo	7	6
Yaroslavl	10	7
Ryazan	1	8
Novokuznetsk	3	9
Kirov	11	10
Khabarovsk	5	11
Astrakhan	8	12
Izhevsk	16	13
Barnaul	13	14
Penza	17	15
Naberezhnye Chelny	12	16
Ulyanovsk	18	17
Togliatti	14	18
Makhachkala	19	19

Source: compiled by the authors.

extremely low level) and by three points in terms of investment in fixed assets per capita. Negative trends were also observed in the budget sphere: a decline in the city's position in the level of budget revenues per capita and stagnation in the expenditure part (11th place). Stagnation was also observed in the indicator of shipped goods of own production and works performed by own forces per capita.

Positive trends among comparable municipalities "City of Kirov" in 2019 demonstrates in terms of demography (moving from 13th to 9th position) and migration attractiveness (moving up 2 positions to the 2nd place among 19 cities with a population of 500–700 thousand people).

Thus, according to the results of the assessment of competitiveness with cities with similar parameters of development, the Municipality under consideration turned out to be on the middle positions, taking the 10th place by the end of 2019. At the same time, according to the totality of the analysed indicators, it has increased its position for 10 years by only one point, which indicates the lack of high rates of socio-economic development.

The focus on the active involvement of civil society and business structures in the process of local self-governance, as well as the target setting of socio-economic development of municipal entities management to maximise the satisfaction of the needs of the population and business predetermines the need to take into account the opinion of local stakeholders when monitoring socio-economic development of municipal entities. Accordingly, the methodological approach to the assessment of socio-economic development of municipal entities should include a section containing the assessment of public opinion.

The classical method of its determination is a sociological survey, which allows not only to identify the opinion of residents on certain problems of the territory, but also to determine the level of their awareness of the activities of local government in general, which itself is indirectly a managerial toolkit [19].

There are various forms of conducting sociological surveys, but in the conditions of development of modern information and communication technologies online surveys are gaining popularity, one of which was implemented in the Municipality "Kirov City" on the platform of the city administration website.

More than 3000 respondents took part in the survey, 63% of them — women and 37% — men. The questions related to the efficiency of functioning of the Municipality macro-subsystems and public satisfaction with living conditions in the city as a whole. Slightly more than half of the respondents (51%) reported that they like living in the city of Kirov, but 37.5% noted that the quality of life had deteriorated over the past five years, and 34.6% — that it had not changed. At the same time, the majority of citizens (more than 70%) assessed the socio-economic situation negatively. As the key problem 75.7% of respondents indicated limited opportunities to find a suitable job and low wages in the area.

Such public sentiments have a negative impact on the migration attractiveness of the considered municipal entity in the long term: 34.8% of respondents want to leave for another city in Russia, and 5.1% have plans to move abroad. At the same time, those wishing to move are mainly city dwellers with higher professional education, aged 30 to 39 (mostly women) with an income of 30 to 60 thousand roubles per family, officially married and without children (or with one child), i.e., this is the working age population.

As the key socio-economic problems, the residents named: unsatisfactory quality of roads (86.7%), excessive tariffs for housing and utilities services (83.9%), shortcomings in the improvement of neighbourhood territories and streets (81.3%), unfavourable environmental situation (71.7%), unsatisfactory operation of public transport (65.6%). Characterising the

state of the business sphere, respondents drew attention to the problem of corruption in the city (29.8%). As positive aspects of the urban environment, more than 70% of respondents noted a fairly high quality of work of sports and cultural and leisure facilities.

Thus, the results of the sociological survey of the population of the Municipality "City of Kirov" confirmed the results of statistical analysis and expert assessments. The exception was the environmental component, which, according to the ratings, is not the key one for the city. At the same time, the analysis of public opinion allowed to prioritise the highlighted problems and study them in more detail, taking into account their perception by the city residents.

To ensure the functional purpose of the tool for monitoring socio-economic development of municipal entities not only in the current, but also in strategic management, it seems reasonable to carry out scenario forecasting as part of the final section of the proposed methodological approach, since it is it that allows to make effective management decisions to achieve the best results in different socio-economic conditions.

The forecast is based on the municipal statistical base formed in the first section of the methodological approach through the development of a complex economic and mathematical model of municipal entities using correlation and regression analysis of the most important interrelations of macro-subsystems of municipal entities according to the three scenarios [20]:

- conservative, assuming preservation of the current trends of the municipality's vital activity, which is expressed in moderate rates of socio-economic development under unfavourable external conditions (slowdown of the country's and region's economic growth rates, unstable macroeconomic and foreign policy situation, coronavirus pandemic, etc.);
- basic, characterised both by the preservation of the basic conditions of functioning of the municipality and the implementation of the most probable parameters of development of the economic situation in the region and the country;
- targeted, based on the existing potential of the municipality and the implementation of favourable conditions both at the local, regional, and country levels.

Differences in scenario forecasts are determined by the parameters laid down in the key strategic planning documents of the region and Russia, as well as by such factors as labour productivity, investment activity of municipal entities' enterprises, wage growth rates, etc. When developing scenarios for the municipal entity "City of Kirov", the data of the forecast of the Ministry of Economic Development (in accordance with the given scenario parameters), the Central Bank (taking into account the impact of the consequences of the coronavirus infection spread), the Rosstat forecast in the field of demography and the forecast of economic development of the Kirov region were taken into account. The following parameters were identified as difference parameters for the scenarios in the city of Kirov, obtained on the basis of correlation and regression analysis: investment activity, wage growth rates, returns on assets, stock returns, labour productivity, commissioning of the total area of residential buildings, volume of some sources of budget revenues.

The fragment of forecasting socio-economic development of municipal entity "Kirov City" for the period up to 2035 is presented in *Fig. 2*. Demographic indicators in the forecast period under the baseline and target scenarios will maintain growth trends (+5.6 and +8.5%, respectively, compared to the level of 2019) due to the intraregional migration inflow. Economic development parameters will continue to grow moderately: the volume of shipped goods of own production and works performed by own forces (by all types of economic activities) will increase

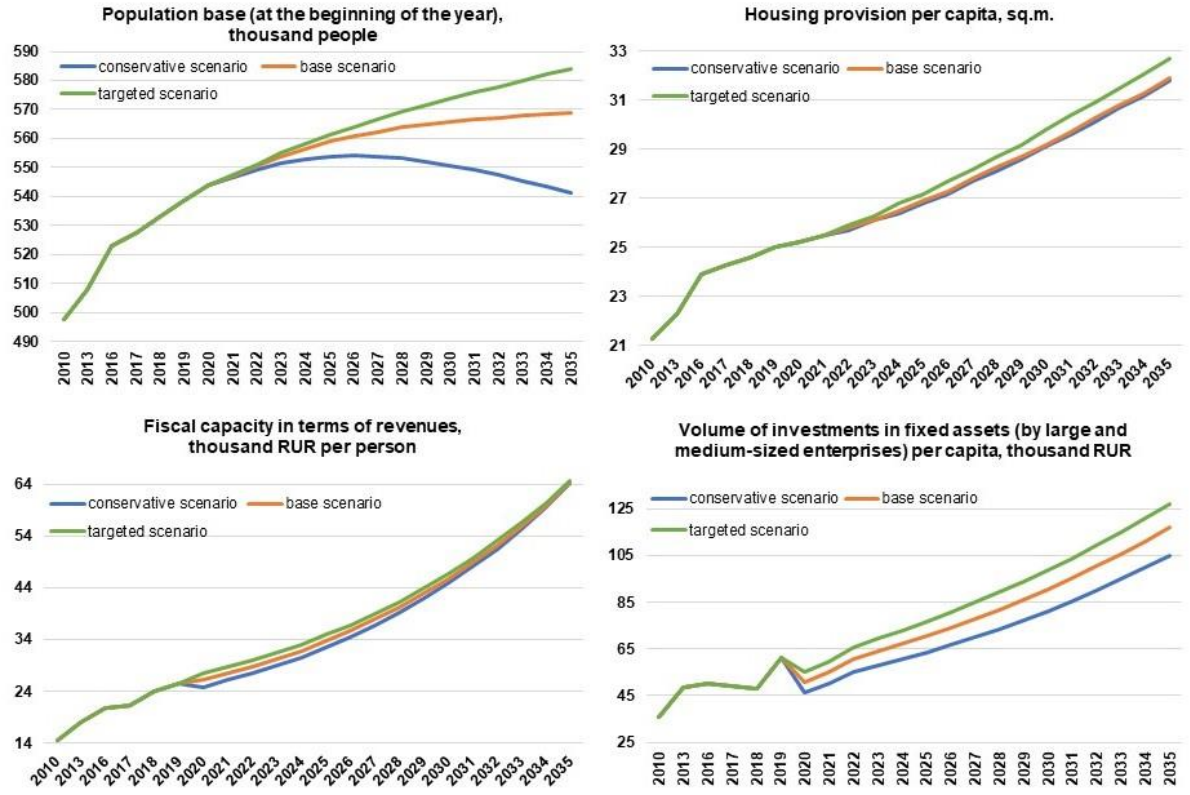

Fig. 2. **Fragment of the forecast of socio-economic development of the municipality "Kirov City" for the period up to 2035**

Source: compiled by the authors.

to RUR 472.0 billion by 2019 under the conservative scenario; (259.3%) mainly due to price changes (real growth is 28.8%), and under the target scenario — to RUR 608.8 billion (334.5%, real growth of 101.2%). The volume of investments per capita by 2035 will grow by 14.6% in the conservative scenario and by 25.3% in the target scenario (in comparable prices to the level of 2019), which is explained, on the one hand, by the effect of a high base, as a significant increase in investment activity was recorded in 2019, and, on the other hand, by the consequences of unfavourable external economic conditions in the first "five-year" of the forecast period. At the same time, the wage growth rates, according to the forecast, even under the target scenario are inferior to the Russian average: 2.5 times growth in the city of Kirov over 15 years and 2.6 times over the same period in Russia. A similar situation takes place in the sphere of housing provision of Kirov residents: according to the target scenario this indicator by 2035 should amount to 32.7 sq. m/person, while according to the Strategy for the Development of the Construction Industry and Housing and Utilities Services of the Russian Federation[4] until 2035 it will amount to 35 sq. m/person on average in Russia.

The formed scenarios allow to define sustainable development corridors for municipal

[4] Order No. 3268-o dated 31.10.2022 (On the Strategy for the Development of the Construction Industry and Housing and Utilities Services of the Russian Federation for the Period until 2030 with a Forecast until 2035). URL: https://www.consultant.ru/document/cons_doc_LAW_430333/f62ee45faefd8e2a11d6d88941ac66824f848bc2/?ysclid=ll434emv5998553947; http://static.government.ru/media/files/AdmXczBBUGfGNM8tz16r7RkQcsgP3LAm.pdf

entities — intervals (lower, optimal and upper) between scenario lines for each of the socio-economic indicators, forming a field of activity for local self-government bodies in terms of taking necessary management measures to move to the corresponding corridor.

CONCLUSIONS

The proposed methodological approach to the assessment of socio-economic development of municipal entities consists of five interrelated sections, each of which implies a certain list of empirical data, rules and sources of their formation, appropriate algorithms, and methods of their analysis, as well as requirements and limitations, the totality of which ensures methodological unity:

1. Assessment of quantitative and qualitative indicators characterising socio-economic development of municipal entities in the context of interrelated macro-systems.

2. Assessment of competitiveness of municipal entities:

- expert, characterising the positions of municipal entities in all-Russian ratings in certain areas;
- statistical rating, which determines the position of municipal entities when compared to municipalities with similar development parameters.

- 3. Assessment of public opinion based on the results of a sociological survey of residents of municipal entities.
- 4. Scenario forecasting of socio-economic development of municipal entities.

The formed methodological approach allows:

- comprehensively analyse socio-economic development of municipal entities not only based on the results of achieved management results for the previous long-term period, but also for the current moment, including the level of competitiveness of the municipality and public assessment;
- monitor socio-economic development of municipal entities within the selected corridor of sustainable development in the long term, which makes it possible to improve the efficiency of strategic management of municipal entities.

In addition, this approach, unlike most existing ones, is quite universal and can be applied to different administrative-territorial entities (agglomerations, regions) provided that an appropriate complex empirical (statistical) base is formed and, accordingly, is of practical interest for regional authorities and local self-government bodies.

The results of the analysis are of significant value for the expert community, population, and business, which are not only direct participants of monitoring socio-economic development of municipal entities in the implementation of this approach, but also local stakeholders who can improve the efficiency of their own activities on the basis of the obtained complex and comprehensive information.

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Structural Changes in the Spatial Development of Russia: New Realities

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ABSTRACT

The purpose of this study is to analyze changes in the spatial structure of the national economy, including those occurring under the influence of sanctions; to identify promising areas and forms of spatial organization of the economy, designed to help overcome the prevailing negative trends and territorial imbalances in the socio-economic development of the country's regions. One of the key problems of the Russian economy as a whole is structural imbalance. According to the author, its overcoming can be facilitated by the creation of innovative and industrial clusters, territories of advanced socio-economic development, special economic zones. Their role is primarily to strengthen intersectoral, intra- and inter-regional interaction of market participants, attract investment (including in infrastructure development), create new jobs, ensure industrial, scientific, technological and information development, which ultimately is designed to enhance the competitiveness of regions, smoothing differences in the level of their socio-economic development. In the process of work, general scientific methods were used: economic and statistical, comparative analysis, systematization of data. The results of the study can be taken into account when updating the strategies of spatial development of Russia and socio-economic development of the subjects of the Russian Federation to develop a more balanced approach to making organizational and managerial decisions in this area.

Keywords: national economy; spatial development; structural changes; territorial proportions; regions of Russia; forms of spatial organization of the economy

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INTRODUCTION

Development and implementation of an effective strategy of spatial development of Russia and its regions is one of the most urgent directions of improving sectoral and territorial proportions of the national economy today.

Research aimed at finding ways to optimise the spatial structure of the national economy, improve the efficiency of territorial management at the federal and regional levels, and solve the problems of socio-economic development of individual regions of the country are reflected in scientific publications [1–3]. It should be noted that there are different points of view on possible means and methods of implementing regional policy, as well as approaches to solving the problem of uneven development of territories, as well as the fact that the authors of most works focus on analysing and assessing the impact of internal factors of regional development, given the huge variety of geographical, demographic, natural, infrastructural, and other conditions of our country. However, in recent years, the processes of spatial development have been increasingly influenced by external factors (consequences of the pandemic, anti-Russian sanctions), affecting the functioning of not only large, but also medium and small businesses.[1]

This study analyses the spatial structure of the national economy and its changes, including under the influence of the sanctions imposed on Russia, and identifies promising directions and types of spatial organisation of the economy.

IMPACT OF SANCTIONS ON THE RUSSIAN ECONOMY

In recent years, the Russian economy has faced serious challenges and problems, the main ones being the consequences of the pandemic and economic sanctions imposed by Western countries.

According to the preliminary estimates of the Russian Ministry of Economic Development, in 2023, taking into account the impact of rapidly changing external and internal factors, GDP is expected to decline by 0.8%, with growth forecasted only from 2024 onwards.[2] The recovery of the domestic economy is associated primarily with the expected growth of household incomes and domestic consumer demand, measures of state support for the labour market and the real sector of the economy, and increased investment activity.

The Forecast of Socio-Economic Development of the Russian Federation for 2022 and for the planned 2023 and 2024 years[3] highlights spatial development among the key areas, which implies a reduction in inter-regional differentiation in the quality of life while maintaining incentives for development in the leading regions and increasing the number of economic growth points. This approach is consistent with the overall Strategy for Spatial Development of the Russian Federation until 2025.[4]

At the same time, the restriction (full or partial) of both Russian exports, including supplies to the world market of oil, gas, ferrous and non-ferrous metallurgy, machine-building, chemical industry, and imports of high-tech products into the country, had a noticeable impact on the functioning of many industries, as well as

[1] Results of the survey "The Impact of Sanctions on Russian Business". RSPP (official website). URL: https://rspp.ru/activity/analytics/rezultaty-oprosa-posledstviya-vvedeniya-sanktsiy-dlya-rossiyskogo-biznesa/

[2] The Ministry of Economic Development has confirmed the forecast of GDP decline. RIA Novosti — News. URL: https://ria.ru/20221130/vvp-1835411910.html

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[4] Strategy of Spatial Development of the Russian Federation for the period until 2025. Approved by order of the Government of the Russian Federation from 13.02.2019. No 207-o. URL: http://static.government.ru/media/files/UVAlqUtT08o60RktoOXl22JjAe7irNxc.pdf

on the development of the economy of certain regions. This particularly applies to those regions where export-oriented and so-called "propulsive" industries (according to F. Perroux[5]), which are the drivers of economic growth, have been predominantly developed. According to expert estimates, Russian exports of 20 key industries in the non-resource sector of the economy in 2022 alone decreased by almost 1/5 as compared to the previous year, which in monetary terms exceeds 25.5 billion roubles.[6]

The study of the current state of the real sector of the economy allows us to conclude that its structure does not yet meet the criterion of sustainable development. One of the main problems is structural imbalance, which is especially manifested in the technological backwardness of the manufacturing industry. To implement the strategy of socio-economic, including spatial development of the country, we need effective organisational, managerial, and financial mechanisms of reproduction and distribution of resources [4].

In order to modernise production, develop and implement innovations, and solve accumulated social problems at the regional level, it is necessary to attract investment and, consequently, to create an appropriate investment climate in the country as a whole and its regions. In view of the sharp reduction (due to sanctions) in the inflow of foreign capital into Russia, the main burden of financing investment projects, primarily infrastructure projects, falls on the state and domestic business. Obviously, the share of the latter in investment financing will increase.

At the same time, according to the data *of the rating of investment attractiveness of regions*, prepared by the RAEX agency ("RAEX-Analytics"), at the beginning of the 2020s, 58 constituent entities of the Russian Federation (or more than 2/3 of the total number) had low and insignificant investment potential and moderate or high risks of entrepreneurial activity,[7] which, in our opinion, is one of the main reasons for low investment activity in most regions.

TRANSFORMATION OF THE SPATIAL STRUCTURE OF THE ECONOMY

The works of prominent economists and economic geographers [3, 5, 6] are devoted to the analysis of trends in changing the structure of the country's economic complex. Therefore, N.V. Zubarevich notes that, according to numerous studies, most countries of the world, regardless of their level of development, are characterised by tendencies of territorial concentration of the economy in regions with competitive advantages. Nowhere can economic inequality in space be visibly smoothed out, as it is formed under the influence of objective factors. Since Russia is a catching-up country (with an economy in transition to a market economy), the growth of regional economic inequality is also inevitable for it, although its rates are already slowing down today [7]. According to this scientist, Russia's economic space is shrinking and will continue to shrink in the future. The depopulation of peripheral territories and the pulling of the population to large centres, mainly urban agglomerations, is a sustainable phenomenon.

P.A. Minakir points out the objective nature of heterogeneity of economic space in his works, noting that it is associated not only with "heterogeneous distribution of non-mobile conditions of economic activity in space", but

[5] According to the French economist F. Perroux's theory of growth poles, the propulsive ones include the most dynamically developing branches of production that influence the territorial structure of the economy.

[6] Experts estimate losses from sanctions for 20 non-resource export industries. URL: https://www.rbc.ru/economics/10/11/2022/636b871a9a794727d63e2f66?ysclid=lmrsidg21j559067860https://www.rbc.ru/economics/10/11/2022/636b871a9a794727d63e2f66?utm_source=yxnews&utm_medium=desktop

[7] RAEX regional investment attractiveness rating for 2020. URL: https://raex-a.ru/ratings/regions/2020#graph

also in the fact that "in the regions themselves a polarised space is formed around propulsive industries, which is transformed into polarisation of the national economic space" [8].

Studying the spatial proportions of the national economy, E.A. Kolomak concludes that they are formed under the influence of both market mechanisms and state regulators, as well as geographical, natural, and historical factors. Spatial transformations themselves reflect the result of redistribution of economic activity from peripheral regions to central regions and from eastern to western regions, from regions with predominantly extractive specialisation to those where manufacturing prevails [9].

Recently, the spatial organisation and territorial proportions of the national economy have been increasingly affected by external factors caused by economic sanctions.

According to the calculations made by S.V. Kazantsev, the strength of the impact of economic recession, deterioration of the situation on world commodity markets and financial and economic sanctions imposed against Russia on the changes in the totality of analysed indicators[8] in the country's regions is directly proportional to the dependence of economic entities on foreign capital, external sources of financing and foreign trade turnover [10].

The decline in exports of Russian goods and services leads to a drop in revenues of the federal budget and export-oriented economic entities. In turn, the curtailment of production volumes of export-oriented enterprises and the corresponding decrease in their profits causes a reduction in employment and tax revenues to budgets at all levels. Restrictions on imports of high-tech machinery and equipment caused by sanctions also hamper the development of a number of industries, especially in the manufacturing sector, which affects employment and, ultimately, the income of the population.

Speaking in the State Duma, Central Bank Chairman E. Nabiullina noted that recent competitive advantages of the regional economy may be lost due to changes in foreign trade conditions and a drop in domestic demand. To withstand new challenges, the Russian economy needs structural reorganisation [11].

To date, the country has developed deep territorial socio-economic disproportions due to the diversity of natural conditions, the nature of population settlement, peculiarities of natural resource potential distribution, differences in transport accessibility and remoteness of many territories from developed economic centres, sectoral specialization of different regions [12, 13], which is reflected in the key macroeconomic indicators (*Table 1*).

As follows from the above data, the European part of Russia accounts for 3/4 of all employed in the economy, more than 2/3 of GRP produced, 2/3 of all industrial production and 4/5 of agricultural output. More than 3/4 of retail trade turnover and paid services to the population are concentrated here. At the same time, the share of the Eastern Economic Zone, which is huge in terms of territory, does not exceed 1/3 of the main macroeconomic indicators.

Among macro-regions, the Central Federal District has the greatest economic potential. Despite the fact that it occupies only 4% of the country's territory, it accounts for 30% of all employment, concentrates one third of all fixed assets and generates one third of the total GRP.

Disproportions are even more pronounced at the level of the constituent entities of the Russian Federation. Thus, the top ten regions account for 2/5 of all employed in the economy, over 1/2 of GRP, almost half of all industrial output and capital investments, and 2/5 of the country's agricultural production (*Table 2*).

[8] The following indicators were taken into account: inflow of direct investments; balanced financial result of organisations' activity; turnover of foreign trade with non-CIS countries; payment of funds for import of technologies and technical services; credit arrears.

Table 1

Territorial proportions of the Russian economy by federal districts at the beginning of the 2020s, % of total

Economic zone, federal district	Territory	Population	Employed in the economy	GRP	Cost of fixed assets	Industrial products	Agricultural products	Investments in fixed capital	Retail trade turnover	Volume of paid services to the population
Western	24	74	75	70	73	66	81	66	77	76
Central	4	27	30	35	35	30	28	31	35	33
North-West	10	9	10	11	13	12	5	11	10	10
Southern	3	11	11	7	8	5	17	7	10	12
North Caucasian	1	7	5	2	2	1	8	3	5	4
Volga	6	20	19	15	15	18	23	14	17	17
Eastern	77	26	25	30	27	34	19	34	23	24
Urals	11	8	9	14	14	17	5	16	8	9
Siberian	25	12	11	10	7	12	11	10	9	9
Far Eastern	41	6	5	6	6	5	3	8	6	6

Source: compiled by the author on the basis of Rosstat data. URL: https://rosstat.gov.ru

The data of *Table 2* indicate an extremely high concentration of production in a limited number of RF constituent entities, which, as a rule, act as donor regions within the frame work of inter-budgetary relations between the federal centre and RF constituent entities. Over the last 15 years, the share of the leading regions in the total volume of industrial production has grown from 43 to 48 per cent.

Against this background, the Moscow urban agglomeration stands out, where more than 1/10 of all employed people in the Russian Federation, 1/5 of fixed assets, 1/5 of total GRP, 15–16% of manufacturing output and retail trade turnover, etc. are concentrated.

According to Rosstat data, the difference between the constituent entities of the Russian Federation with the highest and lowest per capita indicators at the beginning of the 2020s was: in terms of GRP and investment in fixed capital — over 50 times, retail trade turnover and volume of paid services to the population — 7–8 times, average per capita cash income of the population — 5 times, housing — 2.5 times, etc.

Moreover, territorial inequality (including due to differences in economic growth rates) not only persists, but in some parameters is even increasing, which indicates that the state regional policy is insufficiently effective [14].

Table 2

Leading regions by individual indicators of the level of socio-economic development in 2020

Number of people employed in the economy	GRP*	Volume of industrial products	Volume of agricultural products	Investments in fixed capital
Moscow	Moscow	Moscow	Krasnodar Territory	Moscow
Moscow region	Moscow region	Moscow region	Rostov region	Yamalo-Nenets Autonomous region
St. Petersburg	St. Petersburg	Khanty-Mansiysk Autonomous region - Yugra	Belgorod region	Moscow region
Krasnodar region	Khanty-Mansiysk Autonomous region - Yugra	Khanty-Mansiysk Autonomous region - Yugra	Republic of Tatarstan	Khanty-Mansiysk Autonomous region - Yugra
Rostov region	Yamalo-Nenets Autonomous region	Yamalo-Nenets Autonomous region	Voronezh region	St. Petersburg
Sverdlovsk region	Krasnodar Territory	Republic of Tatarstan	Kursk region	Republic of Tatarstan
Republic of Tatarstan	Republic of Tatarstan	Krasnoyarsk territory	Republic of Bashkortostan	Krasnodar region
Republic of Bashkortostan	Sverdlovsk region	Sverdlovsk region	Saratov region	Krasnoyarsk region
Chelyabinsk region	Krasnoyarsk Territory	Chelyabinsk region	Stavropol territory	Leningrad region
Nizhny Novgorod region	Republic of Bashkortostan	Republic of Bashkortostan	Lipetsk region	Sverdlovsk region
In % of the all-Russian indicator				
39	53	48	39	49

Source: compiled by the author on the basis of Rosstat data. URL: https://rosstat.gov.ru

Note: * — по данным 2019 г. / according to 2019 data.

The accumulated social inequality can be judged by the number of constituent entities of the Russian Federation in which the share of the population with incomes below the subsistence minimum (in fact, below the poverty line) exceeds the national average. Thus, in 2020, the total number of such regions totalled 56, i.e., 2/3 of their total number. At the same time, in the Republics of Tyva and Ingushetia, almost a third of the population is below the poverty line; in the Kabardino-Balkar and Karachay-Cherkess Republics, the Republics of Altai, Kalmykia and the Jewish Autonomous Region, almost a quarter of the population is below the poverty line.

Uneven spatial development of Russia remains one of the most serious problems that cause large-scale inter-budgetary redistributions. At the same time, the analysis of steps taken by the state in the form of subsidies from the federal budget gives grounds to conclude that such a policy of inter-budgetary equalisation does not have any noticeable impact on reducing spatial differentiation in the socio-economic development of individual territories [15].

The scenario of changing the spatial socio-economic landscape through "polarised growth", proposed as one of the possible scenarios for

the future, in which the task of economic recovery would fall on 10–12 so-called "core" regions ("engines of growth"), also poorly correlates with the peculiarities of Russia's territorial development and, for a number of reasons, is unlikely to have a significant impact on its breakthrough in modernising production and introducing innovations as applied to the regions. On the contrary, according to a number of scholars, the consequence of such a regional policy will be an even greater gap in the level of socio-economic development and increased territorial stratification of the country [16, 17].

The problem is aggravated by the fact that the constituent entities of the Russian Federation themselves have noticeable spatial differences in the historical distribution of production and population, which has led to the formation of "nuclei of economic growth" and *peripheral* (or the so-called *marginal*) *territories* [18]. The uneven development at the regional level is also confirmed by the results of applied research [19, 20]. However, their authors, based on the theory of "poles of growth", come to the conclusion that polarisation should not be considered an obstacle — on the contrary, polarised space provides a basis for identifying growth centres, as which can be considered not only large urban districts, but also rural municipal areas.

When discussing the new concept of the Strategy for Spatial Development of Russia until 2030, including from the point of view of national security, many experts draw attention to the need to reflect in it a balanced approach to solving the problems of ensuring further economic and innovative development, involving, on the one hand, the stimulation of established and the creation of new growth centres in the form of large and major urban agglomerations, and, on the other hand, government support for the development of small and medium-sized cities, as well as rural areas [21, 22].

The inevitable consequence of violation of such a balance may be a mass outflow of population from the periphery to urban centres, degradation of the countryside, further polarisation of the economic space of both the country as a whole and its individual regions.

DIRECTIONS AND FORMS OF SPATIAL ORGANISATION OF THE ECONOMY

Such forms of territorial organisation of economic activity as innovation and industrial clusters, territories of advanced socio-economic development (PSEDA — priority social and economic development area), special economic zones (SEZ), which have already proven themselves abroad and in domestic practice, can contribute in no small measure to the reduction of structural disproportions of the Russian economy and spatial differences in the level of socio-economic development.

However, under the conditions of sanctions, the process of forming territorial clusters focused on the production of high-tech and export-oriented products in the foreseeable future may face the problem of selling the latter in the foreign market and the need to replace foreign equipment and technologies used in production with domestic analogues.

Unlike other countries in Russia, the processes of economic clustering have started to unfold relatively recently — since the early 2010s.[9] According to the Russian Cluster Observatory (RCO), as of the early 2020s, there were over 110 cluster initiatives (employing about 1.5 million people) in the country, but almost 3/4 of them are in the initial stage of development, and about another 1/5 are in the middle stage.[10] Therefore, the share of relatively developed cluster formations functioning mainly in the European part of the country: the Volga, North-Western and Central Federal Districts, is

[9] Concept of long-term socio-economic development of the Russian Federation for the period up to 2020 (approved by the RF Government Order No. 1662-o dated 17.11.2008).

[10] Map of clusters in Russia. URL: https://map.cluster.hse.ru/list

less than 10%.[11] Only half of the constituent entities of the Russian Federation located beyond the Urals are covered by clustering processes.

According to the existing ideas, a cluster is considered as a complex open socio-economic system functioning on a certain territory, uniting representatives of business, science and government, whose joint activities provide a synergy effect [23]. The transition to a new model of spatial development provides for the formation of various types of clusters in Russia with the provision of financial, administrative, and infrastructural support from the state and the creation of mechanisms to promote and sell their goods, works and services on the market.

State support for clusters is provided by the Ministry of Economic Development and the Ministry of Industry and Trade of the Russian Federation as part of programmes to support pilot innovation-territorial clusters and small and medium-sized enterprises,[12] the aim of which is to strengthen cooperation between enterprises, scientific and educational organisations — participants of cluster formations, as well as to increase the scientific, technical and production potential and, in general, the competitiveness of the Russian regions [24].

At present (due to the anti-Russian sanctions), special business support measures are being developed and adopted at the federal and regional levels. Their list is constantly being finalised and will be supplemented and updated, as the socio-economic situation in the country is changing quite rapidly.[13] One of the latest decisions in this direction was the adoption of resolutions of the Government of the Russian Federation No. 1956 dated 16.11.2021 and No. 2407 dated 23.12.2022 concerning government support measures for industrial clusters in order to stimulate their activities and enhance import substitution.[14]

The role of territorial clusters in the formation of the spatial structure of the economy is seen primarily in strengthening inter-sectoral, intra- and inter-regional interaction between market participants, attracting investment, including in the development of infrastructure, creating new jobs, ensuring scientific, technological and information development, which is ultimately designed to contribute to improving the competitiveness of regions and smoothing socio-economic differences between them. The effectiveness of clusters, their positive impact on the sustainable development of the region is confirmed by numerous studies of foreign and Russian scientists and relevant calculations [25–29].

Nevertheless, the Strategy for Spatial Development of the Russian Federation for the period until 2025[15] does not adequately reflect the cluster policy. Therefore, when updating this document in view of new realities, it is

[11] The Kama innovation territorial production cluster in the Republic of Tatarstan (automotive industry and production of automotive components); petrochemical cluster in the Republic of Bashkortostan (chemical production); nuclear innovation cluster in Dimitrovgrad, Ulyanovsk region (nuclear and radiation technologies); consortium "Scientific-educational-production cluster "Ulyanovsk-Avia" (aircraft construction); St. Petersburg cluster of clean technologies for urban environment (environmental protection and waste recycling) are distinguished by a high level of development..

[12] State programmes to support small businesses. URL: https://kontur.ru/articles/4710

[13] Register of clusters in Russia. URL: https://xn——dtbhaacat8bfloi8h.xn — p1ai/clusters-list-2015

[14] Resolution of the Government of the Russian Federation of 16.11.2021 No. 1956 (On Amendments to Resolution of the Government of the Russian Federation of 31.07.2015 No. 779). URL: http://government.ru/docs/all/137607/; Resolution of the Government of the Russian Federation No. 2407 dated 23.12.2022 (On Amendments to the Rules for Granting Subsidies from the Federal Budget to Participants of Industrial Clusters for Reimbursement of Part of Costs in the Implementation of Joint Projects for the Production of Industrial Products of the Cluster for the Purpose of Import Substitution). URL: http://government.ru/docs/all/145329/

[15] Spatial Development Strategy of the Russian Federation for the period until 2025. Approved by the Order of the Government of the Russian Federation No. 207-o dated 13.02.2019. URL: https://www.consultant.ru/document/cons_doc_LAW_318094/006fb940f95ef67a1a3fa7973b5a39f78dac5681

advisable to reflect the role of cluster forms of economic activity in the development of regions and centres of economic growth, and not only large, but also small and medium-sized cities.

Other forms of spatial organisation of the Russian economy designed to help reduce the level of interregional differentiation in socio-economic development and reduce intra-regional differences include special economic zones (SEZ) and priority social and economic development areas (PPSEDA). The creation and functioning of these entities are regulated by the relevant Federal Laws of the Russian Federation.[16]

The purpose of their creation is to attract investments (including foreign ones) primarily in high-tech sectors of the economy, as well as in the development of tourism and health resort sphere, production, and transport infrastructure; to ensure accelerated socio-economic development of regions, to improve the living standards of the population. For this purpose, special economic zones and priority social and economic development areas are subject to a special (favourable) legal regime for entrepreneurial activity, and a free customs zone procedure may also be applied.

According to the Ministry of Economic Development of Russia, as of mid-2022, 45 special economic zones were functioning in the country: 26 industrial-production, 7 technology innovation, 10 tourist-recreational, and 2 port zones.[17] For more than 15 years of work in special economic zones almost 1000 residents have registered, of which more than 140 are companies with foreign capital from more than 40 countries; the total volume of declared investments exceeded 1.6 trillion roubles, invested — 738 billion roubles; about 60 thousand jobs were created; about 295 billion roubles of tax payments, customs duties and insurance premiums were paid.[18]

The geography of special economic zones reflects uneven spatial development: the bulk of them, namely 4/5, are concentrated in the west of the country. Most special economic zones are established in the Central Federal District — 16, which is more than 1/3 of their total number. The second federal district in terms of the number of operating special economic zones — the Volga Federal District — has 10 special economic zones (1/5 of the total number). Thus, more than half of all special economic zones operate in the two districts, while in Siberia there are only 5 of them: one technology innovation zone, two industrial-production zones and two tourist-recreational zones; only one special economic zone of tourist-recreational type is organised in the Far East.

The assessment of the efficiency of special economic zones is ambiguous. During the period of their work since the adoption of 116-FL along with positive examples [techno-innovative special economic zone "Dubna" (Moscow region), special economic zone of industrial-production type "Alabuga" (Republic of Tatarstan), "Lipetsk", "Togliatti" in the Samara region, "St. Petersburg", etc.] serious shortcomings in their activities, mainly of legal and organisational nature, were revealed, which led to the liquidation of a number of ineffective special economic zones. However, the reasons

[16] Federal Law No. 116-FL dated 22.07.2005 "On Special Economic Zones in the Russian Federation", (hereinafter — 116-FL). URL: http://www.kremlin.ru/acts/bank/22673; Federal Law No. 473-FL dated 29.12.2014 "On Territories of Advanced Socio-Economic Development in the Russian Federation", (hereinafter — 473-FL). URL: http://www.kremlin.ru/acts/bank/39279

[17] In addition to SEZs established in accordance with Federal Law No. 116-FL (on the basis of government decrees), Russia also has SEZs established on the basis of separate federal laws: SEZ in the Kaliningrad Region, SEZ in the Magadan Region, free economic zone on the territory of the Republic of Crimea and the city of federal significance Sevastopol, free port of Vladivostok.

[18] Special economic zones. Ministry of Economic Development of the Russian Federation (official website). URL: https://www.economy.gov.ru/material/directions/regionalnoe_razvitie/instrumenty_razvitiya_territoriy/osobye_ekonomicheskie_zony/

for their unsatisfactory performance, according to experts, are more of a subjective nature, and support should continue for this instrument of state regional policy and form of spatial organisation of regional economies to make fuller use of the potential of their transport and geographical location, natural wealth, labour resources and to ensure economic growth [30].

At the same time, plans for the further development of special economic zones, which were initially formed in anticipation of close cooperation ties with foreign partners, now have to be adjusted under the influence of sanctions and in connection with the need to implement import substitution measures [31].

Initially, the 473-FL covered the Far Eastern Federal District, where 22 priority social and economic development areas have already been established. As of the beginning of 2020, more than 300 residents were registered in these areas, and the total amount of announced investments exceeded RUB 2.3 trillion. The law also provides for the formation of priority social and economic development areas in other federal districts, in particular, Article 34473-FL stipulates the procedure for their creation in the territories of single-industry municipalities. Priority social and economic development areas are regarded as growth points that ensure the inflow of investment capital into the regions, promote their innovative development, the formation of a new economic structure and the development of the social sphere. In this case, the principle of "effect over cost" should be observed [32].

According to the Ministry of Economic Development of Russia, by the beginning of 2021 about 90 priority social and economic development areas have already been created in single-industry towns, in which more than 700 residents have been registered; 70 billion roubles of investments have been attracted, and the number of new jobs has exceeded 27 thousand.[19]

Thus, despite the sanctions pressure, the processes of economic clustering and the formation of territories with a special regime of entrepreneurial activity will continue to promote the spatial development of Russia. Moreover, a number of scientists and specialists conclude that sanctions can and should be used to mobilise regional economies in order to ensure advanced growth [33].

This requires: support for cluster initiatives at the federal and regional levels; implementation of national technology platforms, which serve as an important tool for combining the efforts of business, science and government to implement priority areas of modernisation and technological development of the Russian economy, as well as a set of programmes for import substitution and scientific and technological development; cross-industry integration; compact location of enterprises, allowing for maximum optimisation of logistics.

CONCLUSIONS

The analysis of structural changes and peculiarities of the spatial organisation of the Russian economy at the present stage has shown a number of negative trends due not only to internal factors (geographical remoteness of certain territories, their lagging behind in the development of infrastructure, social sphere, depopulation of the population, etc.), but also, to a large extent, to external reasons associated with the toughening of anti-Russian sanctions, which creates additional risks of economic, including investment and external economic risks.

One of the main problems of the national economy — its structural imbalance — is particularly manifested in the technological backwardness of manufacturing industries. The increase in spatial differentiation in the level of

[19] The number of PDA (priority development area) residents has increased by 22% since the beginning of 2020. Russian Ministry of Economic Development. URL: https://www.economy.gov.ru/material/news/kolichestvo_rezidentov_tor_s_nachala_2020_goda_uvelichilos_na_22.html

socio-economic development of the country's regions is also a negative process.

The solution to the problem is seen in the framework of more balanced management decisions at the state and regional levels. A balanced approach to solving the tasks of ensuring further economic growth within the framework of the Spatial Development Strategy should ensure, on the one hand, stimulation of the activities of established and creation of new growth centres in the form of large and major urban agglomerations, and, on the other hand, and no less importantly, government support for the development of small and medium-sized cities and rural areas.

Such forms of spatial organisation of economic activity as innovation and industrial clusters, territories of advanced socio-economic development, special economic zones can contribute to the reduction of structural and territorial disproportions of the economy. Their role is primarily to strengthen inter-sectoral, intra- and interregional interaction of market participants, attract investments, including in the development of infrastructure, create new jobs, ensure industrial, scientific, technological and information development, which is ultimately designed to promote the competitiveness of regions, smoothing their socio-economic differences.

These instruments of state regional policy should be further supported in order to more fully and effectively utilise the resource potential of the country's regions and ensure their economic growth. At the same time, it is necessary to expand the geography of cluster associations and special economic zones in the eastern direction, where they have not been properly developed yet.

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Towards the 105th Anniversary of the Financial University

ORIGINAL PAPER

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Identification of Digital Intellectual Assets and Features of their Commercialization

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ABSTRACT

The need to identify, define the types, specifics and features of the commercialization of digital intellectual assets is due to the prevailing realities and the opportunities for additional income associated with the digitalization of the economy and the legislative consolidation of new objects of civil turnover — digital rights. The purpose of the work is to characterize digital intellectual assets as objects of commercialization, to identify the features and conditions of its implementation, as well as factors affecting the type and amount of license fees for the transfer of rights to these assets. The methodological basis of the research was the categorical apparatus of management methods in the field of intellectual property and digital rights, methods of classification, statistical and comparative analysis, a systematic approach, scientific works of leading domestic and foreign scientists in the field of evaluation of intellectual property and digital assets. Results of the study are as follows: two interpretations of digital intellectual assets have been identified: 1) as rights to intellectual property objects that exist and have value in digital form; 2) as digital rights to intellectual property objects, the disposal of which is carried out exclusively in an information system based on blockchain technology; the typologization of digital intellectual assets with the allocation of separate types within each interpretation is carried out; the features of commercialization of digital intellectual assets, factors influencing the choice of the type and amount of license remuneration are revealed. The findings can be used in practice by the management of companies when developing strategies for managing new types of assets in order to increase the efficiency of their commercialization.

Keywords: digital intellectual assets; digitalization; commercialization; cost factors; license fee

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INTRODUCTION

In Russia, as in the rest of the world, the processes of digitalisation of all spheres of society and, first and foremost, of the economy are accelerating on the basis of the introduction of new digital technologies. According to estimates by Allied Market Research, by 2030 the amount of global investment in digital technologies may reach USD 698.48 billion.[1] In Russia, according to the results of a survey of financial market participants conducted by the FinTech Association with the support of Accenture, the introduction of digital technologies is active, but not evenly in relation to certain types of technologies themselves.[2] Mobile interfaces account for the largest share (about 75% of respondents). Also, more than 50% of financial market participants reported using corporate data warehouses, cloud technologies and software interfaces. Such technologies as Big Data, machine learning and biometrics are becoming increasingly popular, although the share of active users is still small — from 21 per cent to 46 per cent. The most promising digital technologies — blockchain, Internet of Things and augmented reality (up to 10% of active users) — are in the development stage.

The processes of digitalisation, as well as the issues of commercialisation of intellectual property in the new realities are actively discussed in the global scientific environment [1–6]; at the same time, an important role is played by active state promotion of the development and implementation of digital technologies. Thus, according to the World Bank, in 2022 Russia entered the top ten countries in the world in terms of the level of digitalisation of public administration,[3] and the total cost of the national project "Digital Economy" in 2023 will amount to 188 billion roubles[4] — in terms of funding it ranks fifth out of 14 national projects, second only to such projects as "Demography", "Health Care", "Education" and "Safe Quality Roads".

These trends encourage companies in various spheres of activity, including non-financial ones, to change their business management strategies based on the use of both digital technologies themselves and the digital assets they generate, which can provide a competitive advantage in the face of unprecedented sanctions.

At the moment, domestic and foreign researchers pay considerable attention to the economic and legal issues of digital financial assets (DFA) regulation [7–12]. In addition, the state demonstrates readiness to develop the infrastructure necessary for the functioning of digital financial assets, which will allow businesses to quickly and without significant costs to organise the issuance and placement of digital financial assets with reliable data protection through the use of blockchain technology.

As for digital intellectual assets (DIA), the interpretations of this category and related commercialisation issues, as well as the legal status of digital intellectual assets, have not been fully explored. The solution of these issues is an urgent task, which has an important scientific and practical significance for Russian companies and the country as a whole to achieve technological sovereignty.

The purpose of this study is to identify the peculiarities of digital intellectual assets as objects of commercialisation, to characterise the conditions for its implementation, as well as

[1] Allied Market Research. https://www.alliedmarketresearch.com/investment-banking-market-A06710

[2] URL: https://www.fintechru.org/analytics/rezultaty-issledovaniya-mneniya-rynka-po-voprosam-razvitiya-finansovykh-tekhnologiy-na-2021–2023-gg-/

[3] Ministry of Digitisation of Russia (official website). URL: https://digital.gov.ru/ru/events/42223/ (accessed on 14.05.2023).

[4] Ibidem.

the factors that determine the type and amount of royalties for the transfer of rights to digital intellectual assets.

The information base of the research includes normative and legal acts revealing the understanding of the essence of digital intellectual assets, works of Russian and domestic researchers on the subject of the article, thematic publications in mass media, statistical data published in open sources.

RESEARCH METHODOLOGY

The following methods were used in the course of the work: analysis of the processes of digitalisation of the economy in Russia and in the world; typology of digital intellectual assets in different interpretations, ways of commercialisation of digital intellectual assets as intellectual property objects, justification of the type and amount of the licence fee based on the identified pricing factors.

The main types of digital intellectual assets, features and conditions of their commercialisation are defined in accordance with the following regulatory documents:

1. The Civil Code of the Russian Federation (Part IV) of 18.12.2006 No. 230-FL. Article 1225. Protected results of intellectual activity and means of individualisation[5];
2. Order of the Government of the Russian Federation No. 1632-o dated 28.07.2017 "On approval of the programme "Digital Economy of the Russian Federation"[6];
3. Federal Law No. 259-FL dated 31.07.2021 "On Digital Financial Assets, Digital Currency and Amendments to Certain Legislative Acts of the Russian Federation"[7];
4. Federal Law No. 259-FL dated 02.08.2019 "On Attracting Investments with the Use of Investment Platforms and on Amendments to Certain Legislative Acts of the Russian Federation"[8];
5. Federal Valuation Standard "Valuation of Intellectual Property and Intangible Assets (FVS XI)".[9]

Graphical and tabular presentation of information was used to visualise the scientific results.

RESULTS

Digital intellectual assets as objects of commercialisation

Commercialisation is understood as the extraction of benefits from the possession or use by a company of its assets. Commercialisation may be external, i.e., it may involve generating income from the sale of the company's assets, or internal, which involves the use of the created or acquired assets for its own purposes. In the following discussion we will talk about external commercialisation of digital intellectual assets.

We propose to consider digital intellectual assets in two interpretations.

1. Digital intellectual assets as rights to intellectual property in digital form.

In a broad sense, digital intellectual assets mean any intellectual assets that exist and have value in digital (electronic) form: domain names; 3D models that have no tangible analogue; databases, including those obtained using Big Data technology, including spatial databases; computer programs, digital art objects and virtual assets or property. Digitised data (digital electronic signatures, personal data, digitised objects of the material world), i.e., something that is not created by intellectual labour, but is obtained as a digital copy of

[5] URL: http://www.consultant.ru/document/cons_doc_LAW_64629/2a4870fda21fdffc70bade7ef80135143050f0b1/ (accessed on 25.06.2023).

[6] URL: http://static.government.ru/media/files/9gFM4FHj4PsB79I5v7yLVuPgu4bvR7M0.pdf. (accessed on 21.06.2023)

[7] URL: https://www.consultant.ru/document/cons_doc_LAW_358753/ (accessed on 15.06.2023).

[8] URL: https://www.consultant.ru/document/cons_doc_LAW_330652/ (accessed on 15.06.2023).

[9] URL: https://docs.cntd.ru/document/1300254787 (accessed on 10.06.2023).

a material object using computer processing without the possibility of subsequent creative transformation, should be excluded from consideration.

In order to commercialise various types of digital intellectual assets, it is important to establish their legal status as assets capable of civil turnover. Since digital intellectual assets are intangible in nature, it is logical to classify them as the results of intellectual activity (RIA) in digital form, which are subject to intellectual rights under Article 1225 Part IV of the Civil Code of the Russian Federation. The owner's intellectual rights are confirmed and protected traditionally — on the basis of Rospatent protection documents, agreements on the alienation of exclusive rights or trade secret regime. However, this legal status is not inherent in all of the above assets. In particular, virtual property is not recognised by the Civil Code of the Russian Federation as an object of civil turnover, therefore, it cannot be an object of contractual relations and, accordingly, commercialisation. As for the rest of the listed types of digital intellectual assets, some of them are objects of copyright or related rights, others are objects of patent law, means of individualisation or complex objects that include several results of intellectual activity (*Fig. 1*).

When assessing the value of digital intellectual assets, it is necessary to take into account not only the characteristics inherent to any intellectual property objects (scope of transferable rights, availability of legal protection, territory of validity of rights, level of novelty or originality), but also the risks associated with the digital form of existence (loss of access to the object due to technical failures, unauthorised access through hacking or illegal distribution on the Internet, etc.), as well as the specifics of each type of digital intellectual assets.

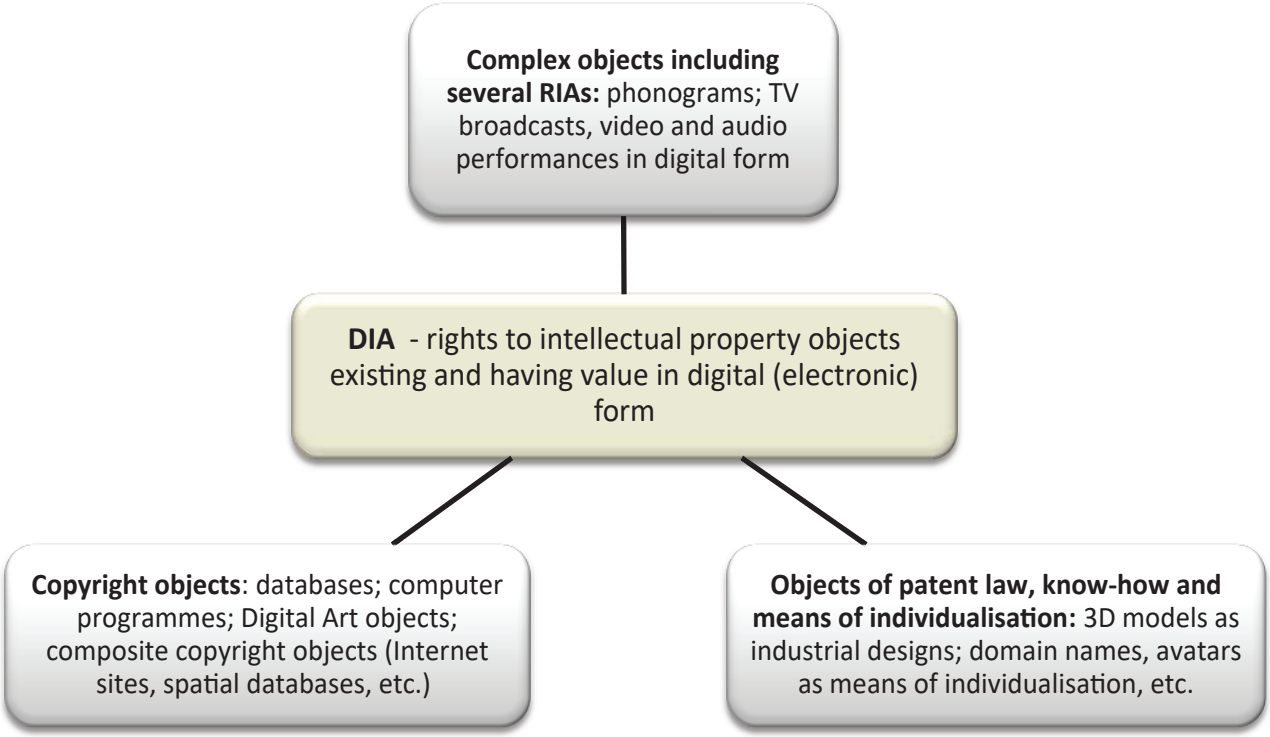

Fig. 1. **Digital intellectual assets as intellectual property rights in digital form**

Source: compiled by the authors.

2. Digital intellectual assets as digital rights to intellectual property objects or their use.

Due to the development of digital technologies based on distributed registers, digital rights have emerged,[10] including rights to intellectual property items (IPIs) and their use, which can be legally involved in civil turnover. In this case, digital intellectual assets are understood as digital rights to intellectual property items (results of intellectual activity specified in Article 1225 of the Civil Code of the Russian Federation) or rights to use intellectual property items, circulating and having value only in an information system that meets the requirements of the legislation (*Fig. 2*).

The figure shows that tokenisation of digital intellectual assets is essentially a form of their commercialisation and is possible under two scenarios: 1) creation of an NFT token,[11] which may contain both the intellectual property object itself (e.g., an object of digital art) and certify the rights to it by assigning a unique identifier in the blockchain system; 2) Creation of a token identifying the owner of the digital intellectual assets and the digital rights to use the intellectual rights in the digital intellectual assets (without the digital intellectual assets themselves existing separately from the specific token).

At the same time, in the context of current legislation, the owner of a token or NFT-token is not necessarily the subject of a copyright or other proprietary right to the digital intellectual asset associated with it. The purchase of an NFT-token does not automatically confer copyright to digital intellectual assets, unless they are specifically acquired under a licence agreement. In the absence of such a contract, the owner of the NFT-token is not entitled to make or sell copies of the work of art or otherwise exercise copyright in any way. It is possible to create several NFT tokens with the same digital object. However, if the participants of the regulated market of digital assets (e.g., Digital Art objects) agree that the NFT should be formed only by the author or the owner of digital intellectual assets, then further transfer of the NFT will imply the transfer of the corresponding rights to digital intellectual assets or its use, i.e., the NFT-token will become the subject of contractual relations in the commercialisation of digital intellectual assets in the information system. Undoubtedly, the creation and regulation of such markets of digital intellectual assets is a rather promising direction for the development of intellectual property commercialisation from the point of view of potential opportunities to increase the value of IPI owned by a company and to ensure the protection of owners' rights. This will determine whether Russian entrepreneurs, artists, galleries, and museums will be able to actively participate in the international market of NFT-tokens, the volume of which is growing exponentially: in 2020 — $315 million and over $40 billion in 2021 [13].

As for digital intellectual assets as utilitarian digital rights to intellectual property items, they essentially represent the right to claim the transfer of exclusive rights to the results of intellectual activity and/or rights to use intellectual property items and may be acquired, disposed of, and exercised in an information system that meets the requirements of the law.[12]

[10] Civil Code of the Russian Federation, Art. 141. Digital Rights. URL: https://base.garant.ru/10164072/85c4c3fa890eded8662d051b65e114a0/?ysclid=ll3r6oo3uc78527261

[11] NFT (non-replaceable token) or unique token is a type of cryptographic token, each instance of which is unique (specific) and cannot be replaced or substituted with another similar one. It is a cryptographic certificate of a digital object that can be transferred through the mechanism used in the blockchain.

[12] Federal Law of 02.08.2019 No. 259-FL (ed. of 14.07.2022) "On Attracting Investments with the Use of Investment Platforms and on Amendments to Certain Legislative Acts of the Russian Federation" (with amendments and additions, effective from 11.01.2023). URL: https://www.consultant.ru/document/cons_doc_LAW_330652/ (accessed on 25.06.2023).

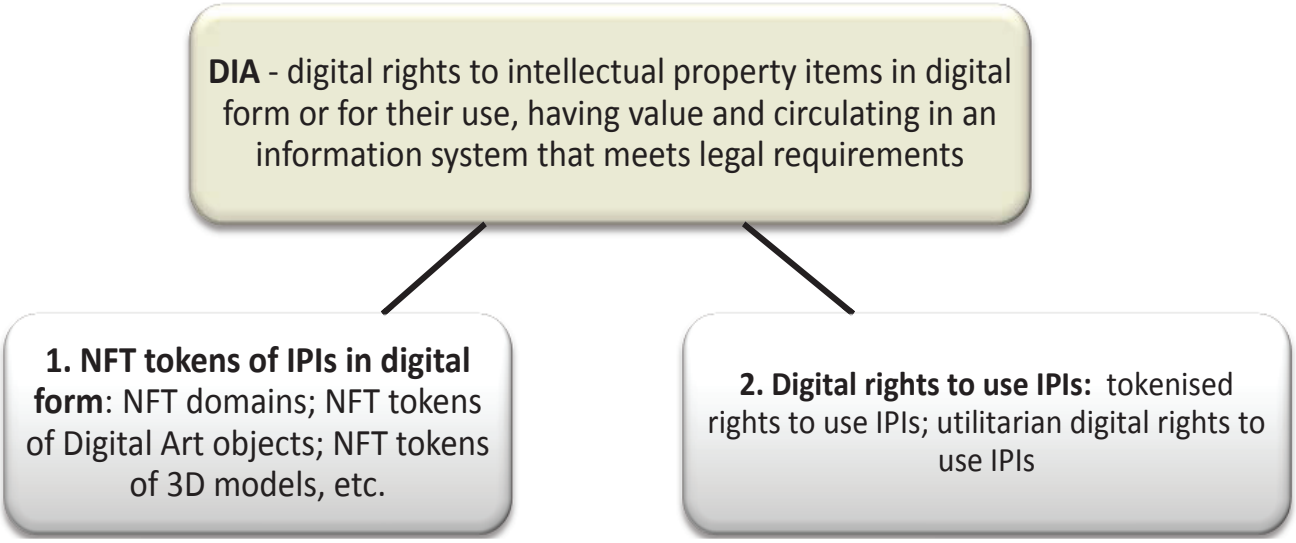

Fig. 2. **Digital intellectual assets as digital rights to intellectual property objects or their use**

Source: compiled by the authors.

The data of these digital intellectual assets can be conveniently used to attract financing on crowdfunding platforms for the purpose of commercialisation of innovative ideas that can be embodied in protected results of intellectual activity. The considered right of claim can be confirmed by a digital certificate, which in essence is identical to a non-issue book-entry security that has no par value and certifies that its owner owns a utilitarian digital right.

Thus, the digital intellectual assets discussed in clause 2 are assets that have the characteristics of both digital financial assets and intellectual property items, but are certainly objects of civil turnover and, therefore, are capable of commercialisation. When determining the value of such digital intellectual assets, it is necessary to take into account the form of commercialisation through digital, including utilitarian digital rights, and the specifics of the intellectual property items to which the digital rights are transferred.

As a result of the above two interpretations, it can be concluded that digital intellectual assets in the broad sense can be considered as any intellectual property objects existing and having value in digital (electronic form), and in the narrow sense — as digital (including utilitarian digital) rights to exclusive rights to the intellectual property items themselves or to their use.

SPECIFICS OF COMMERCIALISATION OF DIGITAL INTELLECTUAL ASSETS

Commercialisation of digital intellectual assets is carried out by the same methods as commercialisation of results of intellectual activity, including by means of:

1) contribution of rights to digital intellectual assets to the charter capital of an organisation (for example, 3D models to the charter capital of a computer games manufacturing company);

2) assignment of ownership rights to digital intellectual assets (sale of the full scope of rights under an alienation agreement — more often used for NFT tokens);

3) transfer of the right to use the rights to digital intellectual assets under a licence agreement, commercial concession agreement or leasing agreement (for example, for software).

Licensing is the most common practice. The main terms and conditions of a licence agreement are determined by agreement of its parties, taking into account the following:

1. Type of licence: simple (non-exclusive) or exclusive, depending on the following factors:

a) the need to grant the right to use digital intellectual assets to one or several licensees: if several, a non-exclusive licence applies; for digital intellectual assets in the form of an NFT token, only an exclusive licence is possible.

b) the need for the licensor to retain the right to use the digital intellectual assets: if the licensor plans to use the digital intellectual assets to the same extent as the licensee, the licence is intended to be non-exclusive;

c) the need to grant the maximum amount of rights to use digital intellectual assets without retaining that right with the licensor: if it is planned to grant the right of use to one licensee without retaining it with the licensor to the same extent as it is granted to the licensee, the licence is presumed to be exclusive.

The licensor's retention of the right to use digital intellectual assets may be ensured by including a clause to that effect in the text of the licence agreement.

The transfer or grant of an exclusive right to digital intellectual assets in the form of an NFT token can also be provided for in the smart contract through which the NFT is disposed of on the blockchain, or can be prescribed in the metadata of a particular token.

2. The objects of the licence are digital intellectual assets listed in (*Fig. 1, 2*). For their use it is expected to receive remuneration, which depends on the type and amount of the licence fee.

Licence payments are divided into:

- periodic interest payments (royalties);
- lump sum (fixed) payments;
- combined payments (lump sum payment and royalty).

The preferred type of licence payment is determined taking into account the factors given in (*Table 1*) as follows: the presence of each factor for a particular type of digital intellectual assets adds one point, and finally the type of payment with the maximum number of points is selected. In case of equality of points the licensor stops on the most acceptable option (in practice it is most often a combined payment).

3. The amount of the *lump sum payment* should at least cover both the licensor's expenses for legal protection of digital intellectual assets and other expenses related to the ownership and commercialisation of digital intellectual assets.

When setting the amount of the lump sum payment, it is necessary to take into account the influence of the following factors (if any):

- peculiarities of the current legislation (for example, the lump sum payment for software may be reduced by VAT if the software is not included in the Unified Register of Russian Computer Software and Databases, or if the licence agreement is concluded within the framework of intra-corporate transfer;
- prevailing market conditions and market conditions of digital intellectual assets (supply and demand ratio, availability of competitors with similar offers, macroeconomic situation, etc.);
- the licensee's costs associated with the form of commercialisation (creation of an NFT token, access to an information platform, costs for a digital certificate, smart contract or electronic signature, etc.);
- specific cost factors of a particular type of digital intellectual assets that affect the final price of the licence agreement (*Table 2*).

If a *combined payment* is chosen, the licensee pays a part of the sum in the form of a lump sum payment and the rest — in the form of royalties.

It is reasonable to differentiate the size of the lump-sum payment as part of the combined payment according to the rule 10%-25%-50% of the calculated licence price tak-

Table 1

Factors influencing the choice of the type of license fee

No items	Factors	Lump sum payment	Combined payment	Royalty
1	Composition of the object of the licence (licence agreement)	digital intellectual assets are defined in the contract as digital rights to intellectual property items (Figure 2) other than know-how. digital intellectual assets are defined as know-how but no patent rights or know-how and patent right objects are present, but the contract does not include a clause on compensation for damages for disclosure of know-how or does not contain a formula for calculating damages and sources of input data for the calculation	digital intellectual assets are defined in the contract as intellectual rights to digital intellectual property items (Fig. 1) in the form of know-how, patent, or copyright. At the same time, the contract includes a clause on compensation of losses for disclosure of know-how, and the parties to the contract have agreed on a formula for calculating losses and sources of initial data for calculation	digital intellectual assets are defined in the contract as intellectual rights to digital intellectual property items (Figure 1) in the form of patent or copyright, but there is no know-how
2	The ability of the licensee to derive income from the disposal of rights to digital intellectual assets	The Licensee does not intend to use the digital intellectual assets to derive additional income from the disposal of the rights to the digital intellectual assets, the benefit from the acquisition of the rights to the digital intellectual assets is non-recurring	The Licensee does not plan to use digital intellectual assets to generate additional income from the disposal of rights to digital intellectual assets, but receives stable income from its use of digital intellectual assets for its own needs	The Licensee plans to use digital intellectual assets as a source of income for internal purposes, as well as additional income through the disposal of rights to digital intellectual assets
3	Type of licensee	Individual entrepreneur or Sole proprietor	A legal entity that does not belong to the categories to which the use of a lump sum or royalty is available	A legal entity with state participation in the authorised capital and/ or under direct or indirect control of the state. A legal entity in whose charter capital the licensor has a share (contribution) or which is under direct or indirect control of the licensor
4	Experience of co-operation with the licensor	The licensee has no experience of cooperation with the licensor	The licensee has one-time positive experience of cooperation with the licensor on execution of contracts related to the disposal of exclusive rights to the results of intellectual activity	The licensee has repeated positive experience of cooperation with the licensor on execution of contracts related to the disposal of exclusive rights to the results of intellectual activity
5	Ability to control the volume of digital intellectual assets utilisation	No effective monitoring of the use of digital intellectual assets (the basis for royalties) through open source data, corporate procedures or licence agreement terms	There are opportunities to implement effective control over the volume of use of digital intellectual assets (the basis for royalty accrual) in accordance with the terms of the licence agreement	It is possible to effectively monitor the use of digital intellectual assets (the basis for royalties) by obtaining data from public sources or through corporate procedures

Source: compiled by the authors

Table 2

Specific cost factors of certain types of DIA that affect the price of the license agreement

Name of the type of DIA	Potential type of RIA	Specific cost factors
NFT- token	Works of science, literature, and art (Digital Art object), rights to use patent or copyright objects, know-how	1. The cost of creating the underlying asset 2. Commercial potential of the underlying asset a 3. The level of novelty/originality of the underlying asset 4. Duration of token availability 5. Uniqueness (whether there are other owners of the token for this type of results of intellectual activity) 6. Usefulness of the token (what benefit can be derived in the physical and digital world) 7. Level of risks of infringement of the licensor's rights when using the token
Domain names b	Brand names, commercial designations	1. Relevance of the domain name to an existing word or concept related to the domain's area of use 2. Method of domain name formation from the original word or concept (if the word is formed from such) 3. The number and income level of the population of the city specified in the domain name (if such semantic component is present in the domain name) 4. Technical characteristics (exposition period, number of characters, number of search queries, etc.) 5. Compliance of the domain name with the trademark or brand name 6. Cost of domain name registration
3D models	Objects of patent or copyright law	1. The cost of creating the underlying asset 2. Commercial potential of the underlying asset. 3. Quality of visualisation of the required model. 4. Animation of the model. 5. Ability to modify the model 6. Uniqueness of the model

Source: compiled by the authors.

Note:a – *The procedure for determining the commercial potential of digital intellectual assets* is summarised in [15]; b – domain name value factors are given on the basis of the methodology for assessing the market value of second-level domain names in .RU and .RF top-level domains in the secondary domain name market. URL: https://app.cctld.ru/KC_buklet_2020.pdf (accessed on 12.05.2023).

ing into account various factors [14] — for example, for a software product they are given in (*Table 3*). According to its data, the size of the lump-sum payment should be 10% (the largest number of factors is 6), but it is preferable to use its weighted average value, taking into account the number of factors for each column:

(10% *6 + 25%*4 + 50%*0) / (6 + 4 + 0) = 16%.

Therefore, the recommended lump sum payment — is 16% of the licence price.

Determination of the *royalty rate* can be carried out by various methods, the most popular of which are [16]:

- based on the method of standard royalty rates, i.e. on the use of ranges of rate values obtained by statistical analysis of published data on industries, groups of industries and certain types of products with subsequent adjustment taking into account the specifics of digital intellectual assets and licence conditions;
- relying on the method of analogues, based on the search and analysis of licence

Table 3

A set of factors used to calculate a lump sum payment

No. items	Factors	10%	25%	50%
1	Age	Introduced to the market in the current year	On the market for up to 5 years	On the market for more than 5 years
2	Area of use	For internal use	External and internal use	For realisation
3	Market share	Small (up to 5%)	Medium (5% to 20%)	High (above 20%)
4	Awareness	Region	Country	Global
5	Expansion potential	Limited to market segment	Several markets and segments	Not limited
6	Territory	Regional	Domestic Russian	International
7	Licence	Non-exclusive	Non-exclusive/Exclusive	Exclusive
8	Market competition	High (4 or more competitors)	Medium (2-3 competitors)	Low (1 competitor) or no competitors
9	Implementation risks	Significant advertising costs and high risks of not achieving planned revenues (only potential counterparties are present)	Minor advertising costs and low risks of not achieving planned revenues (existence of preliminary agreements with real counterparties)	Little or no realisation risks (regular counterparties are available)
10	Market availability and volume	Market in development (1-2 potential customers in the market)	Market segments (established market with known customers)	Several markets with large volumes of existing and potential customers
	Number of factors	6	4	0

Source: compiled by the authors.

agreements for similar types of intellectual property items, information about which is contained in public sources or is available in the licensor's organisation.

Both of these methods are suitable for calculating the royalty rate when understanding digital intellectual assets in the first interpretation, i.e., as digital intellectual property rights (*Fig. 2*), since they have been objects of civil turnover for a considerable period of time and there are already accumulated volumes of information both on similar transactions and on standard royalty rates.

As for digital intellectual assets in the second interpretation (as digital rights), in this case the choice of royalty rate, until sufficient data on similar transactions is accumulated, may be agreed upon by the parties during the licence agreement process and may take into account the above factors as well as industry ranges for

standard royalty rates.

CONCLUSION

The conducted research allows us to draw the following conclusions:

1. Digital intellectual assets can be considered in a broad sense as intellectual property rights that exist and have value exclusively in digital (electronic) form. The most common form of commercialisation of digital intellectual assets is a non-exclusive licence. As a form of licence remuneration, royalty payments or a combined payment are most often used. When determining the type and amount of royalties to be paid to the licensor, it is necessary to take into account the specifics of a particular type of digital intellectual assets, as well as factors related to the licensee (its type, experience of cooperation with it, its ability to generate additional income from the use of digital intellectual assets, the possibility of controlling the licensee's income).

2. In a narrow sense, digital intellectual assets refer to digital rights to intellectual property items or to the use of intellectual property items. At the same time digital intellectual assets have the characteristics of both digital assets and intellectual property items; digital intellectual assets exist and circulate exclusively in a legally compliant information system, usually based on blockchain. The most common forms of commercialisation of such assets are an exclusive licence or an assignment agreement. The main type of licence fee is a lump sum payment. When determining its amount, the peculiarities of the current legislation, current market conditions, specific costs of the licensor (for creation of NFT tokens, registration on an electronic platform, etc.), as well as factors affecting the value of specific types of digital intellectual assets listed in (*Table 2*) are taken into account.

The results and conclusions of the research can be used by the management of companies when developing strategies for managing digital intellectual assets to ensure technological sovereignty in the context of digitalisation of the economy and sanctions restrictions.

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Towards the 105th Anniversary of the Financial University

ORIGINAL PAPER

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Improving of the G2C Payment Mechanism as the Part of the Development of the Social Treasury Project Using the Russian National Payment System

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ABSTRACT

The purpose of the study is to consider the possibility of improving the G2C payment mechanism in the context of the digital transformation of the social sphere, as well as to develop a methodological concept for a model for implementing a centralized payment service in the social sphere. The authors reviewed the proposals of Russian and foreign researchers to standardize forms of interaction between citizens and the state. Approaches to understanding the effectiveness of the social security model have been studied; the possibilities for improving state programs for the development of the social treasury and the national payment system have been analyzed; recommendations have been proposed based on the best payment solutions in the field of social security. Based on the results of the study, the authors developed a model of the centralized payment service "SBP ZH", integrating SBP into the unified state information system for social security (USISSS), which simplifies the "client path" due to simple and convenient identification of beneficiaries of social assistance by phone number. The results of the implementation of the model will be: an increase in the number of recipients of social assistance among residents of populated areas of the country who do not have access to the Internet, and the population of new constituent entities of the Russian Federation (in the context of a lack of payment infrastructure), as well as an increase in the share of non-cash money turnover by 5–6%. The proposed measure for the implementation of the G2C payment mechanism works within the framework of such areas as the Social Treasury project and the Development Strategy of the National Payment System for 2021–2023.

Keywords: digitalization; social security; social treasury; NPS; support; state; platform; FPS

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INTRODUCTION

High degree of uncertainty, complex geopolitical situation, unprecedented international sanctions, as well as openly hostile actions of Western countries have become the reasons for the increased attention of politicians, sociologists and economists to the problem of ensuring social stability in Russia. Especially relevant in modern conditions is a flexible and effectively working system of social support of the population, as well as expanding the number of citizens covered by it and increasing the share of instruments of its targeted impact.

Every third Russian regularly receives payments, services or consultations in social sphere organizations — the amount of money allocated for these purposes increased in the period 2017–2022 for a number of objective reasons, including a series of crises (including the coronavirus pandemic), as well as planned measures to implement the constitutional guarantees of Russian citizens (*Fig. 1*).

Optimization of expenditures (for example, gradual reduction of the share of benefits in accordance with the strategy of development of the Russian pension system), as well as the introduction of innovative technologies, the use of new public administration mechanisms and the development of results-based budgeting allow to cope with the increasing volume of social liabilities and commitments of the state. Innovative solutions at the intersection of various digital government platforms contribute to the transparency of the budget system and the growth of citizens' satisfaction with the work of state and municipal financial management bodies [1]. Digital transformation of the social sphere is one of the most important directions in the development of the social security model and increasing the accessibility of public social services [2].

The events of this year have shown the strength of the established national payment system, so its integration into the process of social security financing is reasonable and has a number of advantages for solving problems in this area. This article formulates the author's concept of implementing the G2C (Government-to-Citizens) payments mechanism as part of the development of digital transformation projects of the social treasury and the national payment system (NPS) of Russia [3].

LITERATURE REVIEW

Large-scale digital transformation is necessary to improve the efficiency of the social security mechanism. Yu.V. Timofeev and K.A. Tumanyants, in their work [4], conducted a comparative analysis of the values of modified elasticity by the cost-effectiveness method (CEA), taking into account the growth of subsistence minimum, revealed that the categorical nature of payments is to the detriment of targeting and negatively affects the rate of poverty reduction in the regions.

L.A. Gladkova and A.A. Chetverkina in the course of the analysis of social support, social insurance and social security of the population of the Moscow region revealed that not all the resources of the budget system are targeted and represent a wide range of social support measures [5]. In their opinion, the direction to improve the efficiency of the social protection system is to bring the average payments to socially vulnerable segments of the population to the level of the average wage in the region.

V.E. Makarov sees the problem of inefficiency of the social security system in the insufficiency and untimeliness of information provision, and recommends to establish access of social workers to "banks of social technologies", as well as to fill legal reference information systems. [6].

I. Lebedeva and S. Gubarev note that to maximize the effectiveness of social policy and the fullest provision of social services, it is necessary to ensure the coordinated functioning of the relevant state mechanisms [7]. The trend towards accelerated introduction of digital

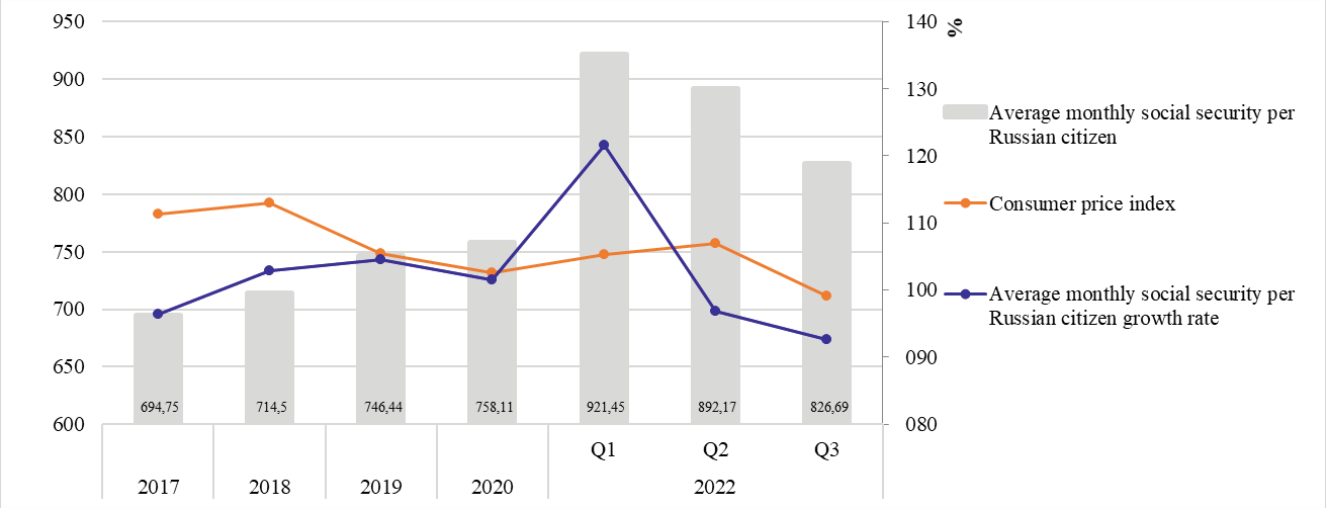

Fig. 1. **Average monthly social security per Russian citizen, 2017–2022, rubles**

Source: compiled by the authors based on Unified interdepartmental information and statistical system data. URL: https://www.fedstat.ru/indicator/33993/

technologies in the economy and social sphere is currently one of the national development goals [7].

The above-mentioned topics are also discussed by foreign researchers and international organizations. The ISSA's (International Social Security Association) 2020–2022 synthesis / consolidated report on the potential of digital transformation to create better and more resilient social protection systems notes that the bulk of social care institutions have undergone digitalization during the coronavirus pandemic, which has served as the basis for a fundamentally new working environment.[1] Global changes in the social sphere due to the accelerated introduction of digital technologies and the trend towards its full digitalization have changed the model of interaction between the state and citizens.

We understand the efficiency of social policy as its economy and effectiveness. The first is mainly associated with the financing of the social security system from the budget system, the optimization of which is possible by increasing the transparency and targeting of social assistance, including by improving the mechanism of G2C payments, which implies providing access to state information through online services [8]. The Table systematizes the main results of the Russian authors' research in this area of scientific interest.

RESULTS

Best global practices in the development of digitalization in the social security system

One of the countries succeeding in the digitalization of the social security system is India. In 2021, the government introduced a new digital payment concept, e-RUPI [13], which uses a system based on electronic vouchers for social services, health benefits, etc., delivered to recipients' cell phones via QR code or SMS. Users can get the voucher from the service provider without a card, app or internet banking.

The main uses of e-RUPI include: 1) implementation of services under government

[1] ICT response to COVID-19: Leveraging accelerated digital transformation to build better and more resilient social protection systems (Summary report 2020–2022). ISSA. URL: https://ww1.issa.int/node/236179

Table

Review of proposals for improving the social sphere in the context of the development of the social payment system

No.	Authors	Scope of the research	Problem to be solved	Suggestions
1	Yu.V. Kuvaeva, E.A. Sedunova [3]	Improvement of the FPS as an element of the creation of a new technological basis for the qualitative functioning of the social sphere	Identification of the possibility for FPS to make payments in favor of state authorities	Improvement of interbank transfers by launching C2G and G2C services. Use of FPS in other areas - for example, introduction of a service for payment of salaries to those working not only in the budgetary but also in the social sphere
2	K. K. Gavrilov, M.A. Babenko [9]	Analysis of innovative payment solutions formed on the basis of digital technologies	Search for prospects for the development of payment instruments and payment system in the conditions of digitalization in Russia	Introduction of a universal standard of QR codes; consolidation of the right of holders of the digital rouble to exchange it for cash or non-cash funds; preparation of legal ground for the introduction of electronic payment account instruments (e-invoice); development of a universal platform using Mir.Pay
3	N.V. Mironenko [10]	Methodological aspects of evaluation of control processes in G2B and G2C electronic systems	Lack of standardized procedures and methods for efficient and fast processing of G2C services	Formation of a "feedback" mechanism by means of user voting; development of a score-rating methodology for monitoring the results of the automation of the authorities' activities
4	V.B. Morozov [11]	Essence and peculiarities of social innovations in the public sphere	The need for a public and open trustful dialog between the state and representatives of the business community and civil society	Creation of innovation cells (blocks), where the whole innovation cycle is united in one administrative and technological system
5	M. Aliyev, M. Mammadov, V. Rzayeva, A. Safarli [12]	Fast payment system as a tool to optimize payment processes in the Russian financial system	The need to introduce new types of payments in favor of the state	Distribution of payments from individuals to the government (C2G) for tax dues, government charges and duties (levies) through FPS

Source: compiled by the authors based on [3, 9–12].

schemes for dispensing medicines, nutrition and diagnostic support, tuberculosis eradication, mother and child protection under certain health and social programs, fertilizer subsidy; 2) implementation of employee welfare and corporate social responsibility program in the private sector [14].

The technological side of the innovation emphasizes the reliability of e-RUPI. Public institutions and corporations can generate vouchers through partner banks [15]. Contacting the latter is necessary to transmit information about specific individuals and payment purposes. Beneficiaries are identified by their

mobile number, and a voucher issued by a bank to a service provider in the name of a specific person will be delivered only to that person and no one else.

The main advantage is that e-RUPI connects service sponsors with their providers and beneficiaries digitally without a physical interface. This innovation has led to a true digital revolution in India's social security sector through widespread use during the pandemic (to provide cashless payment for COVID-19 vaccinations) [16].

The system was developed by the National Payments Corporation of India (NPCI) based on the UPI interface and was widely spread among the population due to the fact that SMS can be received even on an old-fashioned push-button phone [13]. This makes the system as accessible as possible to all segments of the population, which is especially important for countries and regions with medium and low per capita incomes.

Many countries are exploring the field of digital currencies issued by central banks. Currently, 135 countries are already engaged in research in this area, developing a concept and methodology, and have launched a pilot or, on the contrary, canceled a digital currency project (*Fig.* 2); however, only a few countries are thinking about the possibility of using the latter for the development of social security systems.

In Russia, the digital rouble project is still under development, so there is an opportunity to adapt its use for social finance, following the example of India. The main problem in this case is the high cost of implementing such technology and the irrationality of its use without the possibility of spreading it throughout the economy.

That is why it is much less resource-intensive to modernize and improve the G2C payment mechanism in order to solve the problems affecting the efficiency of the social security system, in particular, to develop its information transparency and targeting. New solutions in this area will provide additional opportunities for effective interaction of citizens with relevant social institutions through a set of digital and physical channels.

Development of the Russian social security system on the basis of original digital solutions: description of the author's model of operation of the centralized payment service "FPS HC"

The "Concept of Digital and Functional Transformation of the Social Sphere within the Sphere of Activity of the Ministry of Labor and Social Protection of the Russian Federation until 2025" documents the intention to create a unified digital platform "Social Treasury", which will unite 30 thousand measures of social support.[2] In the context of the development of the social security system in the digital direction, we propose to simplify the system of settlements between the state and recipients of services and budget transfers (*Fig. 3*).

Improvement of the payment system can become a key element in the creation of a new technological framework that will help improve the quality of functioning of the social sphere in Russia. According to the authors, it is necessary to activate the mechanism of centralized payments through the inclusion of the Fast Payment System (FPS) in the chain of social support measures. The proposed innovation requires integration into the unified state information system EGISSO (*Fig. 4*).

FPS is a service of the Bank of Russia's payment system that allows for quick transfers and payments by phone number or QR code. It is the main driver of NPS development, realizing, among other things, scenarios of payments by individuals to the budgetary system of the

[2] Concept of Digital and Functional Transformation of the Social Sphere in the Sphere of Activity of the Ministry of Labor and Social Protection of the Russian Federation until 2025. URL: http://static.government.ru/media/files/i2keGFnJGgf832zbAW9tQ7yDDLuEe3Ru.pdf

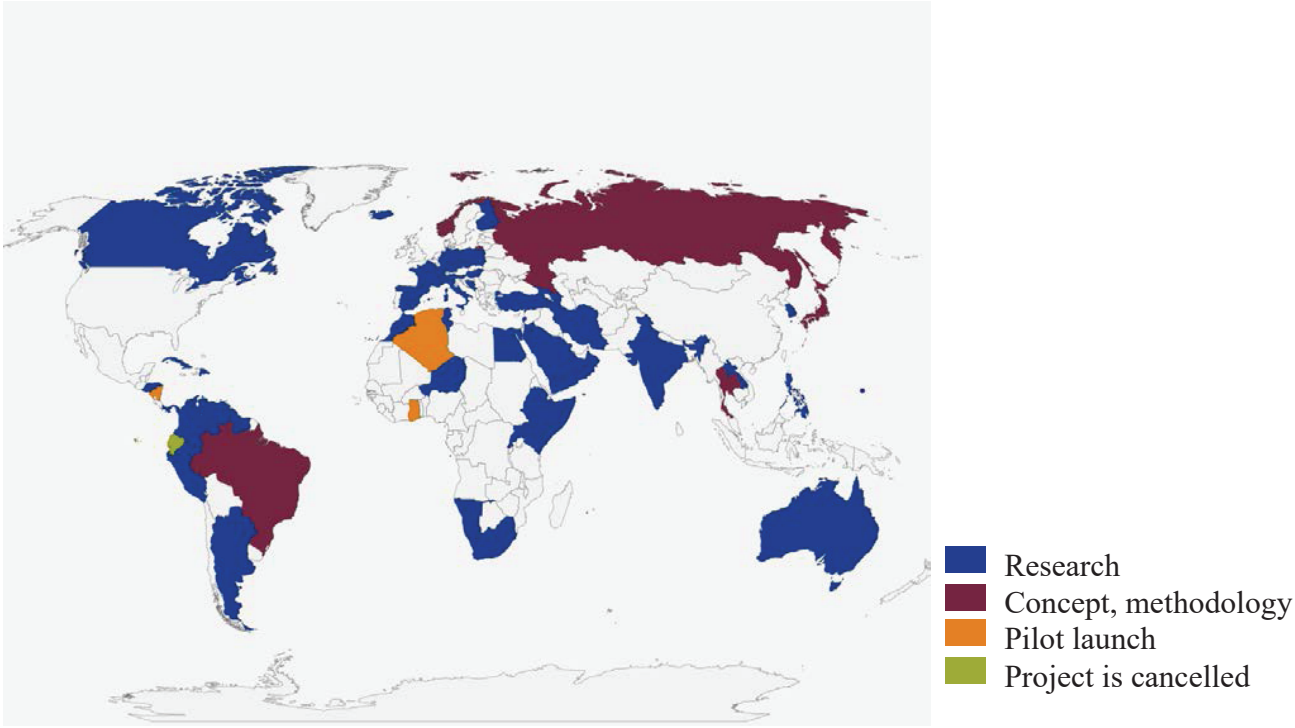

Fig. 2. **Visualization of the spread of digital currency in the central banks of the world**

Source: составлено авторами на основе данных CBDC. URL: https://cbdc.ru/cifrovaya-valyuta/strany-uchastniki/ / compiled by the authors based on the CBDC data. URL: https://cbdc.ru/cifrovaya-valyuta/strany-uchastniki/

Russian Federation (C2G transfers). Integration of FPS into Unified State Information System of Social Security (EGISSO) will allow the relevant agencies to promptly exchange data on payments, allowances and benefits, as well as identify recipients of social assistance by phone number.

As one of the ways to implement the presented mechanism, let us consider a scenario approach on the example of allocation of funds for the purchase of medicines by privileged categories of citizens [Art. 6.1. Federal Law of 17.08.1999 No. 78-FL "On State Social Assistance" (hereinafter — No. 78-FL)][3] and other population groups, in the outpatient treatment of which (depending on the category of disease) medicines and medical devices are dispensed on doctors' prescriptions free of charge.[4] At the moment, in order to get a drug from the list of preferential provision, you need to collect all the necessary documents in the hospital and with them, as well as with a paper confirmation of the appointment of preferential medical drugs to come to a pharmacy participating in the program of state social assistance.

To improve the efficiency of the procedure for obtaining this type of benefits we offer a new form of financing (*Fig. 5*) — the service "FPS HC", or "FPS HealthCare", contributing to a fundamental improvement and acceleration of the process of payment for discounted medicines. Confirmation of the buyer's right to purchase the drug is carried out by phone number.

[3] Federal Law No. 78-FL of 17.08.1999. "On state social assistance". Art. 6.1. URL: https://www.consultant.ru/document/cons_doc_LAW_23735/

[4] Annex No. 1 to the Resolution of the Government of the Russian Federation of 30.07.1994 No. 890 (ed. of 14.02.2002). URL: https://base.garant.ru/101268/

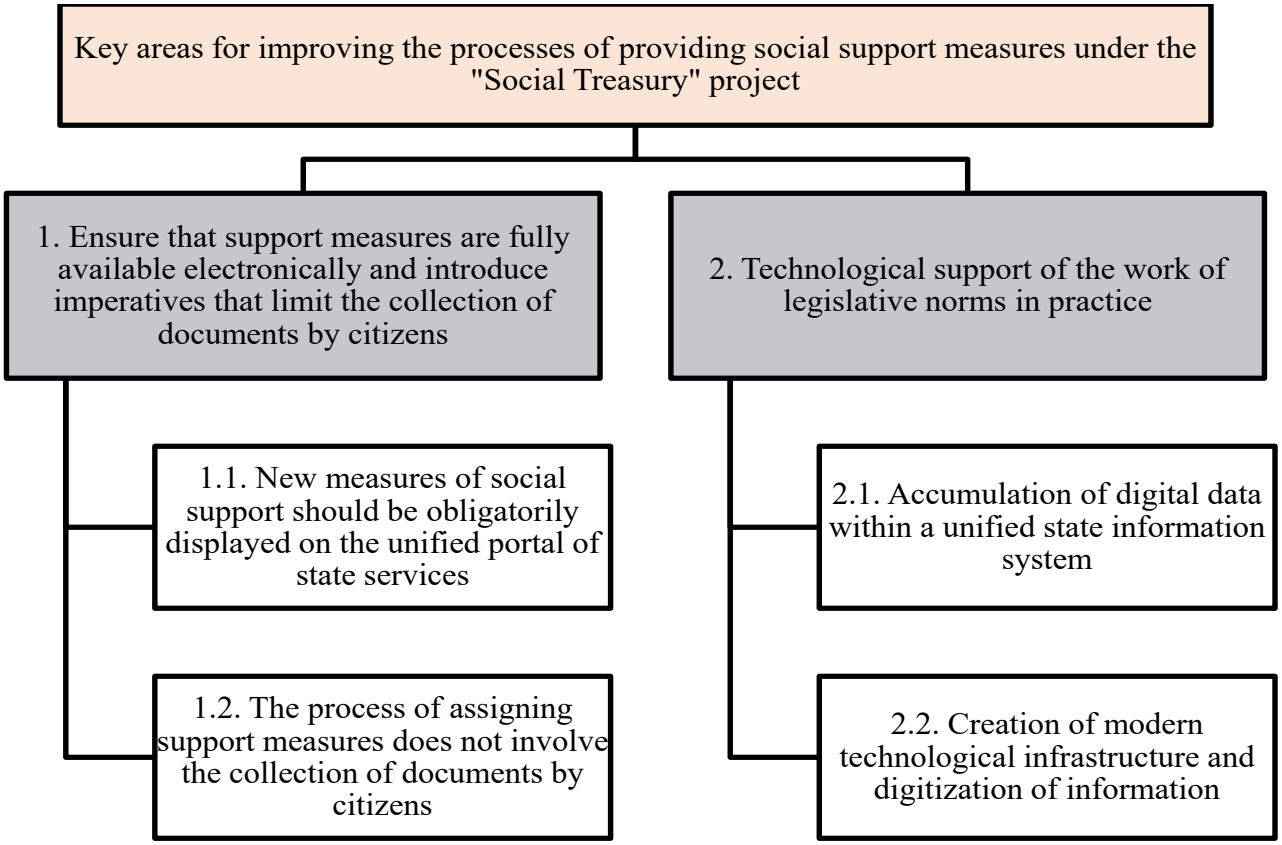

Fig. 3. **Key directions for improving the processes of providing social support measures within the framework of the Social Treasury project**

Source: compiled by the authors based on the Government Order N 3144-r dated November 6, 2021. URL: http://publication.pravo.gov.ru/Document/View/0001202111090005

This is possible if three databases are combined within one payment system: discounted medical drugs from the list No.178-FL, state medical institutions (StateServices/Gosuslugi, EMIAS) with data on patients, their phone numbers and names of drugs prescribed to them and FPS database with information on payment accounts of pharmacies and phone numbers of customers.

The centralized service model for drug payment will work as follows:

Step 1. After choosing the necessary drug in the pharmacy, the beneficiary (purchaser) initiates the purchase in the "FPS HC" service by calling a special number (allocated by the telecommunication operator for each pharmacy). The process is organized according to the principle of "missed call" — a missed call without voice response.

Step 2. The "FPS HC" service, having received information from the incoming number, identifies the user and checks whether the purchased drug is included in the list specified in the Federal Law No. 178.

Step 3. The system checks to see if the purchaser is actually eligible for the requested drug and if the prescribing information is available from a public health agency.

Step 4. If steps 2 and 3 are successfully completed, the payer (i.e., the state) will be willing to fund the purchase of the drug product.

Steps 5, 6. As confirmation, the Buyer receives a short SMS code and tells it to the pharmacy salesperson.

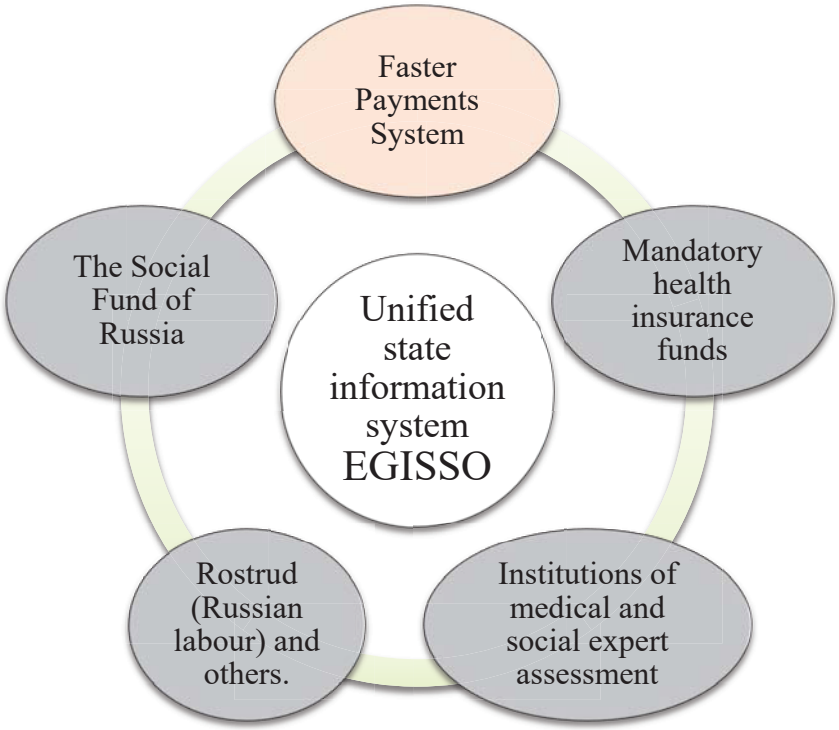

Fig. 4. **Composition of the unified State information system of social security (USISSO)**

Source: compiled by the authors based on [8].

Step 7. The vendor sends the code to the "FPS HC" system for verification.

Steps 8, 9, 10. If the verification is successful, the funds are directly transferred from the "state account" to the pharmacy's account.

Step 11. The seller gives the drug/ medication to the buyer.

The above scenario is only one of the possible options for using this method of integrating the payment system into the social sphere.

The effectiveness of the proposed model can be assessed by comparing the costs of its implementation and maintenance with the economic effect of reducing related administrative costs caused by the existing social security system. The quality of social services provision will reach another, much higher level.

The introduction of such solutions, which help to increase the efficiency of the system of administration of state and municipal finances, will provide savings of up to 20 billion roubles per year,[5] so the development of digitalization processes in the social security sector in most cases is economically feasible.

The proposed measure to improve G2C payments will make it possible to increase the targeting of social support measures by increasing access to FPS for more than 20% of the population. Mobile identification will ensure the involvement of poorly covered groups of citizens and business units:

1) residents of settlements without Internet access but with cellular communication;

2) business structures and residents of new constituent entities of the Russian Federation, which are in the conditions of lack of payment infrastructure;

3) all those who do not use a smartphone (20% of the Russian population — 30 million people.).

[5] The Social Treasury will save the Russian authorities 142 billion roubles. Izvestia (online). URL: https://clck.ru/WjDQC

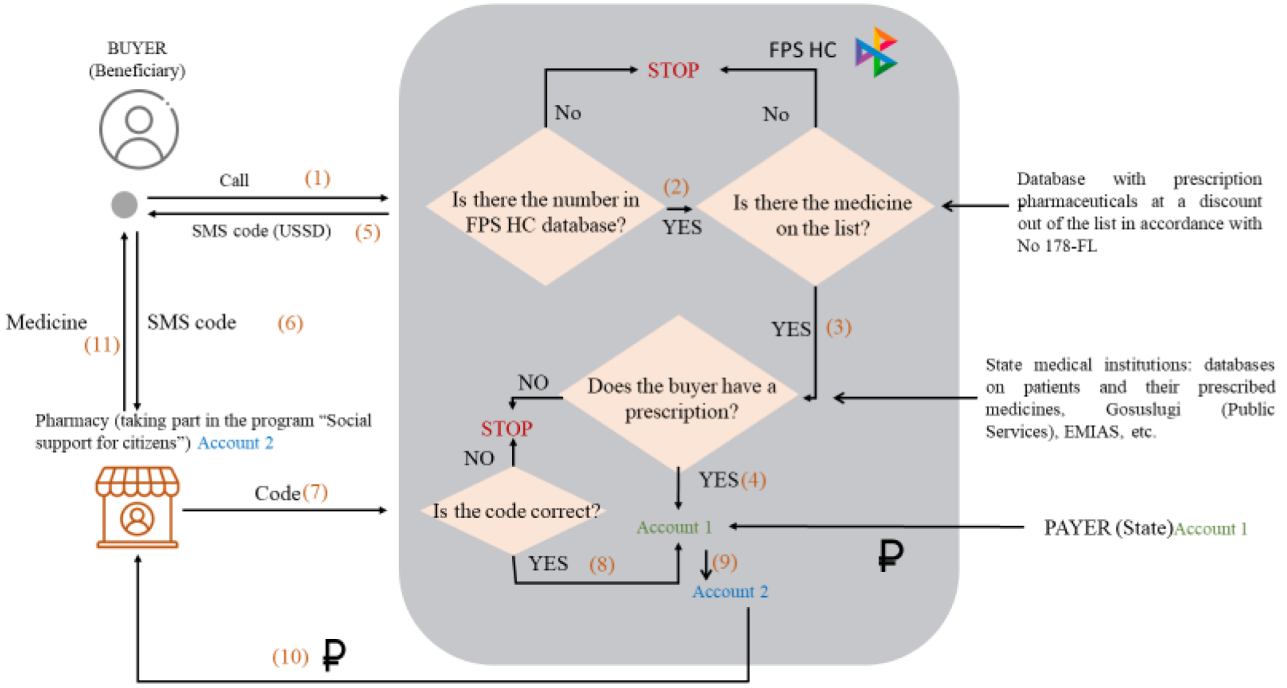

Fig. 5. **The model of the centralized service for payment of medicines "FPS 3X"**

Source: compiled by the authors.

The number of potential FPS users is 10–30 million people. The selected categories are presumably the target beneficiaries; at least one third of them will receive social assistance. Due to the increase in the number of FPS users, the volume of transactions in non-cash turnover will also grow (tentatively — by 6%). According to data for 2022, the share of non-cash payments in trade turnover amounted to 62% (or 877 billion roubles.).[6] The receipt by 10 million citizens of social payments in the amount of RUR 826.69 per month[7] will increase the volume of payments by RUR 99 billion (+5–6% to the non-cash turnover).

This simultaneously corresponds to the goals of improving the efficiency of the social security mechanism and the development of the NPS. As a special advantage, it is worth noting the relatively low costs of implementing the proposed model due to the fact that the technologies used in it already exist and work successfully in Russia. The unification of databases will also reduce the cost of maintaining disparate information systems.

The result of the digital transformation of the social sphere will directly affect the targeting of the assistance provided, so the effective implementation of the project is extremely important.

CONCLUSIONS

The study showed that the development of unified mechanisms for the provision of public services (regardless of the region) to implement measures that promote proactive receipt of social support is among the priorities of digital transformation. In this regard, the authors developed a model of operation of the centralized payment service "FPS HC", the main idea

[6] Share of non-cash payments in trade turnover. SberIndex (online). URL: https://sberindex.ru/ru/dashboards/dolya-beznala

[7] Average monthly amount of social support per user. EMIASS (online). URL: https://www.fedstat.ru/indicator/33993

of which is to integrate FPS into the structure of Unified State Information System of Social Security (EGISSO).

The proposal strengthens the targeting of work with the population and simplifies the "client path" through simple and convenient identification of beneficiaries of social assistance by phone number.

The result is an increase in the number of FPS users and, accordingly, an increase in the accessibility of social services for 20% of the populationя.

The use of the scenario approach in the construction of state information systems makes it possible to solve the problem of increasing the personalization of the provided assistance and the timeliness of informing about social payments. The authors see the following advantages for the state in the measure proposed in the article for the development of the "Social Treasury" system by improving the mechanism of G2C payments:

1. Development of the social security system through:
- increasing accessibility of state services in conditions of lack of payment infrastructure (for such recipients of social assistance as residents of settlements without internet, population of new constituent entities of the Russian Federation);
- reducing the number of documents required to obtain services;
- increasing transparency of data on the quality of human capital, targeting and need verification;
- increasing the updatability and integration of state systems;
- reducing the cost of maintaining disparate databases.

2. Development of the national payment system through:
- increase in the efficiency of budget funds management, increase in the transparency of the financial system;
- increase in the volume of budget funds transferred through FPS;
- increase in non-cash turnover by 5% by 2025.

Among the risks and factors that may hinder the implementation of the described idea, the authors highlighted the increasing role of digital currencies in the mechanism of social financing. The study considers the best foreign payment solutions in the field of social security in recent years. Particular attention is paid to the Indian project "e-RUPI", which created a real digital revolution in the country in 2021. Russia is also actively engaged in research on the digital rouble. Digital currencies are a technology that could become a serious competitor to other payment instruments in the social security sector. Nevertheless, according to the authors, it is much less resource-intensive to improve the G2C payment mechanism by integrating social treasury with FPS to solve the problems affecting the efficiency of the social security system.

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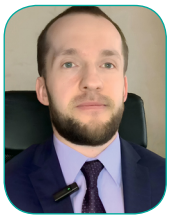

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ORIGINAL PAPER

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JEL E6

Analysis of the Problem of Import Substitution in the Chemical Industry and its Impact on Other Sectors of the Economy

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ANNOTATION

In Russia, the issues of import substitution are now more acute than ever. In this article, these problems are examined in relation to various sectors of the economy, and first of all, to the chemical industry, which is the basis for technological progress and whose development makes it possible to create conditions for the emergence and implementation of innovations in other industries. The author of the study set out to analyze the situation with import substitution in the chemical industry, as well as related industries, using Rosstat data, existing research results on similar issues, and also based on her own experience. In the course of the work, the main trends in import substitution and existing opportunities for increasing it were identified. Scientific tools such as analysis, synthesis, statistical method and data visualization method were used as a methodological basis. The research results reflected in this article can be useful both to researchers of the development of high-tech industries, and to representatives of federal and regional executive authorities, and other interested parties.

Keywords: import dependence; high-tech industries; sanctions policy; development problems; R&D; import substitution; chemical industry; financing problems

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INTRODUCTION

Due to the current geopolitical situation, the task of import substitution in all sectors of the Russian economy has become particularly acute. As for the chemical industry, the share of imports here is extremely high and reaches 90% of the total volume of production. However, the real data are often understated: most companies do not have direct supplies from China, but purchase Chinese products from Russian intermediary firms with russified documents.

The first direct references to the problem of import substitution appeared back in 2015. The fact that it still exists is evidenced both by the statistical data analyzed in this article and the results of scientific research; at the same time, about half of the authors openly point out the problem, while the rest cover it in a veiled manner.

Thus, the need to reduce import dependence and increase the share of domestic production is discussed in the article by E. Yu. Shirokova [1]. The issues of import substitution are touched upon by S.V. Kirbitova and N.A. Kozhina [2]. M.A. Kuimova [3] notes that the Russian Federation has an unrealized potential for the development of the chemical industry, and L.A. Suvorova, S.A. Banin, L.L. Zaushitsyna, I.V. Pestova [4] point out some tasks, the solution of which can contribute to its development. O.A. Mironova writes about the creation of some systemic conditions of state support [5].

Failure to solve the problem of import substitution may lead to irreversible technological dependence on foreign suppliers. In this study, the author proposes to analyze the situation in the chemical industry and related industries by studying the Rosstat data of existing research results on similar issues, as well as on the basis of her own experience.

RESEARCH METHODOLOGY

In this study, the author, using Rosstat data, existing research results on similar issues and based on her own experience, conducts a comparative analysis of the situation with import substitution in the chemical industry, as well as its dependent industries: radio-electronic, electronic, aviation, metallurgical, machine-building, agro-industrial, food pharmaceutical, textile, printing and fuel industries.

Rosstat data (selected by the name of the type of activity according to OKVED) are presented by the category "Production indices for certain types of economic activities in the Russian Federation". Three sub-sectors of the chemical industry were considered: production of pesticides and other agrochemical products; production of paints, varnishes and similar coating materials, printing inks and mastics; production of chemical fibers, with maximum peak values for the period from 2014 to 2022 and three peak points for each sub-sector.

RESULTS OF STATISTICAL DATA ANALYSIS

To confirm the relevance of the problem, we study the Rosstat data in terms of average actual import prices for basic goods, as well as physical volume indices of imports of goods and services.

The analysis reveals that the highest peaks of import growth occur in Q3 2010 (135.1%) and Q2 2021 (132.2%), and the highest average actual import prices for major commodities, in July 2020 ($8,165.4 thousand).[1] This indicates that the price of imported products was increasing in value terms, which reflects the direct dependence of the Russian economy on the import policy of foreign suppliers. Based on the values of the Indices of the physical volume of imports of goods and services and average actual import prices for basic goods, we can conclude that urgent measures are needed to reduce the share of imports, as well as the development of

[1] Average actual import prices for basic commodities. URL: https://www.fedstat.ru/indicator/43239?ysclid=le4rjpxz15788192711 (accessed on 15.12.2022).

weak areas. The latter include: lack of financing, low exports and significant imports of chemicals; outdated and obsolete production facilities; shortage of qualified personnel (holders of unique knowledge are usually over 70 years old); poorly organized sales; slow implementation of innovations and the presence of a corruption component.

OVERVIEW OF THE CURRENT SITUATION IN THE CHEMICAL AND RELATED INDUSTRIES

According to Rosstat data, the share of chemical products is 8.6% in the total volume of shipped goods [1]. Based on the information of the Center for Macroeconomic Analysis and Short-Term Forecasting (CMASTF), there is no progress in this production for the last five years [1].

The author, relying on her own experience, knowledge gained by reviewing the literature on similar issues, as well as on the basis of the results of analyzing the activity of one of the leading chemical enterprises, considered the problem in more detail:

– ***Energy-rich materials.***

In 1970–1980, domestic raw materials were used in the USSR for the production of energy-rich materials, but later they were abandoned under the pretext of "environmental danger" and replaced by imports, for example, from Germany, Korea and France, which turned out to be much more expensive. In addition, Russia became dependent on the political situation, as Western countries gradually imposed restrictions on the supply of raw materials, up to a complete ban. As a result, under time pressure, it is necessary to look for another importer and raise the issue of adapting production to the new imported raw materials.

– ***The reagents.***

The USSR had its own production of almost all types of reagents for analyses and/or for use as components in the chemical industry. Due to its cheapness it started to be purchased abroad (mainly from China). Our own production was liquidated, and the quality of Chinese products began to deteriorate, but the price began to rise due to lack of competition. Thus, we invested money in the Chinese economy, which gained not only markets, but also the opportunity to gain significant profits from the large-scale production of reagents; at the same time, the delivery time due to logistical disruptions (as a result of the COVID-19 pandemic) increased, and enterprises were unable to deliver their products on time. This problem requires the immediate development of new domestic technologies for the manufacture of these components.

– ***Materials for the chemical industry (plants for chemical production).***

The requirements for materials that were produced in the USSR were defined in design and technological documentation in accordance with GOSTs (technical specifications of state standards). As part of import substitution, the properties of materials have deteriorated due to the use of various additives that were not used in Soviet times. This negatively affects the quality of manufactured products.

– ***Ozone-depleting substances.***

Ozone-depleting substances are widely used in fire extinguishing systems, refrigeration systems, as solvents, etc. In accordance with the requirements of the Montreal Protocol[2] their production was banned from 1996; only regeneration (recovery) of those in use was allowed. At the same time, the production of ozone-depleting substances was stopped, and regeneration (recovery) required imported raw materials (from Great Britain), the supplies of

[2] Production of highly regulated ozone-depleting substances is prohibited on the basis of the Montreal Protocol (adopted by the Government of the USSR in November 1988) and the Russian legislation acting on its basis (Federal Law of 10.01.2002 No. 7-FL "On Environmental Protection" in the latest version (Art. 69.1), Resolution of the Government of the Russian Federation of 18.02.2022 No. 2 06, etc.). Laws and Statutory Instruments).

which stopped after the introduction of the next package of sanctions. A critical situation arose, and new suppliers had to be found. However, it is impossible to obtain raw materials in the previous volumes in the current period, and therefore it is necessary to find alternative ways to produce analogue substances with a lower ozone-depleting potential (not prohibited by the Montreal Protocol).

– ***Solid chemical sources of oxygen.***

Solid chemical oxygen sources are used to provide first aid to the population in critical conditions (for example, in epidemics, accidents, disasters), emergency transport of seriously ill patients, mountain climbers, etc. However, after the introduction of the next package of sanctions, supplies of sodium chlorate produced in Finland were stopped. Chinese sodium chlorate is comparable in cost to Finnish sodium chlorate. There is no domestic analogue, and, as mentioned above, it is impossible to restore production of both raw materials and subsequent products in the shortest possible time.

– ***Components of monitoring, control, automation, and data acquisition systems.***

These components of monitoring, control, automation, and data collection systems are used for construction and development of chemical production facilities. Due to sanctions, supplies of: pressure sensors (manufactured by the European company Keller), temperature sensors, level gauges manufactured by the companies Vega (Germany) and Endress+Hauser (Switzerland), flow meters of the trade mark (Tm) Krohne (Germany), etc. have been suspended. At the same time, the use of Chinese analogues leads to deterioration of metrological characteristics (measurement error increases and reproducibility of controlled parameters decreases), and, consequently, it leads to a decrease in the accuracy of establishing the modes of technological processes and reliability (devices fail prematurely). In addition, the supply of such equipment as thermostats, high-temperature pumps, quality fittings, laboratory glassware cut-offs [in particular, reactors, Kavalier Glass (Czech Republic) made of Simax glass, glass products of European firms FL medical, Kartell, Nuova Aptaca] has been discontinued. Instead of these brands, nowadays Chinese products are used, for example, Greetmed and others, which leads to deterioration of equipment performance. And it takes time to develop own production facilities.

– ***Organofluorinated compounds.***

Monitoring of scarce and requiring import substitution of materials of low-tonnage chemistry revealed the lack of resources possessing the properties of perfluoropolyethers (PFPE) (chemical inertness, low pour point, resistance to aggressive environments and various oxidising agents, high thermal and radiation stability, non-toxicity), allowing to use PFPE as: hydraulic and pumping liquids in diffusion pumps, compressors; sealing gaskets in contact with aggressive environments (oxidising agents, halogens, gaseous acids); low solidification oils and greases in stop valves, bearings (especially in conditions of northern regions in the oil and gas production industry).

High stability and radiation resistance, chemical inertness of PFPE allows to guarantee their performance in devices for a long time (more than 30 years). Currently, the Russian consumer market for perfluoropolyethers is about 30 tonnes. The main suppliers of PFPE, each of which produces several dozens of types intended for different segments of the world market, are the USA (DuPont, Nye Lubricants, IKV Tribology; TM Demnum, Dow Corning), Belgium (Solvay Industries TM Krytox company); Japan (TM Fomblin, Daikin) Great Britain (M&I Materials Limited company); China (ICAN company) and others. Dupont, Solvay, Daikin together occupy about 90% of the global PFPE market, with Dupont dominating in North America and Solvay dominating in Europe. [6]. At present, supplies from abroad have stopped,

so the Russian Federation needs to create its own production facilities.

– ***Radio-electronic and electronics industries.***

These industries were systematically developing in the USSR, and in some areas our country was even ahead of the West. Import substitution affected only the defence industry, and even partially. In 2020 Rostech State Corporation developed a roadmap for the modernisation of Russian microelectronics, taking into account investments in chip manufacturing enterprises (798 billion roubles until 2024) [7, 8]. This document is based on the measures to stimulate the production of new commodities in the absence of imports, but the indicated growth rates of the industry will not ensure the transition of the Russian economy to the modern level. The lack of enterprises in the country for the production of silicon and its derivatives serves as a vivid example of the interconnection of radioelectronics and electronic industry with the chemical industry: the production of semiconductors directly depends on silicon, without it it is impossible to manufacture computer equipment necessary for the automation of production processes and the creation of new modern production facilities.

– ***Aviation industry.***

The development of this industry was based on partial (minimal) import substitution. At the same time, a significant part of aviation equipment and components for it were purchased from foreign suppliers [7]. Thus, the share of domestically produced aircraft in the fleet of Russian air carriers was annually decreasing. As for the components for the aviation industry, some of them imported by Russia are made of domestic basic polymers. This production is developing quite rapidly in our country, but is exported as cheap raw materials to then return in the form of expensive imported products.

– ***Metallurgical industry.***

Let us consider the defence-industrial complex [7]. A vivid example of the lack of import substitution in this industry is the fact that Russia does not produce sodium sulphide, which is used in metallurgy to produce steel and non-ferrous metals. This element is also used for the production of dyes, sodium hydroxide and soda. Sodium sulphide is also used in chemistry itself, mainly as a reagent for chemical laboratories.

– ***Mechanical engineering (Machine building).***

When analysing the regulatory documents on the strategic development of the industry, it was revealed that the existing tools to support it are insufficient [7]. Considering the structure of production, it can be seen that the share of the chemical industry is 9.8%, and in the structure of the domestic market — 14%.[3] The observed imbalance points to Russia's import dependence — for example, the lack of various types of domestic fuel can lead to irreversible consequences, including disruption of launches of civil and military satellites, spacecraft for geological reconnaissance, problems in navigation, provision of cellular communications, etc. This may cause a multiplier effect and disruption of the state's vital activity, as well as a threat to its defence capability.

– ***Agro-industrial complex.***

The analysis has shown that this industry is also import-dependent, as well as those mentioned above [9]. Due to the geopolitical situation and sanctions imposed against Russia on the supply of various types of equipment and components, there is no possibility to organise the production of calcium carbonate, which is widely used in animal husbandry, agriculture, construction, food industry and cosmetics industry.

– ***Food processing industry.***

The data analysis revealed the following trend: 98% of food ingredients, as well as nutri-

[3] The Russian Government Order No. 2816-o dated 06.10.2021 approved the List of initiatives for socio-economic development of the Russian Federation until 2030. Section 10.5 Chemical Complex. URL: https://www.consultant.ru/document/cons_doc_LAW_144190/4125ee61cb16b4e5fb24f676bb90038570b89c4e/?ysclid=lgs6pc3d9v898868479 (accessed on 22.11.2022).

tion of various types (medical, children's, sports, and preventive) remain import-dependent [10]. The consequence of import substitution at the end of 2020 is a decrease in imports: by 65% — of pork; by 20% — of dairy products; by 11% — of fruits and vegetables. As an example, let us demonstrate the level of support per 1 hectare of arable land abroad (in thousand roubles): in Norway — 146.2; in the European Union — 29.1; in China — 25.9; in the USA — 23.87. In the Russian Federation its value is only 1.9 thousand roubles. [11]. The author [12] notes that full import substitution on the example of the food market has not occurred, including for some reasons: geographical and climatic features of our country and others.

– ***Pharmaceutical industry.***

In the production of pharmaceuticals, the raw materials are substances, about 800 items of which were imported in 2019. [13]. In value terms, insulin ranks first; perindopril ranks second; dolutegravir ranks third. In quantity terms, metformin leads; followed by acetylsalicylic acid and paracetamol. The leading countries in the production of substances are: China (49.7% of the total volumes); India (22.1%) and France (11.1%). The author [14] notes that currently there are 570 pharmaceutical production facilities operating in the Russian Federation, including 60 new ones, 16 of which belong to foreign companies. Based on the above, we can conclude that in this industry it is necessary to develop not only individual enterprises, but also full-cycle production — "from raw materials to the final product".

– ***Textile industry.***

The textile industry is closely related to the chemical industry — the complex technology of textile production is based on physical and chemical processes.

Rosstat recorded positive dynamics of the national light industry growth rate in 2021 in relation to 2020 — the volume of manufactured products in the first two months of 2021 was 14.6% higher than the previous year's level (clothing showed a 5% increase in production, while leather goods showed a 10% decrease in volumes). In February 2021, the textile industry was one of the eight sectors with the highest growth compared to the same period in 2020: the production of textile products increased by 16.2% and clothing by 3.8%. Workwear remains the leading category — the growth against February 2020 was 33.7%, and against January — 22.8% (for comparison, the output of knitted goods increased by 8.5%). The production of knitted raw materials also shows growth. In the first two months of 2021, Russian factories produced 6 thousand tonnes of products, which is 22% more than in the same period of 2020. Companies producing sewing synthetic threads (+11.6%) and fabrics (+8%) started the year on the plus side. The industry increased production volumes despite an increase in the textile price index — the cost of production rose by 1.8% from January 2021, and by 7.1% in relation to January-February 2020.[4]

The sphere of light industry is very dependent on imported raw materials, government orders, as well as the wear and tear and lack of production of Russian equipment. According to the Higher School of Economics, there are up to 600 workers from competing countries in Asia per one worker in this industry in Russia [15]. Another problem is that up to 33% of synthetic fabrics are manufactured in the country, and the share of imports of raw materials (synthetic fibre) is still high. The factors constraining import substitution include the shortage of domestic sewing equipment, lack of raw material base, lack of qualified personnel, and low wages in the industry.

– ***Printing industry.***

The printing market in Russia started to experience difficulties during the pandemic,

[4] Textile industry grew by 15 per cent in 2021. URL: https://profashion.ru/business/finance/tekstilnaya-promyshlennost-prirosla-na-15-v-2021-godu/ (accessed on 06.03.2023).

but since February 2022 they have worsened. The constant imposition of new sanctions is causing significant damage to production and reflects its imperfections. For example, after the introduction of the fifth set of sanctions in April 2022, it became impossible to import certain types of equipment and components, special paints and varnishes, pulp, preparations for paper processing, etc. into Russia. The industry's problems, such as the availability of its own capacity for the production of only some types of paper and cardboard, which is certainly not enough for the full functioning of the industry, have been clearly identified. In addition, during the pandemic there was a tendency to move away from paper media to the online space, and the new crisis is only accelerating this process. As a result, the market for printing services is shrinking. Sanctions prevent the realisation of traditional logistic schemes, and hence problems with the delivery of necessary materials. The output of printing inks is decreasing (over the last four years it has decreased by more than 2 times). Overall, the number of publishing and printing enterprises in 2021 decreased by 12% in each of the segments. This is also accompanied by a drop in the index of entrepreneurial confidence (down by 8% in the industry).[5]

– ***Fuel industry.***

During the sanctions period, the market has shrunk. Since the beginning of 2023, oil is getting cheaper, and the previous production volumes do not bring the same profits as before, so they have to be increased [16]. However, new directions of development are emerging in the industry. For example, over the last decade the number of cars and water transport units with internal combustion engines running on alternative fuels has increased significantly.

[5] State of the printing industry according to Rosstat data. URL: https://blog.pagbac.ru/sostoyanie-poligraficheskoj-i-izdatelskoj-otrasli-na-2021-god-po-dannym-rosstat/?ysclid=lfh4xkpriv236996820 (accessed on 06.03.2023).

– ***Conclusions***

It is clear from the data presented in the review that the lack of domestically produced chemicals of all kinds has a negative impact on various industries. At the same time, the fact that there is no domestic capacity for the development of the chemical industry has a negative impact on the latter. There is a common problem for the chemical (and not only) industry of seeking immediate benefits from the use of imported materials, resulting in significant losses both in terms of finances and possible sales markets. It should also be noted that during the time when production did not exist, many domestic (Soviet) technologies were lost (or sold), plants and research and production complexes were destroyed or repurposed, and experienced specialists — both scientists and practitioners, after losing their jobs, moved to other spheres of activity, and some opted for early retirement.

ANALYSIS OF PRODUCTION VOLUMES IN VARIOUS SUB-SECTORS OF THE CHEMICAL INDUSTRY IN THE INTERVAL 2014–2022 AND CONCLUSIONS BASED ON THE RESULTS OF THE ANALYSIS

Let us consider and analyse the production volumes at the enterprises of the chemical industry for 7 years (from 2014 to 2022) in the context of its sub-sectors.

Analysing the data in *Fig. 1*, we can conclude that the peak growth rates are in January 2018 (173.6% compared to December 2017); December 2018 (145.3% compared to November 2018) and December 2019 (138.9% compared to November 2019). Due to the imposition of sanctions against the Russian Federation, manufacturers are striving to produce and manufacture competitive and import-substituting products, modernise plants and increase capacity.

Based on the data in *Fig. 2*, it can be noted that the peak values are in March 2016 (141.8% compared to February 2016); March 2017 (132.4% compared to February 2017) and Feb-

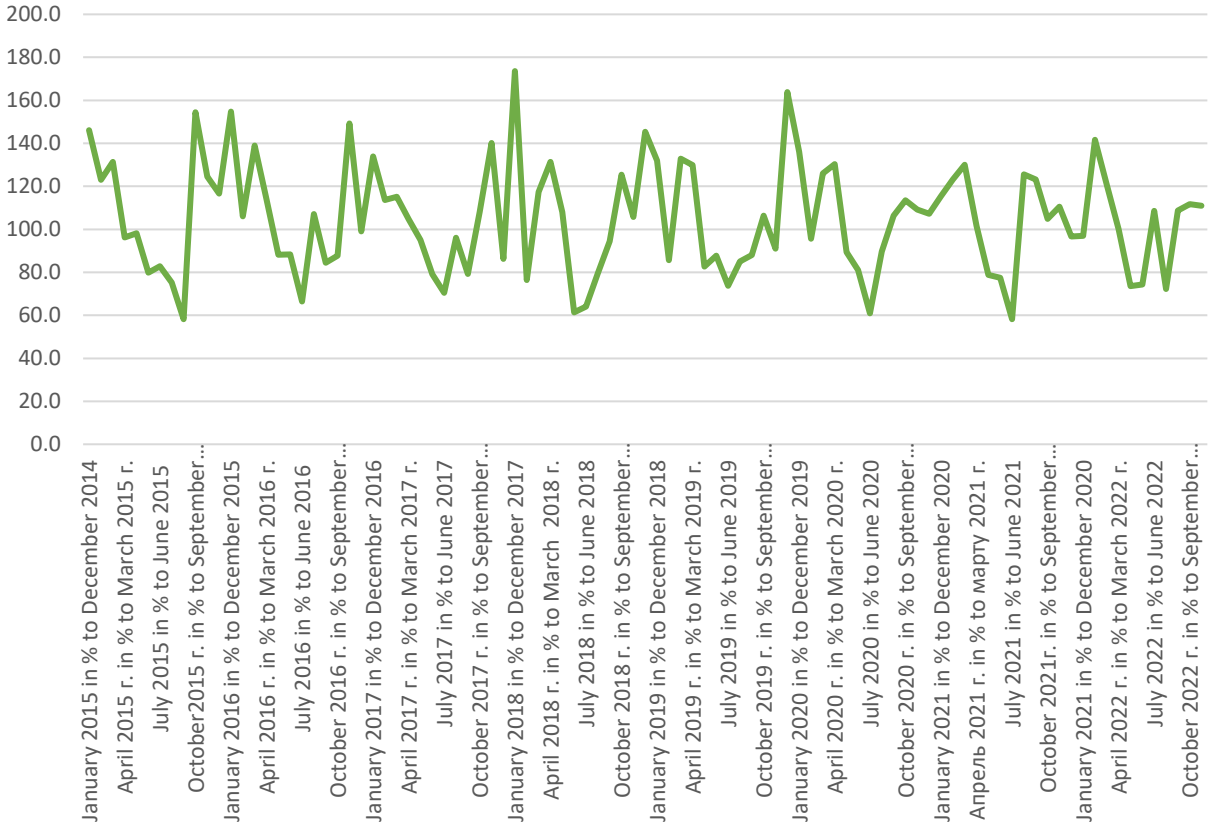

Fig. 1. **The growth rate of production of pesticides and other agrochemical products in the period 2015–2022, %**

Source: Developed by the author on the basis of Rosstat data. URL: https://rosstat.gov.ru/enterprise_industrial.

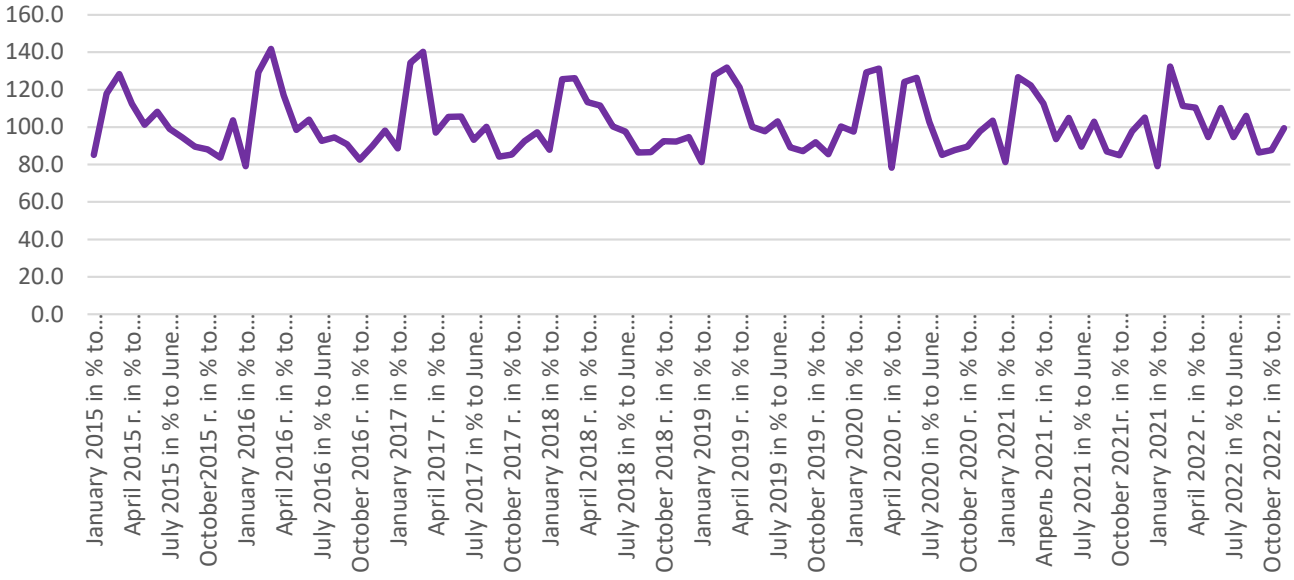

Fig. 2. **The growth rate of the production of paints, varnishes and similar materials for coating, printing inks and mastics, %**

Source: Developed by the author on the basis of Rosstat data. URL: https://rosstat.gov.ru/enterprise_industrial.

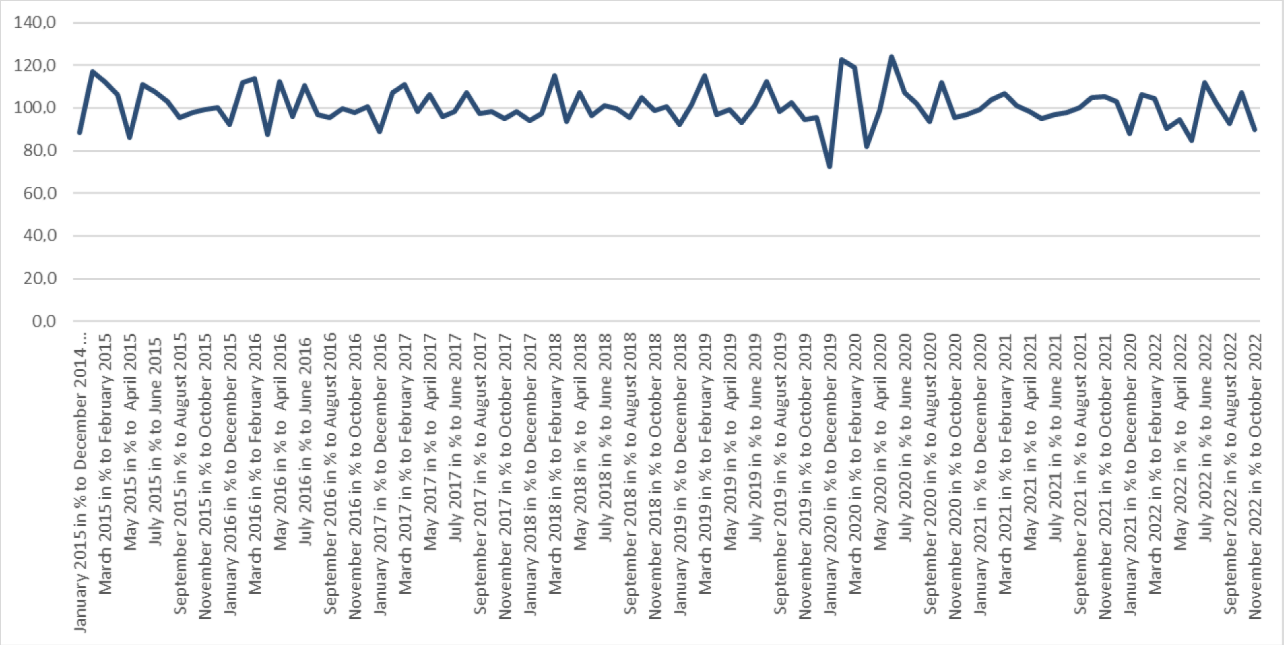

Fig. 3. **Growth rates of chemical fiber production, %**

Source: Developed by the author on the basis of Rosstat data URL: https://rosstat.gov.ru/enterprise_industrial.

ruary 2017 (134.4% compared to January 2017). According to a study conducted by marketing agency ROIF EXPERT[6] in 2022, "the volume of the domestic paint and varnish market showed an absolute maximisation" and increased by RUB 67 billion in terms of value indicators.

From the data of *Fig. 3* it can be evidenced that chemical fiber production reached its first peak in September 2017 (131.8% compared to August 2017); second peak — was reached in March 2015 (127.5% compared to February 2015) and third peak — was reached in June 2020 (117.4% compared to May 2020).

Based on the presented analysis, it can be concluded that the peak of activity in the production of pesticides and other agrochemical products was in 2018, paints, varnishes and similar coating materials, printing inks and mastics — in 2017. Thus, it can be said that in these sub-sectors, the production is developing along the import substitution path.

In general, there are peaks and downturns and not systematic development of the chemical industry, which negatively affects other industries. Sub-sectors of the chemical industry are highly specialized, and more comprehensive changes, such as a state plan for the production and marketing of certain types of chemical products, are needed for the products to be developed systematically [17–22].

RESEARCH RESULTS

In the current geopolitical situation, the import dependence of the Russian Federation economy becomes obvious. Domestic production and technological capacities cannot ensure the production of goods in such quantities that they can replace foreign products [23]. At this

[6] Paint and varnish market in Russia (with types), impact of sanctions of 2022: study and forecast up to 2026. URL: https://vc.ru/u/406653-roif-expert/385506-analiz-rynka-lakokrasochnyh-materialov-v-rossii-vliyanie-sankciy-2022-maksimalnoe-67-mlrd-uvelichenie-obema-rynka?ysclid=le4s88cul0779364284 (accessed on 07.02.2023).

stage, imports are necessary, since the adaptation, introduction of new and/or similar technologies requires a certain amount of time and significant investments. As for the chemical industry, due to its highly specialized nature and lack of permanent markets and plans for development, it develops one-step rather than systematically.

It is worth taking into account that the level of development of the chemical industry in a number of high-tech foreign countries allows the creation of materials with fundamentally new properties, which, in turn, contribute to the development of other areas of the economy.

In addition, it is important to emphasize that in order to develop the chemical industry, it is necessary to use the Soviet experience, adapt the experience of developing countries, especially the People's Republic of China. It is necessary to allocate funds for the restoration, maintenance and development of research and production complexes, guided by the historical and geographical features of the regions.

Based on the results of the study, we can conclude that the problem of import substitution remains open. It should be addressed more comprehensively: to develop the system of product sales and systematize production plans. Also, the process of import substitution should be combined with increasing exports, otherwise the slowdown of economic growth is inevitable.

The creation of specialized ministries will help to optimize the processes of ensuring technological sovereignty, since this method of management will provide better visibility of the problems of each sector, and their solution will be in the hands of qualified specialists. In addition, it will increase the personal responsibility of each ministry for solving problems in a specific sector accountable to it. Interaction between ministries should help regulate the import substitution process in order to maximize the effect of its comprehensive implementation on a national scale.

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Barriers to the Formation of an Ecosystem of Technological Entrepreneurship in Russia

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ABSTRACT

The article is devoted to the current issues of the development of the technological entrepreneurship ecosystem, the growing importance of which is due to the need to implement innovative high-tech business ideas, their implementation and iteration to achieve Russia's technological sovereignty. The **purpose** of this study is to generalize and evaluate Russian experience of state support for technological entrepreneurship, as well as to identify barriers to the formation of an innovation ecosystem at the regional level. During the research process, a complex of general scientific **methods** was used, including: analysis and synthesis, logical, monographic, questioning, generalization, interpretation, graphic visualization. The continuity of international practice of innovative development for Russia, especially in the context of promoting the development of the technological entrepreneurship sector, is determined in the plane of the formation of an innovative society, mental and cognitive strengthening of the national innovation ecosystem. An analysis of the key imperatives in terms of institutional, financial, economic and program mechanisms for supporting the Russian high-tech sector and entrepreneurship was carried out. Based on the results of a survey of subjects of the innovation process conducted as part of thematic foresight sessions in the period 2019–2023. in the regions of the Volga and Ural Federal Districts, barriers limiting the development of the technological entrepreneurship ecosystem are identified, and development directions that help improve its efficiency are identified. From the point of view of practical significance, the results of the study can be useful to government authorities at all levels in the implementation of ecosystem management decisions, including the development of tools to support individual sectors of the economy, the preparation of road maps, regional strategies and standards in the field of innovative development.

Keywords: technological entrepreneurship; ecosystem; innovations; scientific and technological development; technological sovereignty; public policy; regional development

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INTRODUCTION

The growing role of new technologies in the achievement of global leadership by individual countries and regions increases the importance of technological entrepreneurship as an element of national innovation ecosystems — its contribution to the global economy currently exceeds 30% of global GDP.[1] Against the backdrop of the current geopolitical crisis, characterised by unbalanced international economic relations, reformatting of financial mechanisms, and toughening of sanctions policy, innovative development of countries will be focused on domestic sources of growth.

Technological entrepreneurship promotes breakthrough innovations that provide unique offerings and long-term competitive advantages, and its specificity is determined by the following aspects:

- new knowledge and technologies facilitate the penetration of knowledge-intensive solutions into various spheres of life, "socialising" progress;
- technological enterprises (start-ups) generate innovations and integrate resource potential in collaborative partnerships;
- market niches of potential innovative growth are being developed to utilise financial, intellectual, and other types of assets.

The need to strategise innovative changes due to the demands of the neo-industrial agenda (especially in terms of achieving Russia's technological sovereignty) actualises the study of various approaches to the formation and development of the technological entrepreneurship ecosystem at the federal and regional levels.

The theoretical and methodological basis of this study is the provisions of a number of theories: ecosystem, state regulation of the economy, technological patterns, network and spatial economy, firms, and innovation. The application of the ecosystem approach in the economy at the present stage contributes to the qualitative transformation of interaction models of actors — participants of innovation processes — and to the improvement of their economic efficiency.

A significant contribution to the formation and development of the ecosystem concept was made by representatives of foreign and Russian scientific schools: J.F. Moore, M.J. Jacobides, A. Haver, A.V. Babkin, G.B. Kleiner, Yu.A. Kovalchuk, T.O. Tolstykh, N.V. Shmeleva, L.A. Gamidullaeva, V.A. Karpinskaya and others, whose works cover conceptual and methodological aspects of ecosystem development in territorial, sectoral, industrial, and subject contexts [1–6].

Among the most significant researchers of entrepreneurship and, in particular, its technological type, we should mention I. Schumpeter, P. Drucker, G. Etkovits, M.A. Curry, etc. [7–10].

Most modern foreign scientific works confirm the hypothesis about the positive impact of technological entrepreneurship on the economic development of countries and regions [11–14], while the analysis of the Russian publication section shows a significant increase in research interest in fundamental and applied issues of entrepreneurship development in the field of technology. Thus, S.P. Zemtsov notes that against the background of natural, technological, restrictive, and other risks that undermine the foundations of the raw material growth model, due to the ability to change and adaptability, it is technological entrepreneurs who can become the agents of change in the new economy [15]. The study by I.V. Korchagina and K.V. Rogova emphasises the influence of innovation culture, social capital, coevolutionary processes on the emergence and growth of technology companies, and points

[1] Global Entrepreneurship Monitor 2021–2022. URL: https://www.gemconsortium.org/report/gem-20212022-global-report-opportunity-amid-disruption (accessed on 14.07.2023).

to the need to maintain sustainable dynamics of interaction in innovation ecosystems [16]. The study by N.G. Kurakova and L.A. Tsvetkova, which highlights the importance of the ecosystem approach in the institutional transformation of educational organisations, is devoted to the factors of inhibition and acceleration of the development of technological entrepreneurship in regional universities in Russia [17]. R. Malikov, K. Grishin, D. Sultangareev conclude that each entrepreneurial ecosystem is characterised by a specific regional context associated with the differentiation of the potentials of emergence, discovery, and exploitation of entrepreneurial opportunities [18].

TECHNOLOGICAL ENTREPRENEURSHIP IN RUSSIA: IMPERATIVES FOR DEVELOPMENT

By the end of the 2000s, the Russian economy had significantly increased the structural imbalance characterised by the dominance of the primary sector of the economy, exhaustion of sectoral advantages and growing technological lag in advanced production areas. The impact on the domestic economy of the anti-Russian sanctions imposed since 2014 required significant efforts of the management system to maintain critical sectors of technological support of industry. During this period, the need to overcome the gap between science and production, as well as the development of new effective institutional, financial, and economic mechanisms to promptly overcome the dependence on imported technologies and ensure innovative growth became acute.

In 2016, the Strategy for Scientific and Technological Development of the Russian Federation (hereinafter — the Strategy) was approved, the goal of which is to "ensure the country's independence and competitiveness by creating an effective system for building up and utilising the nation's intellectual potential".[2] In pursuance of the Strategy, the Russian Government initiated the National Technology Initiative (NTI),— a long-term interdepartmental programme to create conditions for Russian enterprises to become leaders in high-tech markets by 2035.[3] It was relaunched in 2020 on the basis of a renewed vision of its ecosystem. The National Technology Initiative is specific in that the list of measures required to achieve the set goals and the logic of the strategy are formulated directly by high-tech business, while the government plays the role of a service partner. The 12 working groups of the programme consist of representatives of the executive branch, business and scientific and educational sectors, jointly working on 9 promising markets (aeronet, autonet, marinet, neuronet, foodnet, healthnet, energinet, safenet, and other markets).

Over the 7 years of the National Technology Initiative operation, more than 40 federal-level regulations have been initiated and adopted in favour of technological entrepreneurship, and more than 50 new technologies and products have been developed, including an ultra-high-frequency modulator for 6G-system components; a power system for smart energy management; a GLONASS platform for collecting big data from road networks; a processor for studying neural networks; hybrid unmanned systems for working in extreme climatic conditions; the first Russian electric car based on digital twin technology; Agro-National Technology Initiative project for digitalisation of agriculture; etc.

New formats include infrastructure centres, National Technology Initiative 2035 university and master's programme, boiling points, quantoriums and club movement, project and educational intensive "National Technology Initia-

[2] Decree of the President of the Russian Federation of 01.12.2016 No. 642 "On the Strategy for Scientific and Technological Development of the Russian Federation". URL: http://government.ru/docs/all/109256/ (accessed on 18.06.2023).

[3] The National Technology Initiative (official website). URL: https://nti2035.ru/ (accessed on 19.06.2023).

tive Archipelago", technological competitions, Leader-ID information, and service resource, which are, in fact, "closing" for innovative actors. As for project financing, the programme provides for the possibility of attracting extrabudgetary funds — their total amount was over 28 billion roubles; according to the National Technology Initiative platform, in 2016–2020, the share of third-party investments exceeded 44% of total R&D investments.

In April 2023, the National Technology Initiative Sovereign Technology Fund was established, through which 20 projects with investments of RUB 6.4 billion are to be implemented by 2029 in the field of unmanned aerial vehicles, micro- and radio electronics, and wireless communication technologies. According to the organisers, in the absence of current projects on critical technologies, the Fund intends to invest in the relocation of engineering and nurture its own scientific and technological school.[4]

Basic R&D support tools have been systematically operating in the country since 2019. They provide subsidies to compensate part of the costs of research in modern technological areas (up to 70% of the costs). In 2022, RUR 15 billion was allocated for R&D subsidies. At present, the state is particularly interested in "fast" R&D (no more than 1 year) in order to obtain ready-to-produce competitive technological products in the shortest possible time. Each national project developed by the Government of the Russian Federation in 12 strategic development areas contains an innovation component formalised as a separate project vector or implementation tool.

To promote the development of high-tech industries, a number of state programmes were adopted: "Development of Electronic and Radioelectronic Industry", "Information Society", "Development of Aviation Industry", "Digitalisation of Industry", "National Software Import Substitution Programme", etc., the implementation of which is supervised by relevant departments and state corporations (State Company "Rostech", State Company "Rosatom", Russian Corporation of Nanotechnologies, etc.).

The mechanism of special investment contracts (SPIC 1.0 and SPIC 2.0), developed by the Ministry of Industry and Trade of the Russian Federation under the import substitution programme in 2015 and modernised in 2019, provides for joint participation of the state and investors in the implementation of major innovation projects in the interests of a promising technological agenda. The parties to the SPIC undertake obligations to improve the technological level of production and receive a number of advantages: tax and regulatory benefits, industry subsidies, privileged status in public procurement depending on the size of investments, compensation of R&D costs, preferential lending, and guarantees of unchanged business conditions [19]. As of the beginning of 2023, 68 SPICs have been concluded. According to the public register, most of the contracts are implemented in the automotive industry — 16, chemical industry — 15 and pharmaceuticals — 11. The total volume of project investments exceeded RUB 977 billion.[5]

Russia's innovation infrastructure was formed in accordance with government programmes, including: "Support Programme for Pilot Innovative Territorial Clusters" (2013–2015), "Industrial Parks" (2014–2017), "Establishment of Technoparks in High Technology in the Russian Federation" (2007–2015) and others. For the purpose of import substitution in the period 2015–2021, the government financed projects totalling over

[4] NTI Sovereign Technology Fund. URL: https://www.tadviser.ru/index.php/Компания: Фонд_суверенных_технологий_НТИ_(ФСТ_НТИ) (accessed on 21.06.2023).

[5] Investment projects and SPICs concluded. URL: https://minpromtorg.gov.ru/activities/vgpp/vgpp2/done/ (accessed on 24.06.2023).

RUB 3 trillion (direct budget financing totalled RUB 500 billion).[6]

In the context of financial support, a system of development institutions is connected to the activities of technological entrepreneurship, including: The Foundation for Assistance to Small Innovative Enterprises in Science and Technology (FAI), "Rusnano", "Skolkovo" Foundation, "VEB Innovations", "Russian Venture Company", "Agency for Strategic Initiatives", and others. These structures help innovative start-ups at various stages of financing, preferential lending, and project support: administrative, informational, consulting, educational, and property support. About 60% of all support is provided by the Foundation for Assistance to Small Innovative Enterprises in Science and Technology. For example, in 2022, RUR 7 billion was allocated for the creation and modernisation of 250 high-tech small and medium-sized enterprises (SMEs). Up to RUB 30 million can be received for the launch of innovative production, provided that the R&D stage is completed. Over 5 years, more than RUR 20 billion was allocated to support projects in aggregate; the increase in revenue of innovative products due to grants over this period totalled RUR 140 billion.[7] According to the Foundation for Assistance to Small Innovative Enterprises in Science and Technology, the demand for this form increased 1.5 times in 2023.

In 2022, the Russian government approved the rules of preferential lending for high-tech SMEs — the rate for investment purposes and working capital replenishment for up to 3 years is 3%. RUB 4 billion will be allocated for budget subsidies for the programme over the next three years.[8]

As part of the implementation of the priority action plan to ensure economic development under external sanctions pressure, special attention was paid to the IT sector, which received RUB 21.5 billion in 2022, including RUB 14 billion — in the form of grants. This amount covers 80% of the cost of projects of IT companies developing software (previously — no more than 50%). The software sector became the leader in terms of the number of venture deals in 2022, which is due to the sharply increased interest in IT security on the part of Russian companies due to the withdrawal of foreign developers from the country.

In 2022, a mortgage mechanism was launched for the purchase of industrial real estate (industrial mortgage)[9] — a preferential loan for the purchase of industrial space and the rapid launch of projects, and later — for the construction of new facilities, as well as the reconstruction and overhaul of existing ones. For technology companies, the interest rate is 3% for a term of up to 7 years with the loan amount not exceeding RUB 500 million.

In addition, in 2022, programmes to stimulate technological entrepreneurship on the basis of educational institutions were launched, in particular, such federal projects as "Advanced Engineering Schools", "Creation of a Network of Modern Campuses", "University Technological Entrepreneurship Platform" — the latter is expected to result in 30 thousand technology entrepreneurs entering the market

[6] State support for import substitution: programmes, subsidies, and tools to help industrial companies. URL: https://delprof.ru/press-center/open-analytics/gosudarstvennaya-podderzhka-i / (accessed on 19.06.2023).

[7] The Foundation for Assistance to Small Innovative Enterprises in Science and Technology. URL: https://sfr.gov.ru/press_center/z_news/~2023/01/05/244129 (accessed on 18.06.2023).

[8] Resolution of the Government of the Russian Federation No. 469 dated 25.03.2022 "On Approval of the Rules for Granting Subsidies to JSC "Russian SME Support Bank" for Reimbursement of Income on Loans Granted in 2022–2024 to High-Tech, Innovative SMEs at a Preferential Rate". URL: http://publication.pravo.gov.ru/Document/View/0001202203280014 (accessed on 19.06.2023).

[9] Resolution of the Government of the Russian Federation of 06.09.2022 No. 1570. URL: http://government.ru/docs/all/143173/ (accessed on 20.06.2023).

by 2030. According to the results of the first year of project implementation, 30 advanced engineering schools were established in Russian universities in 15 regions of the Russian Federation.[10] A total of 15 startup studios, 60 entrepreneurial "boiling points" were launched across the country, 300 training sessions and 151 accelerator programmes were developed, which have already been attended by more than 30,000 people. More than 1,000 students received grant support in the amount of RUB 1 million.[11]

In May 2023, the Russian Government approved the Concept of Technological Development until 2030,— a list of the main mechanisms for achieving technological sovereignty, with the following targets: reduction of Russia's technological dependency ratio by 2.5 times; increase in patent activity by 3 times; and growth rate of innovative products — by 1.9 times.[12] 10 cross-cutting technologies and 8 areas of industrial development were selected based on the submissions of agencies. One of the conditions for successful implementation of the Concept's provisions is a high level of innovation activity of the business sector.

PROBLEMATICS OF TECHNOLOGICAL ENTREPRENEURSHIP DEVELOPMENT: CONSTRAINING FACTORS

Assessing the level of development of technological entrepreneurship in Russia, it should be stated that, despite the complex of projects and programmes implemented by the state, it is currently insufficient to ensure technological sovereignty for a number of reasons:

1. Government investments prevail in the structure of science and technology financing, while the share of the entrepreneurial sector remains relatively low — over the last ten years it did not exceed 14–16 per cent of domestic R&D expenditures (*Table 1*) and tended to decline.

R&D expenditures amount to 1.0% of GDP (their planned values, according to the national project "Science", do not exceed 1.2%). At the same time, the leading countries in the field of technology — China, Japan, Germany — allocate up to 2.5–3 per cent of GDP to science (with the share of private R&D funding reaching 60–80 per cent). Speaking about motivational aspects of entrepreneurial activity, it should be noted that there is a shortage of own funds for the development of innovative solutions; insufficient state support for R&D; lack of highly qualified personnel, high competition with foreign manufacturers and the habit to focus on borrowing technologies.

2. The main goals, priorities and directions of the country's innovative development were stated in the Strategy for Innovative Development of the Russian Federation until 2020 approved by the Government of the Russian Federation.[13] The analysis of the dynamics of indicators of enterprises in the innovation sector of the Russian economy shows that the key target indicators outlined in this document were mostly not achieved (*Table 2*). Thus, the increase in the share of innovative goods in the total volume of industrial production by 2020 did not exceed 1.5% (against the expected 20%). The level of innovation activity of organisations in industry increased to 16.2% (instead of the planned 60%).

The share of innovative goods (types of work, services) new to the market during the period under review remained practically unchanged and approached the expected value (8%) by only 0.1%. The balance of export-import of technologies has not left the zone of negative values for

[10] Advanced engineering schools (analytics). URL: https://analytics.engineers2030.ru/ (accessed on 11.06.2023).

[11] Federal project "University Technological Entrepreneurship Platform".URL: https://univertechpred.ru/ (accessed on 11.06.2023).

[12] Concept of Technological Development of Russia until 2030. URL: https://ngtpp.ru/wp-content/uploads/2023/02/Kontseptsiya-tehnologicheskogo-razvitiya-na-period-do-2030-goda.pdf (accessed on 25.06.2023).

[13] Strategy for Innovative Development of the Russian Federation until 2020. URL: http://government.ru/docs/9282/ (accessed on 14.07.2023).

Table 1

Structure of domestic R&D costs in the Russian Federation by sources of funding, %

Source of financing	2000	2010	2019	2020	2021
Budgetary funds	53,7	68,8	64,4	65,4	64,6
Own funds of scientific organisations	9,0	9,1	17,0	17,5	18,7
Funds of the business sector	18,6	16,4	14,9	13,8	13,6
Funds of innovation support funds	-	-	1,1	1,2	1,0
Funds from foreign sources	11,9	3,6	2,4	1,8	1,9
Funds from other sources	0,17	0,2	0,2	0,3	0,2

Source: compiled by the authors based on Rosstat data. URL: https://rosstat.gov.ru/folder/210/document/12994

ten years. There was an obvious growth in the number of industrial organisations engaged in technological innovations, both among the total number of enterprises and within them (by 3 times and 2.3 times, respectively).

With regard to the share of innovative goods new to the world market, the planned level was achieved and amounted to 0.3% in 2020. It should be stated that despite the positive dynamics of some indicators, the national innovation system has not developed intensively enough in recent years.

3. According to the Global Innovation Index (GII) rating, Russia ranks 47th in the world in terms of innovation development in 2022 (45th — in 2021). Positive dynamics is observed in a number of index components, including the level of domestic market development (+13 p.p.), the effectiveness of creative activity (+8 p.p.), the level of human capital development (+2 p.p.) However, the country's innovation potential is only 61% utilised. The GII data also characterise the insufficient maturity of the institutional infrastructure and legislation in the innovation sphere.[14]

4. The National Report on Innovations in Russia for 2020 notes that the level of their commercialisation remains at a low level, which significantly limits innovative development.[15] The coefficient of inventive activity in the last 5 years shows a downward trend (in 2018–2.33; in 2022–1.87).[16] According to Rospatent, the number of applications by Russians for inventions and utility models in 2021–2022 decreased (by 3.1 and 5.69%, respectively). Significantly greater decrease in patent activity was observed from foreign applicants. Thus, there were 30.3% fewer applications for inventions and 25.7% fewer applications for utility models.[17]

5. Underdevelopment of the venture capital market, aggravated by its practical collapse by the end of 2022. The level of investments decreased across all market players (see Figure). The decline amounted to 68% as compared to the previous period, the number of deals on investment in start-ups decreased to the minimum level for the past 7 years

[14] Global Innovation Index 2022. URL: https://www.globalinnovationindex.org/Home (accessed on 15.07.2023).

[15] National Report on Innovation in Russia 2020. URL: https://obrazovanie-gid.ru/doklady/nacionalnyj-doklad-ob-innovaciyah-v-rossii-2020.html (accessed on 15.07.2023).

[16] Inventive activity coefficient in the regions of the Russian Federation 2023. URL: https://new.fips.ru/about/deyatelnost/sotrudnichestvo-s-regionami-rossii/a-iz-akt-2022.pdf (accessed on 16.07.2023).

[17] Rospatent. Key performance indicators of Rospatent for 2022. URL: https://rospatent.gov.ru/ru/about/stat/osnovnye-pokazateli-2022 (accessed on 16.07.2023).

Table 2

Dynamics of indicators of innovative development of the Russian Federation in 2010–2020

Index	2010	2015	2016	2017	2018	2019	2020 Plan for SID RF*	2020 Fact
R&D expenditure, in % of GDP	1,13	1,10	1,10	1,11	1,00	1,04	3,0	1,1
Share of innovative goods in total industrial output, %	4,9	7,9	8,4	6,7	6,0	6,1	25	6,4
Share of organisations engaged in technological innovation in the total number of organisations, %	7,9	8,3	7,3	20,8	19,8	21,6	25	23
Share of organisations implementing technological innovations in industry, %	9,4	7,9	9,2	19,6	18,5	20,0	40	21,5
Share of innovative goods, types of work, services, new for the sales market of organisations, %	0,8	0,9	1,0	0,9	0,9	0,6	8	0,9
Share of innovative goods new for the world market, %	0,03	0,3	0,1	0,2	0,2	0,3	0,28	0,3
Level of innovation activity of organisations, %	9,5	9,3	8,4	14,6	12,8	9,1	-	10,8
Level of innovation activity of organisations in industry, %	11,0	10,6	10,5	10,6	15,6	15,1	60	16,2
Balance of export-import of technologies, USD mln.	- 1	- 0,6	-1,2	-2,1	-1,7	-1,3	0,3	-0,2

Source: compiled by the authors based on Rosstat data. URL: https://rosstat.gov.ru/statistics/science/

Note: * – target indicators in the Strategy for Innovative Development of the Russian Federation.

(139 vs. 306 in 2021). For 2023, the market is forecast to shrink further (from USD 819 million to USD 400 million).[18] The main factor behind the negative trend is Russia's involvement in the geopolitical conflict. Market players are likely to remain cautious until the conflict is over. While individual investors try to identify and acquire quality assets during the crisis, opening up new growth opportunities, corporations tend to take a wait-and-see attitude.

6. Inefficiency of innovative development institutions, which necessitated their reform against the background of severe criticism of their activities. According to the Federal Treasury, in the period 2006–2020, about RUR 1 trillion of budget funds were allocated to these organisations.

[18] Investment in Russian start-ups may be at a record low in 2023. URL: https://www.forbes.ru/svoi-biznes/486532-investicii-v-startapy-v-rossii-mogut-okazat-sa-rekordno-nizkimi-v-2023-godu (accessed on 15.07.2023).

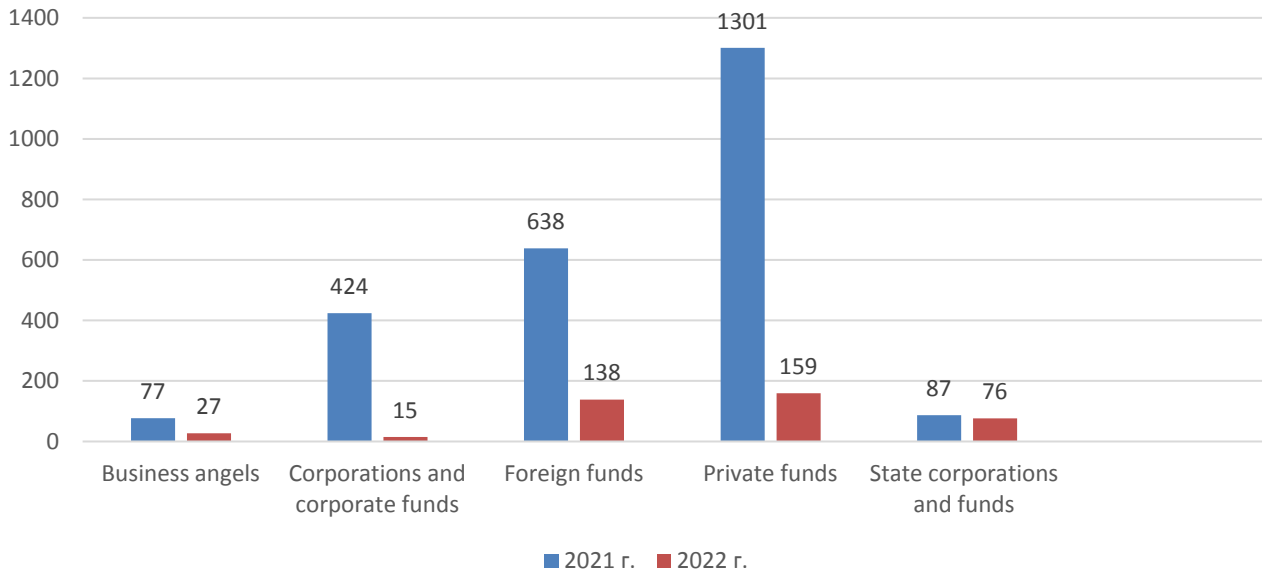

Fig. **Venture financing in Russia in 2021–2022, million dollars**

Source: compiled according to the analytical study "Venture Eurasia 2022". URL: https://dsight.ru/

At the same time, the dynamics of innovative products output over the period of their operation is insignificant, as well as the demand in the world market for the products of the companies they invested in [20].

The number of development institutions has been optimised, but their investment opportunities remain rather modest (their share in total domestic R&D expenditures does not exceed 1–2%). According to the audit conducted by the Accounts Chamber of the Russian Federation, these institutions, created to stimulate innovation and support technological entrepreneurship, have so far failed to show the expected level of efficiency.19 At the same time, it should be acknowledged that, as a result of the revision of their number and organisational modernisation, both the level of project management and the transparency of the selection of the latter for grant support have improved.

7. Negative assessments of the investment climate in Russia and macroeconomic risks contributed both to the suspension of international cooperation in most technological areas, as well as the termination of joint research programmes and restricted access to technological solutions and services necessary for scientific work. Leaving the Russian market, manufacturers of high-tech products temporarily or completely stopped the activities of specialised centres in the country. This process was accompanied, among other things, by the relocation of personnel. The volume of foreign investment in the Russian innovation sphere through research programmes has decreased over the past twenty years from 11.9% to 1.9% (*Table 3*).

A systemic increase in entrepreneurial activity in this area will require a number of regulatory, administrative and organisational solutions, removal of barriers and creation of the most favourable production opportunities in the technology sector.

In the context of international continuity, Russia is interested in the experience of technological entrepreneurship development in the countries that are its most important strategic partners — China and India, where the emphasis was placed on the formation of an innova-

[19] The Accounts Chamber stated that innovative development institutions are unprofitable. URL: https://www.banki.ru/news/lenta/?id=10964017 (accessed on 17.07.2023).

tive society as the basis for the growth of the innovation economy [21, 22]. This allowed to achieve significant results in the frontier areas of global technological development. This approach stipulates not only the construction of the national innovation ecosystem, but also its mental and cognitive strengthening through a comprehensive management impact of the state, aimed at improving systemic sustainability and performance.

REGIONAL ASPECT OF TECHNOLOGICAL ENTREPRENEURSHIP ECOSYSTEM DEVELOPMENT

At the present stage, the processes of development of regional innovation ecosystems in Russia are characterised by the lack of a comprehensive methodology due to the high level of existing spatial polarisation, peculiarities of historical development and local technological specialisation. Interregional differentiation and increasing concentration of innovation activity in the largest agglomerations and leading regions (Moscow, St. Petersburg, Moscow, Nizhny Novgorod, Sverdlovsk, Novosibirsk, Samara, Tomsk Regions, Perm Territory, Republic of Tatarstan) contribute to significant differences both in the volume of its support by the state and in the level of involvement of business entities in the science and technology sphere.

The development of the technology entrepreneurship ecosystem in the regional context is aimed at creating innovative products, commercialising the scientific field and scaling local businesses, which, in turn, will contribute to the growth of revenue of high-tech industries and their share in GRP, increase tax revenues, stimulate exports and ensure the entry of technology companies in IPOs (share issue).

Regional standards of the National Technology Initiative, which are methodological tools for economic development through innovative projects in Russian regions, are being implemented in the Novosibirsk, Samara, Tyumen, Ulyanovsk, Kaluga, and Chelyabinsk Regions. Roadmaps for the development of the technological entrepreneurship ecosystem are currently developed in Moscow, St. Petersburg, Perm and Primorsky Territory, and Pskov Region. In 2023, the authorities of the Republic of Tatarstan and a number of other regions announced the need for action in this direction.

To assess the current situation, as well as to elaborate the prospects and ways of development, the authors of the article conducted a foresight study at the regional level to identify the barriers to achieving the indicators of development of the technological entrepreneurship ecosystem, consisting of the following stages 20 [23]:

1. Formation of the research programme by the working group (definition of the concept, goals and objectives, choice of methods).

2. Creation of an expert group (12 people) to work on the given topic using information and analytical materials, working out the programme context on the basis of the principles of involvement, communication, coordination and systematic. When selecting the experts (representatives of scientific organisations, universities, expert councils of executive regional authorities), we took into account the levels of education and competences in the field of activity, experience of expert work.

3. The expert group will form a pool of indicators for the development of the technology entrepreneurship ecosystem, including: the number of technology companies in the region and the number of their personnel; the number of startups registered annually and the percentage of their "survival" in the market; the volume of non-state investments attracted to innovation projects; the participation of glob-

[20] Foresight is a technology of strategic management based on coordination of positions and interests of strategic influence groups regarding a set of factors, priorities and trends of development of systems, spheres, sectors, industries.

Table 3

Barriers to achieving development indicators for the ecosystem of technological entrepreneurship

Barriers	Share of survey participants who noted the barrier, %
"Toxicity" of state funding: excessive requirements for access to support	15
Non-synchronisation of goal-setting: National Technology Initiative is oriented towards 2035, regional authorities — towards the horizon of changing priorities, entrepreneurs — towards resource availability	12
Historical lack of entrepreneurial thinking	8
Lack of leaders capable of forming a positive public opinion	8
Lack of instruments of real influence	11
Unformed or closed technological demands	8
Lack of staff for qualified project support	8
Rigid regulations and standards	4
Unwillingness of entrepreneurs to invest in R&D	4
Imperfections in the current system of support for innovation activities	2
Lack of systemic interaction between industrial partners and the scientific and educational sector	6
Lack of venture funds with corporate participation at the regional level	4
Lack of access to decision makers	4
Current innovative development programmes are not included in decision-makers' KPIs	2
Mental gap between actors involved and not involved in the National Technology Initiative programme	4
Total:	100

Source: compiled according to the author's research.

al technology leaders in regional events; the number of well-known regional brands; the technological positioning of the region at the national and global levels.

4. Formation of a questionnaire containing a list of situational, open-ended, factual statements (judgements) of non-question form, fixing the essential characteristics of barriers to the development of the technological entrepreneurship ecosystem, and suggesting respondents to choose an option from the list given.

5. Conducting a survey of representatives of regional business, industrial sector, government agencies and development institutions within the framework of thematic foresight sessions on the prospects of technological entrepreneurship in the regions of the Urals and Volga Federal Districts (in the period 2019–2023).

6. Data processing, analysing the results.

The results show that the most significant barriers to achieving the set indicators of development of the technological entrepreneurship

ecosystem (as assessed by its subjects) are the "toxicity" of state funding, excessive requirements for access to support (noted by 15% of participants), as well as the non-synchrony of goal-setting of the participants of the innovation process in the technological sphere, since federal initiatives are focused on a long cycle (until 2035), regional authorities — on the horizon of changing priorities, and for entrepreneurs, of course, the primary factor is the factor of resource availability (12% of participants noted) (*Table 3*).

The "toxicity" of state or governmental funding can manifest itself in the establishment of control over businesses through the provision of support and subsequent pressure on them. The transfer of ownership of innovative solutions and commercialisation is often delayed for fear of overstepping the legal boundaries. Thus, companies decide to avoid interaction with the state, and in these cases the vector of technological entrepreneurship shifts towards large enterprises, which have much greater potential and opportunities to resist control and effectively balance in the innovation environment. In this case, the innovation market loses potential players, which negatively affects the pace of its development.

In addition, the excessive regulatory function of the state in relation to entrepreneurial ecosystems contributes to a decrease in the efficiency of the latter, as evidenced by a number of studies [24–26]. For example, direct support measures are often the reason for a decrease in productivity and competition, while the mechanism of public procurement often creates opportunities for corrupt practices.

Among the identified barriers we should also mention the lack of entrepreneurial thinking in the historical aspect of territorial development; lack of leaders with already existing positive experience in technology business, as well as qualified personnel for the implementation of projects; limited choice of real effective tools for influencing this sphere; lack of a clear idea of technological demands, the embodiment of which is possible on the basis of the potential of regional production systems.

The results obtained can be useful for the management system in terms of coordinating efforts aimed at working out the most problematic areas of technological entrepreneurship, as well as preparing measures within the framework of ecosystem solutions for roadmaps, strategies, and regional standards.

In order to overcome existing barriers and form an ecosystem of technological entrepreneurship at the regional level, including in the context of achieving technological sovereignty of Russia, it is necessary to ensure the following:

- creation of a favourable institutional environment and system support: sustainable cooperation with development institutions on regional programmes, improvement of legislation in the field of patent law, elimination of "toxicity" of state funding, development of standards for implementation of pilot projects and scaling of technological solutions;
- development of innovation infrastructure: venture funds, industrial parks and technoparks, business incubators, science and technology centres, etc.;
- increasing the level of involvement of the regional management system in the innovative neo-industrial agenda to ensure the interaction of actors: entrepreneurs, industrial partners, scientific and educational sector, development institutions;
- development of cases and justification of promising points of innovative growth for the regions, formation of a project portfolio for priority industries, markets, technologies, products; search for opportunities to scale regional projects up to the world level;
- implementation of accelerator programmes, use of new educational technologies that ensure the development of technological

culture and innovative thinking, attraction of innovatively active youth: creation of startup studios, profile classes, boiling points, club movement, system of expertise and mentoring;

- ensuring innovative demand, promoting multipliers of technologisation: innovation customers, anchor big business, technology entrepreneurs, highly qualified personnel of the technology sector;
- formation of a media plan to popularise technological entrepreneurship: coverage of technological exhibitions, publication of success stories of regional entrepreneurs, presentation of innovative projects at forums and conferences.

Thus, the objective reality indicates that the state strategy for the development of technological entrepreneurship should be built with a predominant reliance on internal sources.

CONCLUSIONS

The study allowed us to formulate the following main conclusions:

1. Russia has formed a holistic vision of innovation support and developed relevant institutions and mechanisms, which are updated by the governing system in accordance with the current situation. In addition, there is a clear understanding of the need to stimulate technological entrepreneurship due to the increasing role of technology in ensuring not only development processes, but also national security. At the same time, the performance of the domestic innovation ecosystem should be recognised as insufficient.

2. The dominance of the state in the innovation sphere of Russia under external pressure has played a definitely positive role, as the current support system has demonstrated its sustainability. At the same time, it is now necessary to improve both the efficiency and the level of managerial competences in the field of innovation regulation. In the conditions of increasing complexity and multitasking of ecosystem processes, effective strategising of innovative changes determines the development prospects of both individual regions and the country as a whole.

3. The most important solution at the present stage may be the expansion of the strategic goal from the formation of an innovative path of Russia's development to the creation of an innovative society as the basis of the economy. This will contribute to both mental and cognitive strengthening of the national innovation ecosystem as a whole, and a more comprehensive management approach to its key component — the ecosystem of technological entrepreneurship.

4. The study on identifying barriers to the development of the technological entrepreneurship ecosystem at the regional level revealed the problem of the negative impact of "over-regulation" of state support of the sector, as well as the lack of unity in the goal-setting of technological development for individual subjects of innovation activity. The elaboration of measures to levelling the existing barriers in general will contribute to the "self-identification" of regions in the national innovation ecosystem and the consistent achievement of strategic goals.

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Management of Own Investment Activity by Small Business Entities

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ABSTRACT

The article highlights the problem of investment activity manifestation by small businesses whose activities are related to agriculture. The reserves remaining at the disposal of entrepreneurs after paying personal income tax and VAT are determined by analyzing tax liabilities and obligations. Monitoring of the official websites of the Entrepreneurship Promotion Funds showed the possibility of attracting investments in the form of grants for business support and development. The purpose of the study is to identify and justify ways to implement investment activities through a competent tax policy in relation to small businesses engaged in agricultural production. To achieve this, the task was set to analyze tax deductions from the perspective of increasing the subject's own monetary and cash resources and the latter's ability to invest them in production. In the course of the work, the following methods were used: monographic, abstract-logical, economic-statistical, systems approach, comparative analysis. The methodological and theoretical basis was the works of representatives of domestic science, regulatory and legislative acts of the Russian Federation regulating the functioning of the tax system; official publications, as well as materials of scientific and practical conferences. The study results proposed: to consider the financial capabilities and opportunities of small businesses in the agricultural production sector as an incentive for their own investment activity; when declaring the right to apply tax deductions [Tax on personal income (standard, social, property, investment, professional) and "input Value Added Tax"], to release their own funds from taxation and apply them, as well as to use the possibilities of attracting government (public) and private grants as investments in the production process.

Keywords: tax liabilities; extended reproduction; tax deductions; investment activity; grant

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INTRODUCTION

Effective investment that ensures the process of expanded reproduction is conditioned by external and internal economic factors operating both at the macroeconomic and lower levels. If the possibilities of an economic entity's influence on external circumstances are limited, the internal ones can be managed if timely managerial decisions are rationally taken.

The reproduction cycle is a multitasking (in terms of various interrelationships), continuous and constantly repeating process of production of necessary goods for the consumer, which directly or indirectly includes both producers themselves and counterparties: suppliers and contractors, credit and scientific institutions, final consumers, as well as budgets of all levels and extra-budgetary funds. Each participant, in one way or another influencing the reproduction cycles, is interested in a certain final result: the producer — in obtaining a decent financial result, profitable and cost-effective production; the consumer — in qualitative satisfaction of his own needs; suppliers and contractors — in the profitable sale of their goods, works and services, etc. None of the contractors involved in the chain will be able to meet their needs if there is no modern technological approach to production in the reproduction cycle, associated with both technical and human capital.[1] Accordingly, it requires timely investment in both fixed and human capital, which will ensure not only the financial well-being of the economic entity, but also the fulfilment of the national goal of "decent, efficient labour and successful entrepreneurship". With sufficient investment, it is possible to develop and improve production, renew its real assets, create an innovative product, obtain higher financial results (and pay more taxes) and provide decent remuneration to the employees [1–3].

The main investment directions are state support (subsidies, preferential lending at low bank interest rates), bank credits, loans, grants, as well as businessmen's own funds.

Theoretical aspects related to investment were laid down by the classics of economic theory and were continued in the works of modern scientists: S.Y. Glazyev, D.S. L'vov, A.G. Aganbegyan [4–6] and others.

METHODOLOGY AND RESULTS OF THE RESEARCH

The development of a market economy requires small, medium, and large businesses to search for new opportunities to attract investment resources.

The concept of "investment" is rather new for the Russian science, as it began to appear in the works of modern scientists only since the end of the 20th century. In the USSR, the term "capital investments" was used, and the first methods of their evaluation, which appeared only in the 1960s, were based on the annuity method,[2] did not contain recommendations for discounting the results, efficiency standards were set in a directive manner, etc. This approach was an imperfect tool for investment appraisal and did not meet the requirements of a market economy. Initially, at the transition stage, these concepts were identified, but gradually the term "investments" began to be used instead of "capital investments".

Along with the change of terminology, there was an in-depth study of the holistic process of dynamically interrelated elements of investment activity, manifested through the "chain": resources-costs-income.

[1] Presidential Decree No. 474 of 21.07.2020 "On the national development goals of the Russian Federation for the period up to 2030". URL: https://www.garant.ru/products/ipo/prime/doc/74304210/

[2] The annuity method is one of the options for accurate and quick valuation of an investment project when all payments and receipts of funds are brought to present value. It takes into account the fact that all receipts/disbursements have the same value during the entire economic life of the investment.

Currently, there is no unified definition of the concept of "investment" in the scientific literature, and many scientists express their point of view from the position of reflecting the economic essence of the definition of "investment" (*Table 1*).

ASSESSMENT OF INVESTMENT IN AGRICULTURE IN THE REGION

Recently, dynamic development of investment processes means not only obtaining high final results, but also ensuring the social component of production (cultural, sports and recreational activities, additional medical insurance, etc.). The position of an entrepreneur interested in investing in the formation of a cohesive team creates the image of the enterprise and in the long term expands the horizons for doing business, provided that the social activities carried out are part of the overall strategy of the company.

Participation in this process should not be a spontaneous action, as the maximum economic effect is achieved through thoughtful and planned actions.

Investment of financial resources in reproduction implies improvement of the technological cycle, renewal of machinery and equipment, expansion of the range of products (goods, works, services), introduction of innovations, intellectual developments, as well as development of human resources (creation of new jobs and increase in wages) and, as a result, obtaining high final results.

Investments in real assets can be conditionally divided into two groups — equity capital and borrowed funds [7, 8].

Let us consider the dynamics of investment in agricultural organisations (AO) of the Penza Oblast: in 2013, investments amounted to 5941 million roubles, in 2018 their volume increased to 16,345 million roubles, but by 2021 it decreased to 11,831 million roubles (or by 28%) (*Fig. 1*). The amount of investment in fixed assets is steadily dominated by attracted funds (75%), which come from three sources: bank loans (87%); borrowed funds (12%); budget funds (less than 1%) (*Fig. 2*).

The volume of state investments to support agricultural holdings is extremely small and, therefore, cannot contribute to the increase in real assets of commodity producers (although such a goal is set in the Law of the Penza Oblast of 15.05.2019 No. 3323-LPO "On the Strategy of Socio-Economic Development of the Penza Oblast for the period up to 2035"[3]); credit funds prevail (*Fig. 2*).

FORMATION OF SOURCES OF OWN INVESTMENT ACTIVITY BY ENTREPRENEURS ENGAGED IN AGRICULTURAL PRODUCTION

Own investment activity is an important task, which can be addressed, among other things, through the management of tax flows, as well as through other financial opportunities, such as grants. Their use creates a favourable environment for accelerated capital accumulation by agricultural organisations implementing innovations.

To date, the fiscal policy has a stimulating orientation towards supporting small and medium-sized businesses and their development, modernisation, technical re-equipment, and the introduction of innovative production [9].

State support within the framework of taxation of economic entities is manifested in the care about the taxpayer, establishment at the legislative level of opportunities that allow reducing the tax burden through preferences provided by tax legislation in the form of benefits, tax deductions, reduced tax rates, etc.

The tax burden of agricultural holdings in the Penza Oblast is insignificantly different from the industry average for the type of ac-

[3] the Law of the Penza Oblast of 15.05.2019 No. 3323-LPO. URL: https://zspo.ru/legislative/acts/57116/

Table 1

Distinctive characteristics of the concept of "Investment"

Authors	The essence of the concept of "Investment"	Advantages (result)	Disadvantages
Lipsits I.V., Kossov V.V.[a]	Cash invested in the implementation of the entity's projects for more than 1 year, with an economic effect obtained by the enterprise	ncreasing not only the fixed capital, but also its efficient utilisation to generate profits	The economic effect from the investment of monetary resources is possible in more than one year
Ivanova N.N., Osadchaya N.A.[b]	Increase in assets and profits through long-term expenditure of resources (financial, labour and material)	Not only generating profits but also other positive business results	Investments are determined by long-term costs
Mylnik V.V. [c]	The investment of various types of property, including technology and monetary and financial resources, in the operations of a business entity for the purpose of preserving or increasing	Investments manifest themselves not only in monetary form, but also in the form of property (movable and immovable), modern technologies, etc.	The economic effect of an investment is seen as the preservation or enhancement of property and the non-economic nature is omitted
Yarkina N.N.[d]	Investments (of all types) — investments in the activities of a business entity for profit, economic or non-economic effect	Relationship of investment allocation to time, risk and liquidity factors	-
Leontiev V.E., Bocharov V.V., Radkovskaya N.P.[e]	Investments are directed to business entities in various forms in order to achieve a given social effect and gain profits	The economic effect of business investment is not only manifested through profit, but also through the solution of social issues	Investment is identified with investment resources

Source: compiled by the authors.

Note: a — Lipsits I.V., Kossov V.V. Investment analysis. Preparation and evaluation of investments in real assets. Textbook. Moscow: INFRA-M; 2022. 20 p.; b — Ivanova N.N., Osadchaya N.A. Economic assessment of investments. Textbook. Rostov-on-Don: Phoenix; 2004. 224 p.; c — Mylnik V.V., Mylnik A.V., Zubeev E.V. Investment management. Textbook. Moscow: INFRA-M; 2018. 229 p; d — Yarkina N.N. Investing. Textbook. Kerch: KGMTU; 2022. 236 p.; e — Leontiev V.E., Bocharov V.V., Radkovskaya N.P. Investments. Textbook. Moscow: Yurayt; 2021. 455 p.

tivity "Agriculture, hunting and forestry" and tends to decrease since 2016 (*Fig. 3*).[4]

The alignment of interests of the state and the private sector is manifested through the regulation of the taxation system of economic entities by providing tax preferences. Such measures will promote the inflow of capital and create favourable conditions for innovation activities of agricultural enterprises. The idea of reducing the tax burden through incentive taxation is attractive, including for the state, because it promotes economic growth. In this case, business entities have more free cash at their disposal, and, accordingly, opportunities for modernisation and expansion of production increase [10].

[4] Publicly available criteria for self-assessment of risks for taxpayers used by tax authorities in the process of selecting objects for field tax audits. URL: https://www.consultant.ru/document/cons_doc_LAW_55729/f579efc1e846c86acedf1433b3fb8817a96a6916/

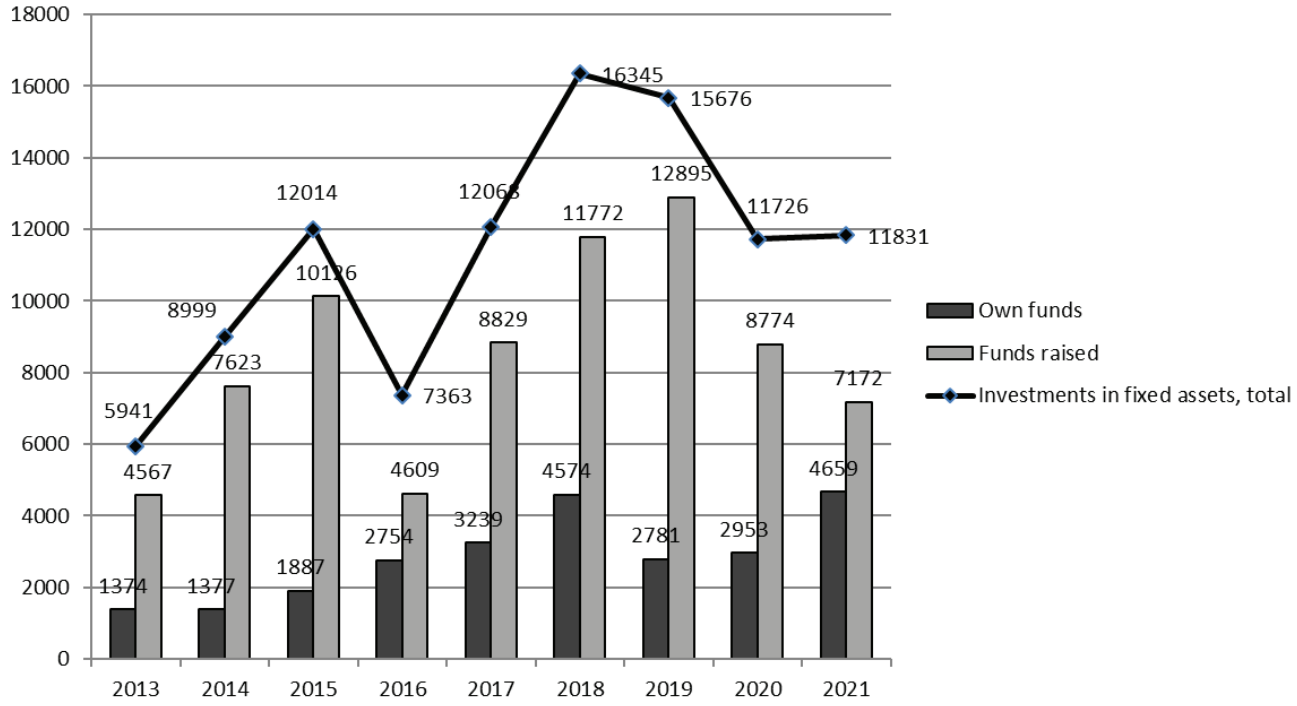

Fig. 1. **Distribution of investments in fixed assets by type of activity "Agriculture", million rubles**

Source: compiled by the authors on the basis of Rosstat. URL: https://rosstat.gov.ru/

An efficient taxation system is the most important economic condition for the innovation process in agricultural sector in the case of:

- provision of investment tax credit to agricultural producers;
- exemption from VAT for the purchase of equipment and materials;
- granting "tax holidays" when carrying out innovative activities;
- exemption from taxation of operations related to reinvestment in fixed assets or R&D (related to agriculture);
- development of a favourable taxation regime for banks providing financing for agricultural enterprises, R&D, etc.

At present, expanded reproduction in agriculture is based on the development of innovation and investment activities within the current regulatory and legal framework aimed at financial, economic, organisational, and infrastructural support of innovative development [11].

The structure of agricultural enterprises includes enterprises of various legal forms: joint-stock companies, limited liability companies, partnerships, individual entrepreneurs without a legal entity, peasant farms. Of those listed, the most vulnerable are small businesses, for which there are special tax regimes adapted specifically to the category of small busines.[5] Consequently, entrepreneurs can apply either them or the general system of taxation (OSNO).

The first ones are provided by the legislator in order to exempt from a number of taxes and reduce the tax burden, to simplify the taxation procedure as much as possible and to facilitate the administration of this process. However, as mentioned above, a businessman has the right to decide for himself which taxation system is more favourable to him.[6]

[5] Tax Code of the Russian Federation (TC RF). URL: https://www.consultant.ru/document/cons_doc_LAW_19671/

[6] Selecting the appropriate taxation regime https://www.nalog.gov.ru/rn77/service/mp/

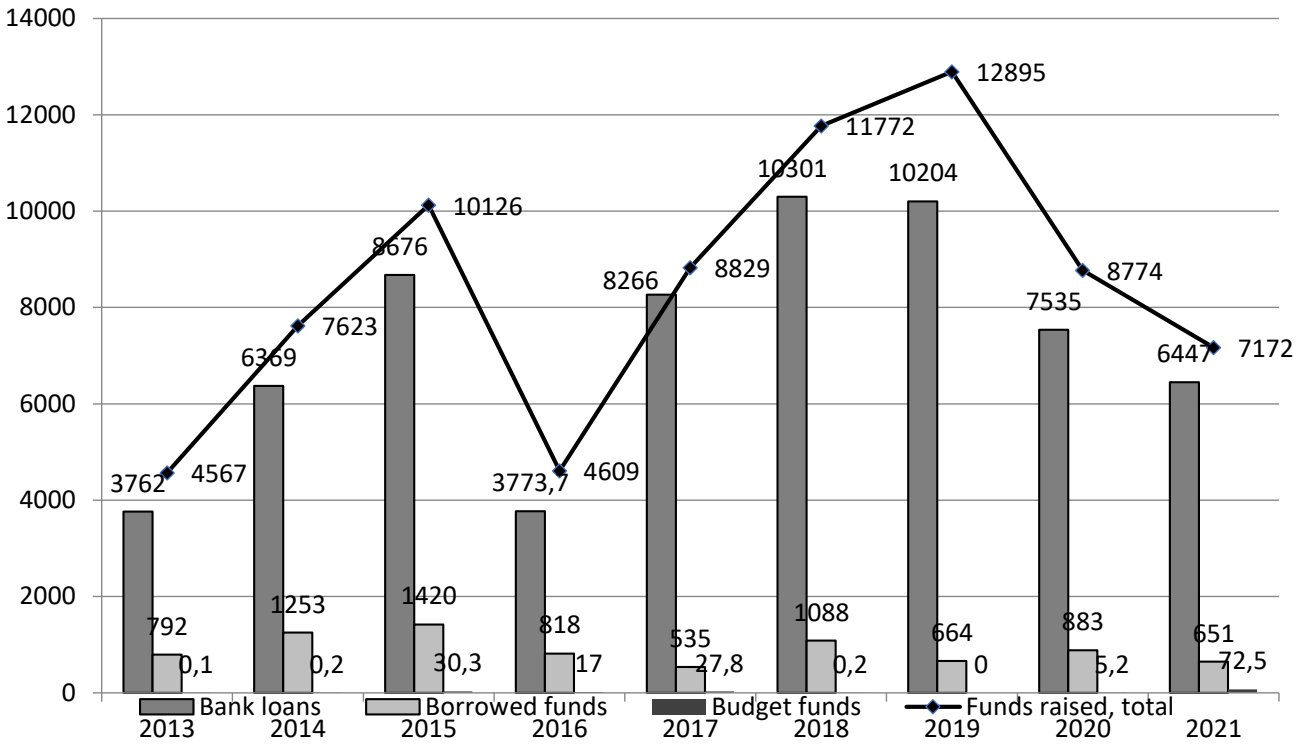

Fig. 2. **Structure of attracted investments, million rubles***

Source: compiled by the authors on the basis of Rosstat. URL: https://rosstat.gov.ru/

* Federal State Statistics Service. URL: https://rosstat.gov.ru/

From the point of view of support-incentivising small business, the OSNO is the most interesting: despite its complexity, the business entity receives more incentives from the state in terms of "input VAT" and personal income tax deductions (standard, social, investment, property, professional, tax). [12, 13] (*Fig. 4*).

Using the right to apply the above-mentioned personal income tax deductions, the head of a peasant farm pays an average of 63 thousand roubles to the budget. If we exclude the right to apply tax deductions, the personal income tax payable to the budget would be 420 thousand roubles, which is 6.5 times more.

Thus, the state, giving the right to use tax deductions, on average leaves at the disposal of the head of a peasant farm 357 thousand roubles, which can be used for business development.

Let us consider the conditions stipulated for purchased goods (work and services) in terms of VAT tax deductions[7]:

- firstly, the purpose of goods (work and services) for VATable transactions;
- secondly, when acquiring goods (work and services), tax amounts must be presented to the taxpayer, i.e., allocated in the documents as a separate line;
- thirdly, the presence of a properly executed invoice[8] and primary documents;
- fourthly, goods (works and services) must be accepted for accounting.

All of these conditions must be fulfilled; if at least one of them is not fulfilled, the entrepreneur's right to apply a tax deduction does not arise [14].

[7] Tax Code of the Russian Federation (TC RF). URL: https://www.consultant.ru/document/cons_doc_LAW_19671/

[8] An invoice is a document that is the basis for the buyer's acceptance of tax amounts presented for deduction.

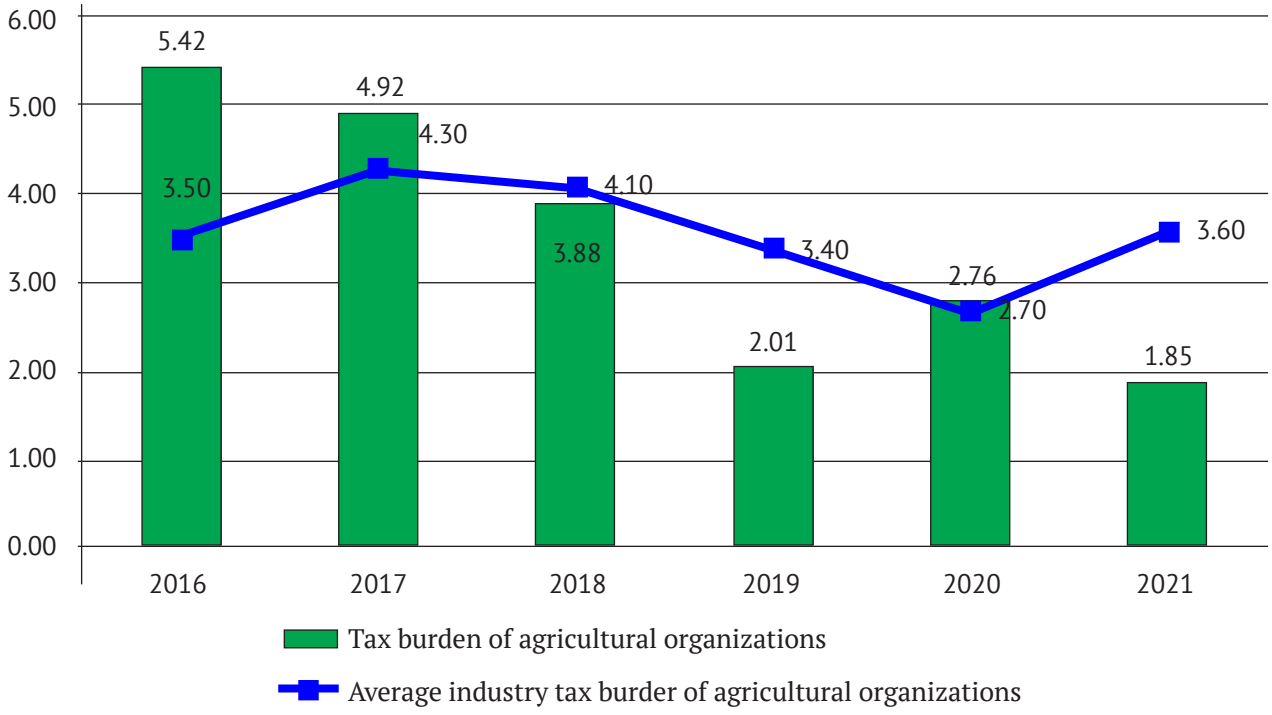

Fig. 3. **Tax burden of agricultural organizations of the Penza region, %**

Source: compiled by the authors based on the data of the Federal Tax Service of Russia. URL: https://analytic.nalog.gov.ru/

In the course of internal audit, a corporate policy of interaction with counterparties (aimed at forming their dossiers) should be formed in order to avoid tax risk manifested in artificial increase of tax burden instead of its reduction.[9]

"Input VAT" is of interest to businessmen from the point of view of reducing its amount payable to the budget; at the same time, the tax authority controls the issue of the legitimacy of the claimed right. By overlooking the circumstances of transactions with counterparties, instead of legal exemption from paying VAT to the budget, the entrepreneur risks paying it twice: the first time — under the contract with the counterparty, and the second time — as a result of the decision of the tax authority only in a larger amount (at the expense of accrued penalties and fines) [15, 16].

The tax authority, in fulfilling its control function, aims at unconditional compliance with the legislation, especially in the administration of VAT (*Fig. 5*).

Accordingly, from 2019 to 2021, from 4 to 12 million roubles per entrepreneur was additionally charged, which for a small business is a significant amount released from the reproduction cycle. The ill-considered exclusion of elements of tax planning and legal optimisation from financial activities leads to additional tax liabilities arising from the inadvertent or deliberate application of "tax saving schemes", which, being an additional tax burden, also affects the reputational risks of the businessman. A more thorough approach to the execution of transactions with counterparties will allow to eliminate financial, including tax, risks of additional tax liabilities in a significant amount by controlling the tax burden recommended by the tax authorities and invest these funds in business development.

In addition to the possibility of managing their own investment activity through legal

[9] Transparent business. URL: https://pb.nalog.ru/

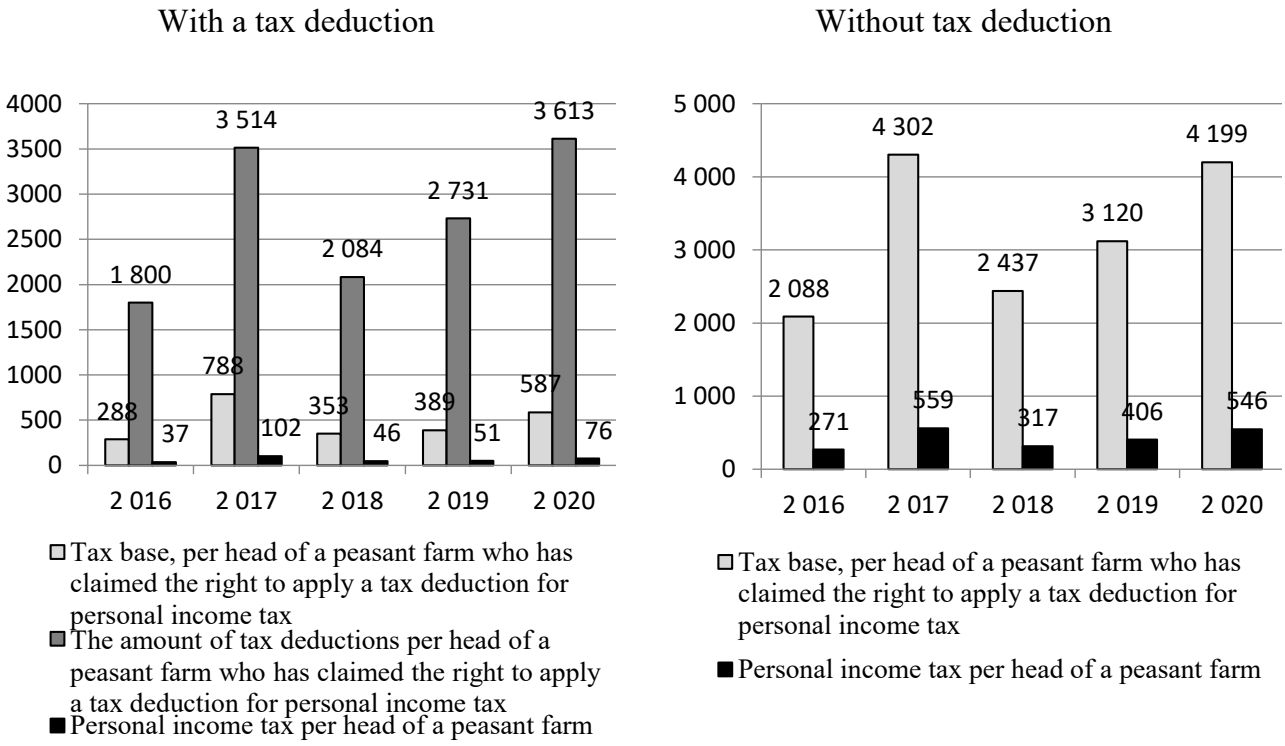

Fig. 4. **Comparison of the amount of personal income tax payable to the budget under various options per head of a peasant farm, thousand rubles**

Source: compiled by the authors based on the data of the Federal Tax Service of Russia. URL: https://analytic.nalog.gov.ru/

optimisation of tax liabilities, small businesses have access to participation in government programmes aimed at attracting public and private investment in the form of grants from the Penza Region Entrepreneurs Support Fund,[10] the Innovation Promotion Fund,[11] the Russian Foundation for Basic Research[12] and others.

Priority for participation in competitions for grants are applications containing the development of import-substituting goods, technologies using the results of own scientific, technical, and technological research with commercialisation potential. In particular, the development of production, digital and biotechnologies and the creation of new devices is relevant for agricultural producers. Grant support is available to a wide range of business entities, including start-up entrepreneurs. Having developed a business plan for an innovative project aimed at import substitution in these areas, an agricultural producer can expect to receive these subsidies. The amount of the grant depends on the declared direction and stage of business development.

For young start-up entrepreneurs, the Funds provide grants of 0.5 million roubles for student start-ups (the period of development is not more than 12 months); for medium and large companies, the amount of grants is more substantial, and the period of development is longer, which, if there are also own resources (cash, movable and immovable property) contributes to the creation of favourable

[10] Grants to young entrepreneurs. Portal of support for small and medium-sized entrepreneurship of the Penza region. URL: https://mbpenza.ru/granty-molodym-predprinimatelyam

[11] Innovation Promotion Fund. URL: https://online.fasie.ru/m/

[12] Grants and scholarships by the Russian Foundation for Basic Research. Russian Centre for Scientific Information (RCSI). URL: https://www.rfbr.ru/rffi/ru/

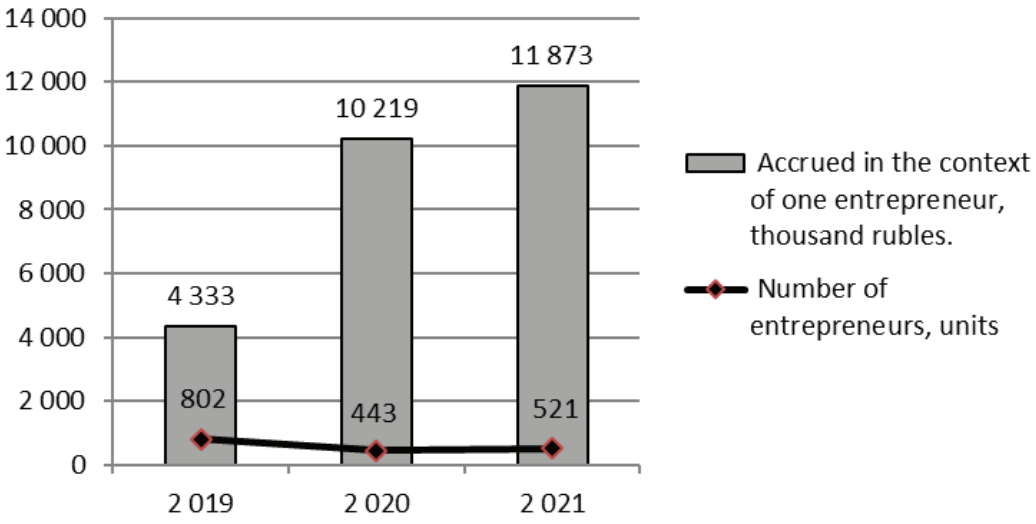

Fig. 5. **The amount of additional charges for each individual entrepreneur who committed a violation of tax legislation, thousand rubles**

Source: compiled by the authors based on the data of the Federal Tax Service of Russia. URL: https://analytic.nalog.gov.ru/

conditions for the implementation of business ideas and strengthening of entrepreneurial activity. Funds allocated in the form of a grant for the production of import-substituting products of innovative nature are earmarked and subject to strict reporting.

For several years students of technical specialties of Penza Agrarian University under the guidance of scientific supervisors took part in the programme of the Foundation for Assistance to Innovations "UMNIK", aimed at supporting young entrepreneurs of the country at the age of 18 to 30 years old[13] (*Table 2*).

Each winner received a grant of 500 thousand roubles for 12 months for the development of an innovative project.

CONCLUSIONS

Small businesses have great potential for their own investment activity, for example, by taking advantage of the right to apply tax deductions for personal income tax and "input VAT" or by participating in programmes and competitions aimed at supporting small and medium-sized businesses.

Grants received by small and medium-sized enterprises for business development (in the amount of at least RUB 0.5 million) are significant investments in production. Managers of companies that carry out legal tax optimisation can allocate the money left after taxes to expand reproduction. Thus, when using the right to apply tax deductions, an average of approximately RUB 9.357 million (RUB 357,000 — personal income tax and RUB 9 million — "input VAT") is released for each business entity, which are the entrepreneur's own funds and can act as free and reliable investments in their business [17]. However, in order to avoid tax risks, the tax administration process must be organised correctly. If when using personal income tax deductions, it is necessary to create a package of documents confirming the actual expenditure of own funds on medical treatment, education, investments, purchase of housing, etc., then VAT deductions should be treated more cautiously. Documents granting the right to apply "input VAT" must be executed in accordance with the current legislation. In

[13] "UMNIK" Programme. URL: https://umnik.fasie.ru/?ysclid=ln0cyum1c6718227563

Table 2

Results of the implementation of the "Umnik" program in 2020–2022

Indicator	2020	2021	2022
Applications submitted, units.[14]	11	21	23
Confirmed applications (winners of tenders), units.	8	8	12
Amount of grants, RUB million	6	3	6,5

Source: compiled by the authors. URL: https://pgau.ru/

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addition to the basic set, the package should include all the documents (even non-accounting documents) which may confirm the legitimacy of the entrepreneur's entitlement. These include: contracts with counterparties (drawn up from the position of excluding the possibility of double VAT payment); files of counterparties (to confirm due diligence in their selection); minutes of working meetings with representatives of counterparties; paper and electronic correspondence, etc. In addition, it is necessary to monitor the size of the tax burden, the amount of "input VAT" in the amount of calculated VAT in accordance with the recommendations of the tax authority (in order to exclude the possibility of an on-site tax audit, the emergence of tax risks and increased tax liabilities).

The entrepreneur is guaranteed to receive assistance from the state in the form of own funds in the amount of declared and confirmed tax deductions, as well as grant support (in case of participation in profile programmes and winning competitions) to invest in production for the purpose of modernisation, improvement of production and formation of the social component of business through the manifestation of own investment activity.

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Promotion of Fashion Brands in the Russian Market in the Absence of Foreign Competitors (on the Example of the LIME Clothing Brand)

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ABSTRACT

Various trends are transforming the organizational, consumer and methodological landscape of enterprises whose activities relate to the fashion industry. The relevance of the chosen research topic is due to changes in the strategies currently used in this area, which is associated with the current geopolitical situation, as well as with the dominance of the trend of humanity (empathy) in strategic branding. The purpose of the study was to identify the features of promoting fashion brands on the Russian market in the absence of foreign competitors using the example of the LIME clothing brand, which is among the most popular (over 100 stores in Russia and the CIS countries). The methods of analysis and synthesis, abstraction, generalization, comparison, and questionnaire survey were used in the course of the work. The authors concluded that the effectiveness of brand development depends both on the right strategic decisions and on understanding the characteristics of the target audience, real-time communications with customers and prompt response to their requests through the use of high-tech strategic planning tools, in particular, personalized value propositions. Based on the research, recommendations have been developed for the promotion of Russian fashion brands in modern conditions, which can find practical application.

Keywords: fashion industry; LIME; strategy; marketing; brand; Russian brands; promotion of fashion brands

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INTRODUCTION

In modern society, the market for goods and services is characterised by high competition. It is no longer enough to create a high-quality and unique product to achieve success. The marketing complex and, in particular, such an instrument as "promotion" — a deliberate attempt of a company to tell the consumer about itself and its offers — is of decisive importance. Branding tactics in the fashion industry remains an understudied area, which makes it a relevant topic for research. Currently, due to new social trends, as well as other, including economic processes, fashion branding requires certain changes and improvements. The authors of the study analysed the peculiarities of fashion brand promotion in the Russian market in modern conditions. The novelty of this paper is due to the weak representation of this topic in the scientific literature and the lack of practical recommendations in the latter. The methodological basis was such scientific tools as generalisation, comparison, analysis, synthesis, abstraction. In order to obtain the results, a questionnaire survey was also conducted.

SITUATION ON THE RUSSIAN FASHION MARKET IN THE ABSENCE OF FOREIGN COMPETITORS

In 2022, foreign companies left or suspended their activities in the Russian market due to the current geopolitical situation. Russian enterprises and commercial companies had to reorient themselves towards domestic producers of raw materials, establish and strengthen ties with CIS countries, India, China, Turkey, Iran and others. As a result of the growing demand for Russian products, small clothing manufacturers are entering multi-brand designer department stores and expanding sales through marketplaces, while medium and large businesses are selling not only clothing and footwear, but also household goods.

Trends in offline sales are being shaped by the search for new formats of retail outlets, staff training to improve the quality of service, development of omnichannel and loyalty programmes. Nevertheless, small businesses face such obstacles as lack of retail equipment and raw materials, higher costs of materials and components, and more complicated logistics.

FEATURES OF PROMOTION OF FASHION BRANDS IN MODERN CONDITIONS

Due to the presence of an element of financial instability, customers are becoming more price-sensitive and often reduce their spending on clothing. Customers are opting for domestic products due to their affordability and decent quality — demand has almost tripled recently.[1] The greatest demand is for basic, sports and streetwear. In particular, sales of bomber jackets, anoraks, ponchos and T-shirts increased by 43, 27 and 21 per cent respectively [1].

When it comes to fashion products, according to a recent study, 42% of consumers find and research available offers online, while 45% prefer offline shopping.

When it comes to buying clothes, the most important influencers are personal recommendations from friends and family, sales consultants, manufacturer and retailer websites, online videos and social media, and the prevailing fashion market is a hybrid model combining both online and offline purchases [2].

In Russia, there is currently a growing interest in national brands. Another trend is rationality, which implies refraining from impulsive purchases, reducing consumption of unnecessary goods, caring for the environment, and saving materials. As competition intensifies and demand for domestic products

[1] Interest in Russian clothing and footwear brands has grown almost threefold. URL: https://vc.ru/marketing/497142-interes-k-rossiyskim-brendam-odezhdy-i-obuvi-vyros-pochti-v-3-raza (accessed on 20.07.2023).

increases, quality and pricing should be prioritised.

However, in order for a company or fashion house to stand out among other market players, it is not always enough just to have a well-thought-out "price-quality" ratio: there must be an emotional component that influences the choice of a particular product. Such a trend as brand philosophy (which was followed by many of the foreign companies that left Russia) is inherent in many Russian enterprises at the present stage. The application of promotion strategy elements, including support of social projects and socially significant initiatives, is very effective in conditions of competitive uncertainty. For example, the niche vacated by the Swedish company H&M, which, among other things, was engaged in the recycling of the second-hand or used clothes and creating environmentally friendly goods, could be occupied by domestic producers. Another trend is the emphasis on social equality, with clothing brands addressing issues such as ageism, gender discrimination and ableism. Examples include projects such as "Shvemy" (St. Petersburg), which pays much attention to feminist themes in clothing, and «Russian Grandmothers» (Moscow) — this trademark — on one of the popular marketplaces — sells the goods which seem to be made by the representatives of the older generation, i.e., grandmothers).[2] Such organisations are likely to have an advantage in the long term.

PROMOTION OF FASHION BRANDS IN THE RUSSIAN MARKET IN THE ABSENCE OF FOREIGN COMPETITORS (ON THE EXAMPLE OF LIME CLOTHING BRAND)

In the current era, social media has become an important component of every major fashion brand's marketing strategy — it serves as a platform for leading fashion businesses to grow their audience and connect with customers and followers around the world. LIME is one such company that designs and manufactures women's apparel and accessories. Founded in 2008 in Samara, it has opened more than 100 single-brand shops in Russia and CIS countries in 17 years of its existence.

LIME's mission is to be among the leaders in its segment, to help its target audience feel confident and stylish through a properly selected individual image and always follow the trends. When making models, designers pay attention to their quality and comfort, follow fashion trends, carefully choose materials so that things retain their authentic appearance for a long time.

Today, LIME is one of the few domestic manufacturers that emphasise fresh images in line with European fashion; it belongs to the mass-market category with a medium price segment and is aimed at a young female audience with an average income who want to dress fashionably without spending a lot of money.

The company's main competitors include fashion brands like "Lichi", "Befree", "Zarina", "Love Republic", "2 mood" of approximately the same price category, oriented towards a similar target audience — girls and women aged 16 to 35 years old, living in large cities of the Russian Federation and preferring to look modern and stylish in everyday life.

It is known that the performance of an economic entity is influenced by many factors. Organisations assess external risks related to the dynamics of the environment, transform their work under changes in the geopolitical situation. There are also risks that have low probability but can cause great damage if realised. For example, COVID-19 shattered a strong belief in the predictability of all aspects of business processes. The pandemic

[2] Website of the marketplace of goods and services from the older generation Russian Grannies. URL: https://russiangrannies.ru/?ysclid=llfao6z436192561499 (accessed on 11.09.2023).

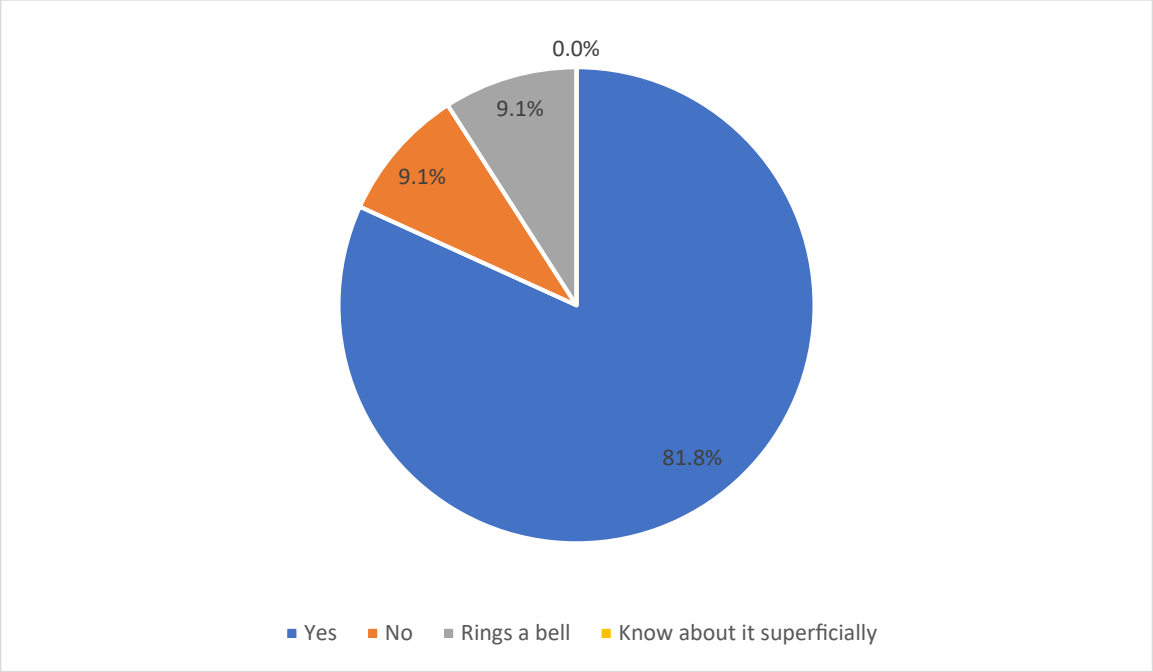

Fig. 1. **Answers to the question: "Are you familiar with the LIME brand?"**

Source: compiled by the authors.

outbreak in December 2019 not only took the economy and society by surprise, but also caused a major disruption to them. Restrictive measures to contain the spread of the virus in April 2020 led to massive plant closures, reduced output of goods, a sharp rise in unemployment, a drop in demand for goods and services and caused significant damage to global businesses. LIME was no exception. During the period of self-isolation, both enterprises and retail shops in Russia and Kazakhstan ceased operations. Nevertheless, the company managed to quickly change its product promotion strategy and switch to online trading, which helped it maintain its market position and attract new customers.

However, LIME's plans to enter the European and American markets in early 2022 had to be postponed indefinitely due to changes in the political and economic situation and the introduction of sanctions against Russian enterprises and businessmen. The logistics also became more complicated, and there were problems with the delivery of finished products from abroad.

The sanctions led to the withdrawal of more than 15 foreign brands from the Russian market, with 10 of them belonging to the fashion segment, such as H&M, Zara, Victoria's Secret, UNIQLO, Massimo Dutti and others. Thus, LIME had a unique opportunity to occupy the position vacated by former western competitors. In this regard, the company's management initiated negotiations with the owners of shopping centres to acquire vacant space.

In this study, a pilot (exploratory) questionnaire survey was conducted between 1 February and 10 March 2023 to determine brand awareness in the domestic market and to assess consumer preferences, with 120 participants. The sampling error and other parameters were not calculated as the survey was exploratory. The results of the survey are presented in *Fig. 1, 2*.

The data of *Fig. 1* shows that 81.8% of respondents know about the existence of LIME

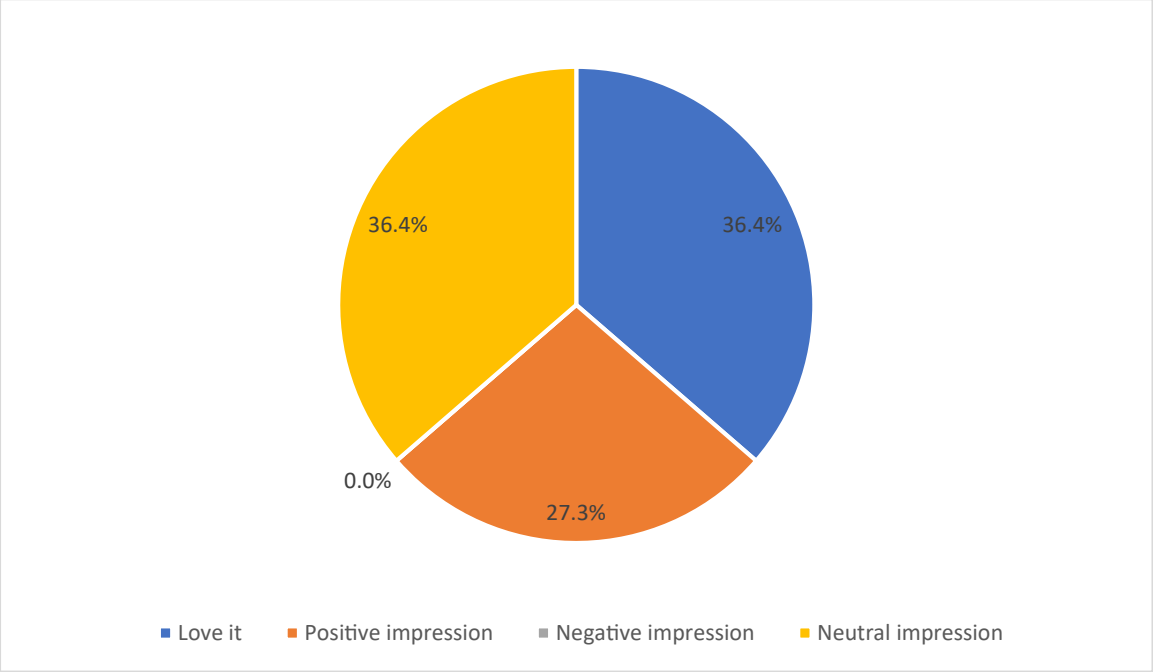

Fig. 2. **O Answers to the question: "What is your impression after visiting the LIME store?"**

Source: compiled by the authors.

brand, which confirms its popularity on the domestic clothing market.

Based on the data presented in *Fig. 2*, we can conclude that none of the customers had negative emotions after buying the brand's goods, which indicates the quality of the products provided and the correct positioning of LIME.

Among the shortcomings, the majority of respondents noted the poor concept and weak marketing strategy for promoting the official page in social networks.

LIME uses many marketing channels, but in the 21st century, digital platforms are one of the most important. The main source of information about the company is the official website, which provides both general information about its activities and a full structured analysis of the collections with colourful photos of models of different types.[3]

The disadvantages of the site design include the presence of a large number of words in English, as well as the low quality of graphic materials. Since most of the site's users are Russian-speaking women, the use of foreign words may cause them difficulties in perceiving the information, as well as mislead them, which will negatively affect their purchasing power. And insufficiently high quality of videos and photos may create a false impression that the page is not elaborate and disrespectful to the customer.

The growing popularity of digital technology and artificial intelligence has led to the widespread use of SMM[4] by fashion and luxury brands to attract the attention of existing and potential customers and achieve the widest possible market recognition [3]. Companies, including LIME, use social media channels, such as VKontakte, to showcase their products and establish a closer relationship with their audience.

[3] LIME (official website). URL: http://lime-shop.ru

[4] SMM (engl. social media marketing) — marketing that aims to attract, retain customers, and make sales through social networks.

The main strategic goal of LIME is to increase customer awareness of the trademark and grow its popularity. The company actively develops its social media accounts, investing in advertising and promotion.[5]

The brand is characterised by a creative approach to advertising campaigns and large-scale shows. Currently, LIME actively participates in social events, films, and video shoots, covering them on its pages. In 2023, the company has refocused its attention on Telegram and VKontakte — regular posts help to attract an interested audience. LIME's modern style in 2023 has become easily recognisable.[6]

Speaking of social media, the brand's digital approach is based on two fundamental principles: authenticity and inclusivity; its digital platforms are open and aim to communicate with its audience, allowing everyone to express themselves through fashion.

The content created by LIME is not only aesthetically pleasing, but also contains cultural and intellectual messages, manifested in visuals and illustrations. The latter, consonant with artworks from different eras, have an uncommon storytelling effect.

To increase brand awareness and credibility, we believe the focus should be on:

- building a holistic, positive image;
- creating a strong emotional connection with potential customers;
- product advertising (with an emphasis on social media), promotions and participation in exhibitions;
- working with shop employees and convincing them of the need for a personalised approach to each customer.

Brand loyalty is necessary to strengthen a brand's image and increase sales, and Internet technologies make it easier to communicate with consumers. However, it is important to correctly assess the target audience and understand their expectations. By analysing marketing campaigns of famous world brands and learning the secrets of their success, LIME can establish itself as a niche leader in the Russian market and create a base of loyal customers. Today's customers are more sophisticated, demanding, and selective about the quality of the goods they buy, and gaining their trust is the key to the successful development of the company — the manufacturer of products.

It is important to increase the demand for human interaction, which forms emotional connections between consumers and producers in the creative economy. These interactions are delivered through a variety of personalised platforms and channels. According to the survey, customers do not want to communicate with bots, with 54% of US consumers saying they believe it negatively impacts their quality of life [4].

Note that customers are more likely to purchase products, recommend the manufacturer and show loyalty if they have a relevant emotional experience. Personalisation is one of the strategic trends whose role is constantly increasing. Experts suggest that there is a direct link between relevant communication and positive outcomes. If consumers perceive a brand as more human, they are 2 times more likely to like it and 1.8 times more likely to recommend it.[7] Consequently, brands that fail to meet the "humaneness" criterion risk losing their followers and pushing them towards competitors that are better trained on this attribute.

The development of intelligent strategic branding relies on a customer-centric approach, including the collection and manage-

[5] LIME (official group in the "VKontakte" social network). URL: https://vk.com/limeshop_ru

[6] LIME (official Telegram page). URL: https://t.me/s/limeofficial

[7] Study shows consumers value human-like communication from brands. URL: https://www.thedrum.com/news/2018/11/20/study-shows-consumers-value-human-communication-brands (accessed on 06.08.2023).

ment of customer data and the implementation of a comprehensive communication strategy. This is manifested in the creation of a brand image based on personal emotions and impressions. The scientific community is actively discussing the development of brand empathy and its impact on the balance of corporate, social, and state interests, competitive advantages of "humane" brands and strategic solutions for the development of the empathic ones [5–9].

Branding innovation draws on insights from neurobiology and psychology to help companies understand the processes in the human body and how they prioritise emotional purchasing decisions for commercial goods and services [10, 11].

Manufacturers are also using new technologies to create human connections with their customers and ensure long-term loyalty — in 2019, the Brand Humanity Index (BHI) was developed by D. Kluger and R. Chatterjee of the international analytic agency Forrester Research to measure a brand's empathy and humaneness through its strategic attributes,[8] and its functional characteristics show what actions it can take to demonstrate and strengthen its sense of empathy.[9] Companies that prioritise building strong relationships with their customers value their time and needs and communicate with them through their preferred channels of communication. When it comes to communication, it is crucial to prioritise customer preferences over business efficiency.

A study conducted by Forrester Consulting,[10] suggests that brands can choose three strategic directions for developing humanity: naturalness, awareness, and personalisation. The first involves using simple speech structures and a conversational tone, while mindfulness involves tracking consumer needs, improving feedback and providing personalised offers. Individuality, for its part, means building personal communications with your customers and promoting yourself through their social circle.[11]

However, the implementation of the empathy tendency requires consistency between the actions of the company's personnel, the technologies used, the organisational structure, the customers, and their data. The latter serves as the basis for crucial management decisions in marketing; collecting, integrating, and managing this information are always major challenges from the field of strategic branding.

CONCLUSIONS

Based on the results of the study of sources, as well as on the analysis of the results of the author's research, it is revealed that the promotion of clothing brands is a complex and costly process, and success in the market requires the development of an effective policy for its implementation. The choice and harmonisation of marketing methods is crucial, especially as the cost of traditional promotional tools is rising and their effectiveness is declining due to the constraints firstly related to the COVID-19 pandemic and then to the current geopolitical situation. Businesses are therefore forced to seek new and innovative approaches to attract consumers and communicate effectively with them.

Consumer trust in a brand is a powerful force that cannot be underestimated. It takes time and effort to ensure its memorability, recognition, sales growth, and ultimately cus-

[8] Be human: exploring the human side of customer relations at LTRs. URL: https://www.affde.com/ru/ltr-2018-recap-1.html (accessed on 06.08.2023).

[9] Build brand humanity by mastering empathy at scale. URL: https://www.braze.com/resources/reports-and-guides/build-brand-humanity-by-mastering-empathy-at-scale accessed on 06.08.2023).

[10] Ibidem.

[11] Communication between brands and customers: why do customers leave? URL: https://vc.ru/social/542522-kommunikaciya-mezhdu-brendami-i-klientami-pochemu-uhodyat-klienty (accessed on 12.07.2023).

tomer loyalty and satisfaction. It is difficult for a new product entering the market to compete. For this reason, the use of various promotional tools has become a necessary component of business operations in the 21st century. For example, digital tools offer unprecedented opportunities to establish personal interaction between producers and consumers, optimise data exchange, enhance communication processes, and reduce business development costs.

Digital channels: the internet, local networks, interactive television, screens and POS terminals are essential for the promotion of clothing brands. Similarly, digital tools such as websites, blogs, and social media, targeting, contextual and viral as well as online advertising, mobile and email marketing, search engine optimisation, search engine marketing, social media optimisation, big data technology, lead generation, web analytics, QR codes and more are crucial to expand audience reach, awareness and connect with them.

Thus, the inclusion of digital tools in the marketing policy of promoting clothing brands allows to significantly increase the number of consumers, increase the efficiency and effectiveness of the communication process between the enterprise and its customers.

As noted earlier, in a crisis, consumers prioritise value for money when choosing clothing and other fashion goods. However, in the long term, their choice will be influenced by the way the manufacturer implements socially significant initiatives in its activities.

The authors believe that LIME needs a detailed marketing strategy that would specify not only the tools and budgets for the coming months or year, but also recommendations for the long term, taking into account the trends of the clothing market, as well as the national priorities of business development in Russia.

The authors also recommend the brand to take into account the requests of the target audience to maintain the national flavour or character in clothing, without forgetting about global trends (ageism, feminism, etc.).

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Improving Features of Sales of Health Insurance Products

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ABSTRACT

Insurance protection of the population is of particular paramount importance during pandemics, economic transformation and other complex processes in the life of society. The paper examines the state of the insurance market during the peak of the COVID-19 pandemic, as well as the main trends in its development during 2022. The purpose of the study is to improve measures for the sale of health insurance products in order to increase the profitability of insurers' operations. In difficult and challenging economic conditions, a comprehensive marketing program will help insurance companies to continue their development and maintain financial stability. The proposed activities include the development of new products and improvement of the conditions already existing in the market; active offer of voluntary health and medical insurance and new programs for migrants traveling abroad; study of the financial situation of corporate insurers, individual entrepreneurs; sales via the Internet; application of discounts for prolongation of contracts; expansion of digitalization in insurance transactions, etc. In the course of the work, general scientific methods were used: analysis and synthesis, observation, grouping and comparison. The results of the study can be useful to employees of insurance organizations, teachers and students of economic disciplines.

Keywords: COVID-19 pandemic; insurers; insurance market; insurance premiums; sales of insurance products; insurance medical programs

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INTRODUCTION

Financial protection provided by insurance is very relevant in "difficult times". Health insurance of citizens is an important element of social and economic policy of any country. In Russia, the insurance market was generally developing well until 2020, but during the COVID-19 pandemic, it reacted with some decline in sales. However, the market did not experience a strong decline, as it was enriched with a whole list of relevant insurance products (health insurance, etc.).

Active sales of the latter are an important area of insurers' operational activities. In times of pandemics and economic turbulence, the financial stability of insurance companies helps to maintain a positive image of the industry as a whole, as well as the confidence of policyholders in the future.

Earlier, in the "pre-Covid" period, socio-economic aspects of insurance market development and tools for promoting available products were considered by such authors as A.V. Rumyantseva, E.I. Rumyantseva [1]; competent approaches to pricing — R. Kotler [2]; problems and prospects of development of the Russian market of voluntary health insurance were the subject of study by O.N. Suslyakova [3]. T.A. Belousova, D.V. Enilina [4] wrote about the effectiveness of anti-fraud programmes in insurance; M.V. Bespalov, V.S. Kudryashov wrote about the main aspects of insurance services management [5].

Since 2020, with the development of the coronavirus pandemic, it has become necessary to analyse in more detail the topics related to infectious morbidity and actions in the conditions of high readiness. Thus, I.M. Zhadan paid much attention to the fulfilment by insurance companies of their obligations under voluntary health insurance contracts under the conditions of a high alert regime or emergency situation in the Russian Federation [6]. The role of insurance in the study of risks of biological threats was considered by S.A. Belozerov, E.V. Sokolovskaya, A.A. Faizova [7]; the issues of insurance against infectious diseases were addressed by L.V. Tserkasevich, E.A. Makarenko [8]; the problems of the insurance market as a whole in conditions of the beginning of the pandemic COVID-19 (including abroad) were closely examined by E.P. Ogorodnikova, M.F. Gridnev [9], S.A. Dedeeva, S.N. Kazyev [10], N.A. Kazakova, D.A. Petrova [11], B. Fayzullaev [12], T. Harris, A. Yelowitz, C. Courtemanche [13].

Having studied these papers, we consider it necessary to:

- to review the financial performance of insurers, to analyse the commercial health insurance programmes that were and/or are present in the market, as the virus continues to make itself known and this pandemic (although officially recognised as completed) is unfortunately not the last;
- propose measures to improve the sales of health insurance products to the public.

RESEARCH METHODOLOGY

To further study the dynamics of sales of health insurance products, it is advisable, in our opinion, to analyse both the indicators of insurance premiums for the 3 years of the pandemic and the main health insurance programmes that appeared not only in 2020, but also later; to identify a number of factors that influenced the changes in the insurance market; to list the accumulated problems during the pandemic; to outline the main ways to improve the sales of insurance products.

RESEARCH RESULTS

Analysis of insurers' financial performance

Несмотря на сложную экономическую Despite the difficult economic situation caused by the coronavirus pandemic, the insurance market in Russia (as well as in the new EU member

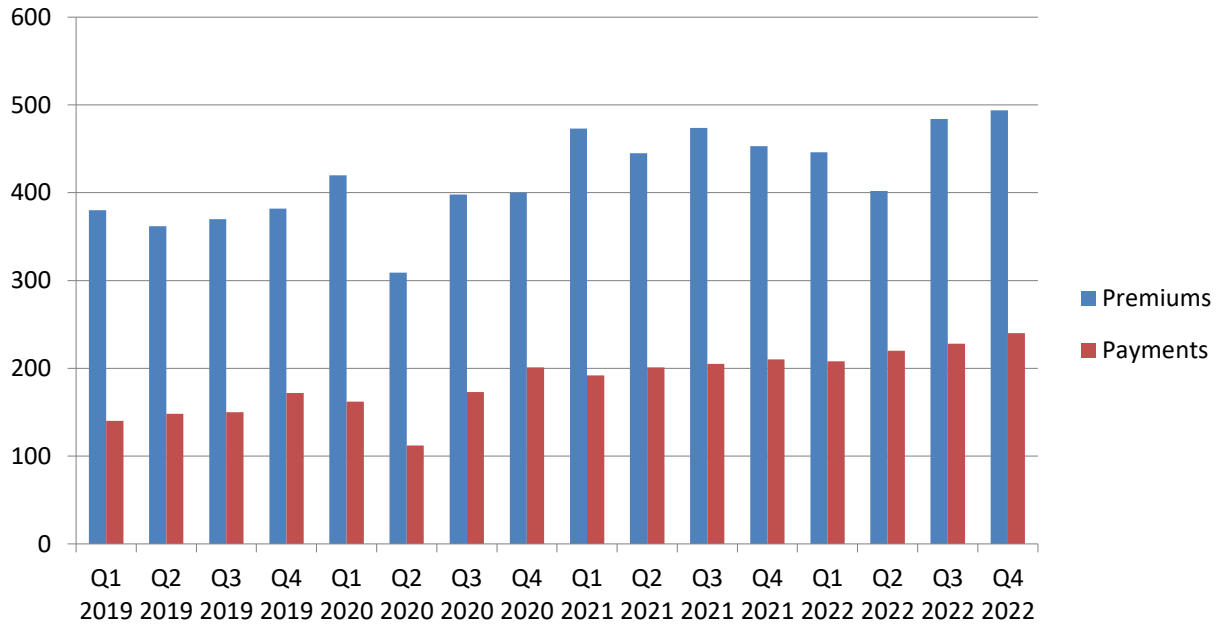

Fig. 1. **Quarterly dynamics of insurance premiums and payments in the Russian Federation for the period from 2018 to the second quarter of 2022 (billion rubles)**

Source: developed by the author based on data from the Central Bank of the Russian Federation. URL: https://www.cbr.ru/Collection/Collection/File/42295/review_insure_22Q2.pdf (accessed on 30.03.2023)

states [14]) not only continued its development, but also became more concentrated. Comparative dynamics of the Russian insurance market is presented in *Fig. 1*.

The pandemic peaked in 2020–2021. While the first quarter of 2020 was characterised by a significant increase in insurance premiums (over RUB 400 billion), in the second quarter, when the most serious restrictions were in place due to the new coronavirus infection, the volume of premiums received decreased to RUB 300 billion. After the situation improved, the market resumed its growth and premiums again reached the value of RUB 400 billion.

In general, their volume at the end of 2020 totalled RUB 1.5 trillion (1.5% of Russia's GDP). In parallel, the number of insurance payments changed — from RUB 160 billion in the first quarter to almost RUB 200 billion at the end of the year. At the same time, the growth of insurance premiums in the most important types of insurance was not uniform (*Fig. 2*).

While premiums for accident and illness insurance in Q2 2020 decreased by 20%, in Q3 and Q4, when financial protection programmes against the new coronavirus infection entered the market, they reached their maximum (actually increased by 40%) (*Fig. 2*). At the same time, the collections for the third and fourth quarters exceeded the premiums for this type of insurance for the first quarter of 2020 (when the pandemic had just started to spread around the world).

In voluntary health insurance (VHI), premiums decreased by 17% in Q2 2020, while by Q4, premiums increased by 17% [15].

In the first quarter of 2021, the growth in aggregate premiums reached 7.9% and totalled RUB 460 billion (*Fig. 1*). Among other things, the prolongation of corporate voluntary health insurance contracts for the next year played a positive role here. The number of aggregate payments decreased compared to the end of 2020 and totalled RUB 183.5 billion

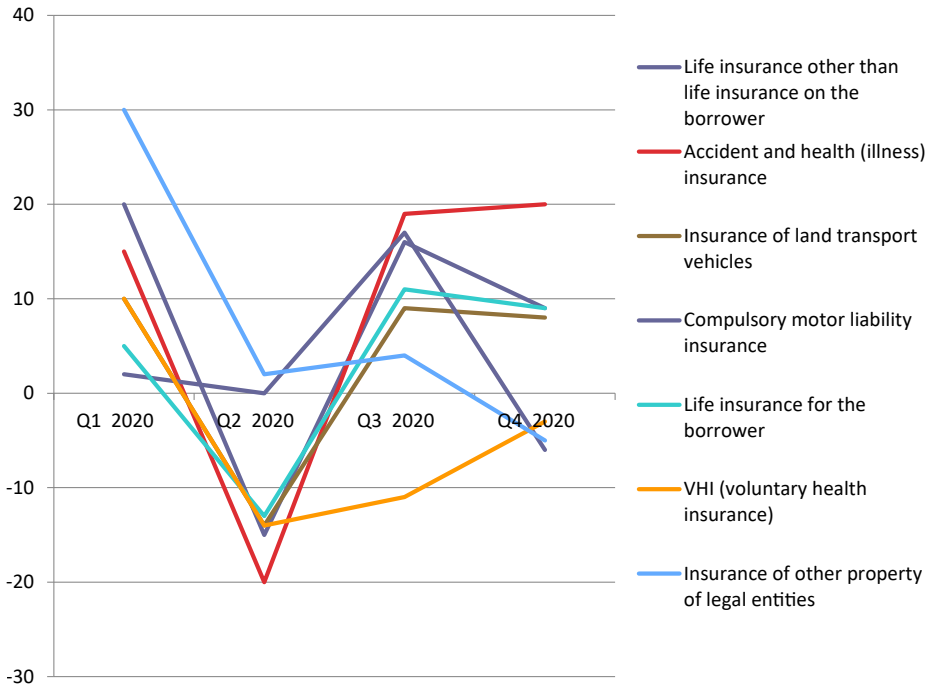

Fig. 2. **Dynamics of growth rates of premiums for the main types of insurance in 2020 in the Russian Federation (%)**

Source: developed by the author based on data from the Central Bank of the Russian Federation. URL: https://cbr.ru/Collection/Collection/File/32073/review_insure_20Q4.pdf (accessed on 30.03.2023).

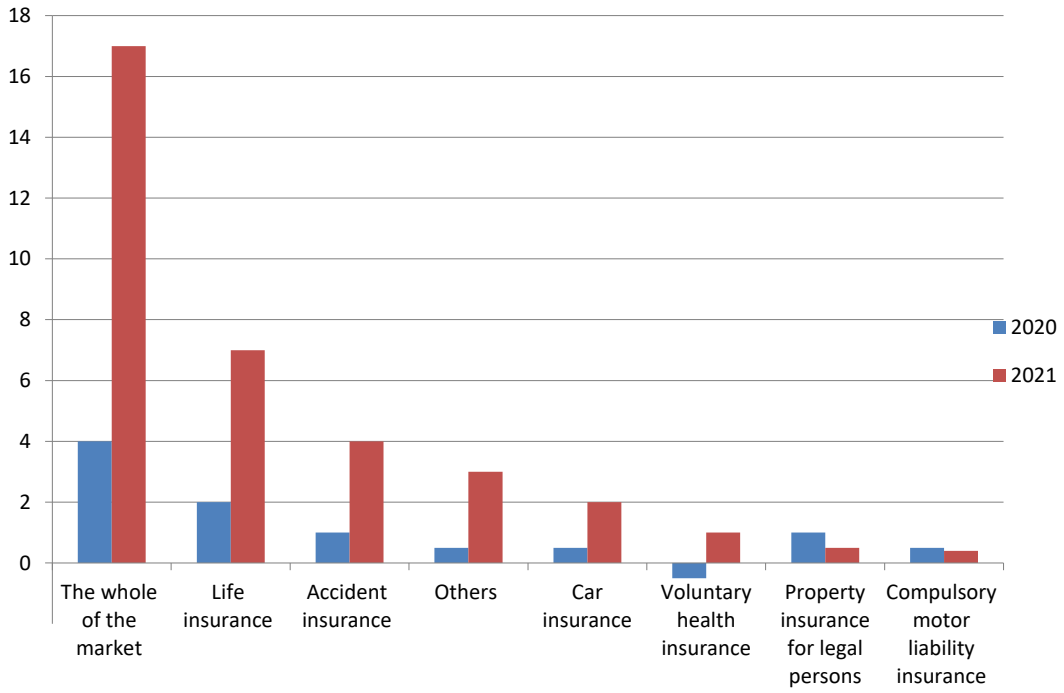

Fig. 3. **Dynamics of growth of premiums for certain types of insurance in the Russian Federation for 2020–2021 (%)**

Source: developed by the author based on data from the Central Bank of the Russian Federation. URL: https://www.cbr.ru/Collection/Collection/File/40874/review_insure_21Q4.pdf (accessed on 30.03.2023).

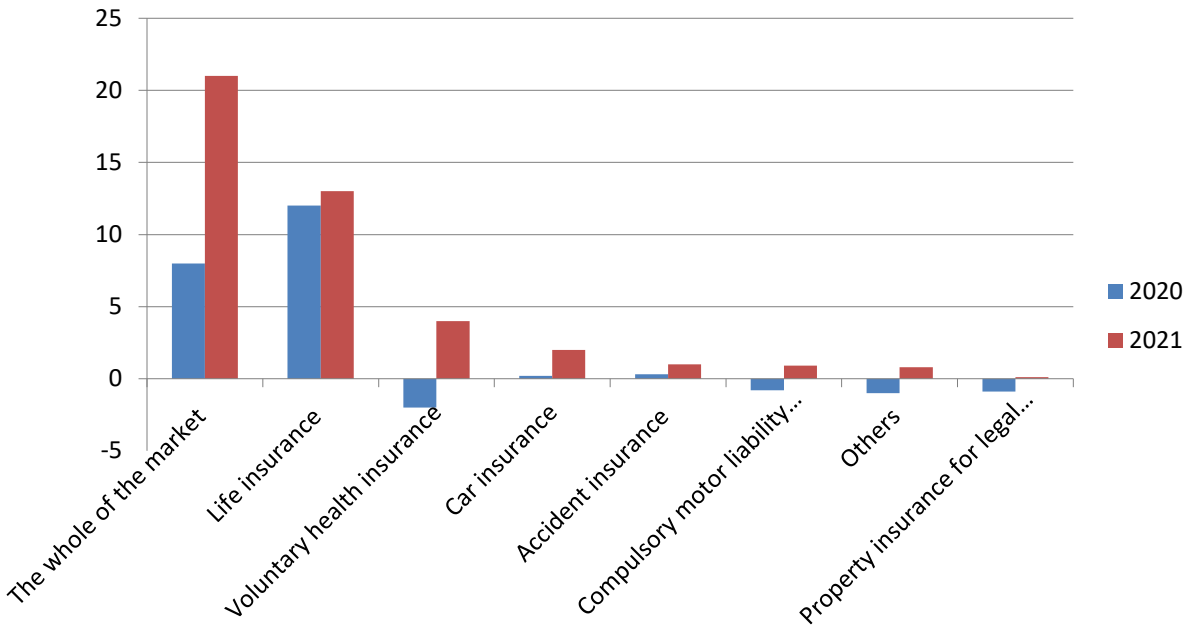

Fig. 4. **Dynamics of the increase in payments in certain types of insurance in the Russian Federation for 2020–2021 (%)**

Source: developed by the author based on data from the Central Bank of the Russian Federation. URL: https://www.cbr.ru/Collection/Collection/File/40874/review_insure_21Q4.pdf (accessed on 30.03.2023).

in Q1 2021; in Q2 there was a decrease in the number of premiums collected with a simultaneous increase in payments. In Q3 premiums grew to the level of Q1, i.e., due to the market contraction in Q2 to 38% and the low base of the beginning of Q3, we can talk about a slowdown in premium growth in Q3 to 16.5% (albeit with positive dynamics). The volume of payments for the III quarter amounted to 203 billion roubles. [16], which can be considered a good result for the economy as a whole.

Next, let us consider the growth of premiums for individual types of insurance for the period 2020–2021 in more detail (*Fig. 3*). Compared to 2020, it amounted to about 17%. The leaders were such lines as life insurance (7%), accident and sickness insurance (4%), car insurance (2.5%) and voluntary health insurance (2%).

Payments in 2021 increased by 22%, especially for life insurance (13%), voluntary health insurance (4%), car insurance (2.5%) and accident and sickness insurance (2%) programmes. These types of insurance account for a significant share in voluntary insurance in our country, and it is necessary to promote their further active development (*Fig. 4*).

Let us further consider the distribution of insurance premiums by sales channels in the Russian Federation (*Fig. 5*).

Figure 5 shows that credit institutions continued to be the leader in insurance sales (35.8% for 2021). In addition, internet sales increased (which is expected, especially during the pandemic and the associated remote working), as well as sales through the broker network.

It is also important to note that commissions to these intermediaries in 2021 have changed and amounted to: for voluntary health insurance — 15.4% (less than in 2020), for accident and sickness insurance — 73.3% (higher than in 2020) (*Fig. 6*).

The pay-out ratio for accident and sickness insurance in 2021 increased slightly year-on-

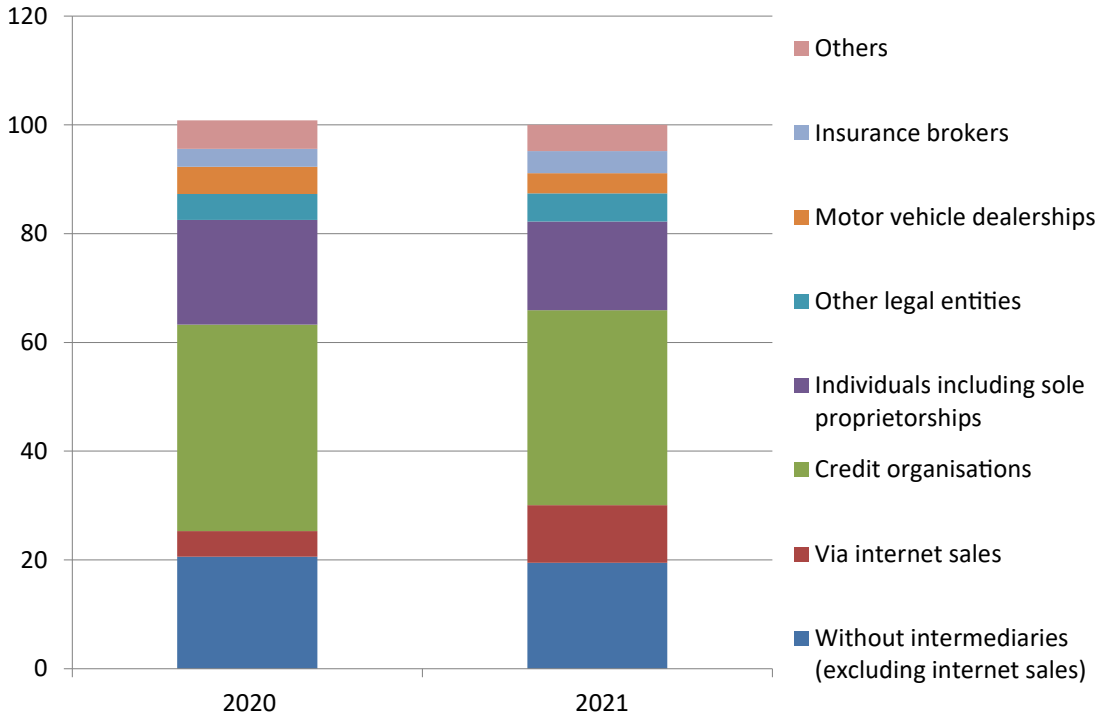

Fig. 5. **Distribution of insurance premiums by sales channels in Russia for 2020–2021 (%)**

Source: developed by the author based on data from the Central Bank of the Russian Federation. URL: https://www.cbr.ru/Collection/Collection/File/40874/review_insure_21Q4.pdf (accessed on 31.03.2023).

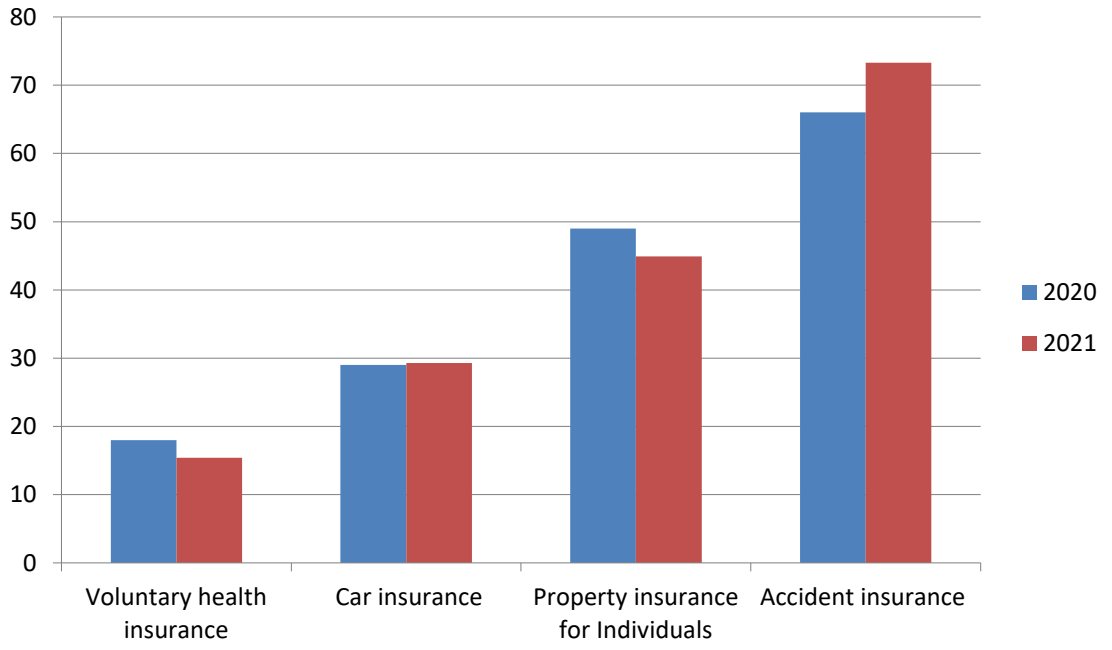

Fig. 6. **Change in the dynamics of intermediaries' commissions in Russia in 2020–2021 (%)**

Source: developed by the author based on data from the Central Bank of the Russian Federation. URL: https://www.cbr.ru/Collection/Collection/File/40874/review_insure_21Q4.pdf (accessed on 31.03.2023).

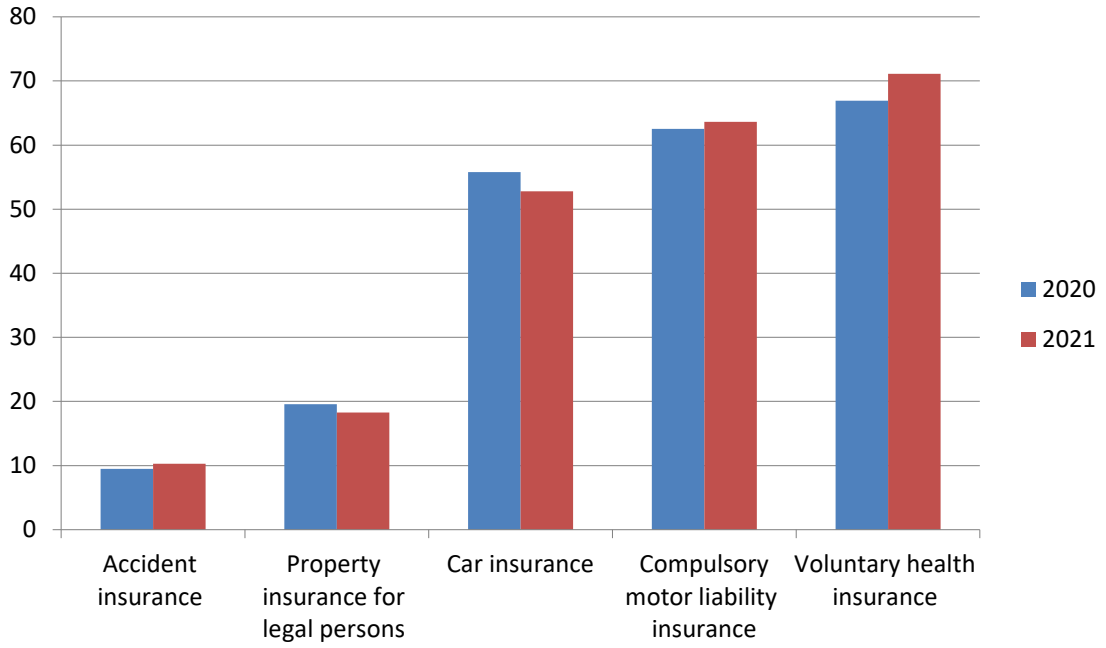

Fig. 7. **Dynamics of the rolling ratio of claims for certain types of insurance**

Source: developed by the author based on data from the Central Bank of the Russian Federation. URL: https://www.cbr.ru/Collection/Collection/File/40874/review_insure_21Q4.pdf (accessed on 31.03.2023).

year to 10.3 per cent and for voluntary health insurance to 71.1 per cent (*Fig. 7*).

The situation with voluntary health insurance is as follows: while in 2019 the increase in premiums for this type of insurance was about 2%, by the end of 2020 it became negative (–0.3%) mainly due to savings by companies amid the difficult economic situation and a decrease in the income of individuals. It should be noted that companies that are leaders in their industries (for example, PJSC "Gazprom") have co-financed interesting expensive medical programmes for their employees (for example, "Healthy Heart" programme, "High Medical Technologies", etc.).

In mid-2021, the situation in voluntary health insurance improved — there was an increase in demand for both individual and corporate programmes. The number of concluded contracts with individuals totalled 3.8 million units (+36.9%), but still did not reach the "pre-pandemic" values of 2019. Of course, during the COVID-19 period, policyholders began to be more attentive to their health. Policies began to include payment for pandemic-related treatment and rehabilitation procedures. However, the average size of the premium was small — 2–3 thousand roubles. This is first of all insurance against critical illnesses, "check-up", which provides insurance of medical services related to medical examinations and check-ups.

The number of concluded voluntary health insurance contracts with corporate clients in the middle of 2021 doubled (850.1 thousand units). But at the same time, the average insurance premium decreased and amounted to about 38.5 thousand roubles (decreased by 60.7%).

Payments under voluntary health insurance policies in the middle of 2021 rose by 57.9% and amounted to 37.2 billion roubles. Such growth in the number of insurance claims is associated with the pandemic [16].

The beginning of 2022 was characterised by a slight increase in insurance premiums, but

Table

Medical insurance programs related to the new coronavirus infection COVID-19

The insurer	Program	Insured person	Validity period	Insurance premium	Insurance amount	Payment
OJSC "Alfa-Insurance"	Coronavirus. NO.	Individuals from 7 to 60 years old	1 year	from 2000 to 10 000 roubles	1 million roubles.	For the risk of illness — 20,000–100,000 roubles, for the risk of death from illness — 1 million roubles
LLC Insurance Company "Soglasiye" (Concordia)	"Family under Protection."	Individual, his/her husband/wife, children from 3 to 60 years old	1 year	3500 roubles	1 million roubles.	For the risk of hospitalisation — 0.1% of the sum insured for each day of inpatient treatment, but not more than 21 days. For the risk of death — 1 million roubles
LLC "Capital Life — Life Insurance"	Stop. Coronavirus	Individuals from 1 to 60 years old	3 months	from 2000 to 5000 roubles	from 200 000 to 500 000 roubles.	For the risk of illness and hospitalisation — from 30,000 to 75,000 roubles, for the risk of death — from RUB 200,000 to 500,000

Source: ccompiled by the author on the basis of data from OJSC "AlfaStrakhovanie" / "Alfa-Insurance". URL: https://www.alfastrah.ru/coronavirus / (accessed on: 30.03.2023), LLC Insurance Company "Soglasiye" (Concordia). URL: https://www.vbr.ru/strahovanie/virus / (accessed on 30.03.2023), LLC "Capital Life — Life Insurance". URL: https://kaplife.ru/shop/archive/stop-koronavirus / (accessed on 30.03.2023)

already in the second quarter there was a rather sharp decline in insurance activity to the level of the fourth quarter of 2020. [17]. Market growth in 2022 slowed down.

REVIEW OF HEALTH INSURANCE PROGRAMMES ASSOCIATED WITH THE NEW COVID-19 CORONAVIRUS INFECTION

It should be noted that in Russia the COVID-19 pandemic resulted in a significant number of infected and hospitalised patients, which entailed additional financial expenditures (taking into account that many people were sick along with their entire families). The market reacted promptly to this situation and offered a number of interesting programmes for insurance protection in case of a new coronavirus infection (*Table 1*).

Their common features are relevance, rather large sum insured (especially in case of death of the insured — about 1 million roubles, at the risk of disease — up to 100 thousand roubles) with a relatively small premium (from 2 to 10 thousand roubles). Financial protection was extended to adults and children.

Thus, many insurance organisations carried out a competent analysis of the consumer market and developed competitive products for it.

CONCLUSIONS

The study identified factors that have influenced changes in the voluntary health insurance and accident insurance markets:

1. Demand for health insurance programmes.

2. Active use of sales of insurance products through banks (development of bank insurance).

3. Increase in the number of voluntary health insurance premiums to RUB 47 billion.— The increase in the first half of 2022

compared to the first half of 2021, despite economic instability, was 16.8% [17].

4. Introduction of relevant COVID-19 insurance programmes in the accident and disease insurance market with a possible prospect of developing new products corresponding to further infectious threats.

5. Increase in aggregate sales of insurance products through the broker network and internet by almost 15% starting from 2021; sales without intermediaries (except internet sales) — by 19.5% (which exceeds the figures of 2020).

6. Increase in average payments for accident and sickness insurance for 2021 (73.8 thousand roubles). For comparison, in 2020 they amounted to 40 thousand roubles. [16], which confirms the need for financial protection in the periods of pandemics.

A number of challenges facing the voluntary health insurance and accident and sickness insurance markets should also be noted: 1. Under the influence of the crisis phenomena after the first half of 2022, the insurers' profit in the market decreased to RUB 46.1 billion, while they incurred losses in the second quarter. Significant losses from investment activities of insurance companies also played an important role here. At the same time, due to the increase in prices for medical goods and services, premiums for voluntary health insurance increased; however, on the contrary, they decreased for accident and sickness insurance [17]. 2. The "cooling-off period" rule, which has been in force since 2020 and applies to voluntary health insurance and accident insurance contracts among others, also has an impact on the reduction of premiums. Applying it, the policyholder may cancel the insurance transaction within 14 days and request a refund of the premium amount [18]. 3. In some insurance companies, the rate of denial of insurance payment has increased. For example, in accident insurance in 2021 it increased from 10.1 to 24.8% [16]. Further study of the causes of this situation is required. 4. Peculiarities of investment activities of all financial intermediaries related to the sanctions regime [19].

Thus, insurers need to take measures to increase the number of sales of customer health insurance products in order to improve the profitability of their operations, especially taking into account losses in the investment activities of insurance companies, which consist of:

- studying the financial situation of corporate insurers, individual entrepreneurs and more actively attracting them to participate in insurance programmes despite the difficult economic conditions (through advertising, social networks, etc.).;
- the development of new products and improvement of conditions already existing on the market. This applies to programmes related to infectious diseases, as well as to such programmes as "Check-Up", "Critical Illness", "High Medical Technologies", etc., which can be purchased by both individuals and legal entities, as well as be used by COVID-19 survivors to monitor their health (as the risk of complications in such patients is quite high);
- –active application of marketing approaches to determining tariffs;
- development of new medical programmes for outbound travellers, migrants, the number of which increased in the second quarter of 2022. [17];
- further development of direct sales via the Internet, use of modern insurance technology tools (InsurTech) in the work of insurers [7].
- application of discounts at prolongation of the contract;
- preventive policy in the field of counteraction to possible fraud with the involvement of expert doctors [4];

• formation of an innovative environment, which may be of interest also to the insurers from other countries [20, 21];

• digital transformation of the insurance industry for all emerging markets — its necessity is noted by foreign authors as well [22–24].

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