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Factors Influencing the Interaction Between the Public and Government Authorities in Moscow's Transport Sector: Assessment of Public Opinion

Yu.Yu. Temnikova
Plekhanov Russian University of Economics, Moscow, Russian Federation;
Mayor of Moscow, Moscow, Russian Federation;
Moscow Metro, Moscow, Russian Federation

ABSTRACT

The aim of this study was to justify the factors influencing the interaction between government authorities and the public in the field of urban transport within the framework of the "Strategy for the Development of the Transport System of Moscow and the Moscow Region until 2035." To achieve this, it was necessary to address tasks such as assessing the current level of such interaction and identifying priority tools for its implementation. The article presents an analysis of the dynamics of passenger traffic in Moscow's urban transport and shows its structure (by mode of transport). A classification of factors is proposed based on the following criteria: financial; accessibility, comfort, and convenience; digitalization; travel speed; transport safety; social and environmental factors; level of infrastructure development; and organizational and regulatory factors. The study employed both general scientific methods — analysis, synthesis, comparison — and applied research methods, including public surveys and statistical processing through correlation analysis. Based on sociological surveys of the megacity's residents on the topic of transport sector development, the study identified priority tasks and directions for its improvement. The results allow for the justification of development scenarios for the urban agglomeration's transport system, taking into account public opinion. These data can be used to improve the monitoring system for both urban management and municipal governance.

Keywords: transport sector; Moscow metropolis; population; government authorities; interaction; factors; sociological surveys; public opinion

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INTRODUCTION

Transportation plays a vital role in the development of any metropolis and significantly influences the sustainable development of human potential [1, 2]. The formation and modernization of the transport sector can be regarded as a category of the economic space within the realm of social and economic processes [3].

In the article by H. Sivilevičius and V. Žuraulis, the challenges of modeling the impact of interaction factors among elements of the transport system on the population's quality of life are discussed using a multi-criteria decision-making method. The authors analyze both a model of interaction between government authorities and the population, which enables identification and study of its levels, and the factors (criteria) that affect the improvement of quality of life [4]. The most significant among these are the development level and quality of transport infrastructure; reduction of road traffic accidents; and decrease in environmental pollution caused by transport operations. At the same time, it was found that an increase in the number of vehicles and changes in their technical specifications have little impact on the quality of life issue.

The work of E.A. Deinega and L.A. Plotitsyna outlines the stages of forming a unified socio-economic space in urban agglomerations as part of Russia's spatial development strategy [5]. E.E. Goryachenko argues for the necessity of addressing social issues within the framework of a metropolis [6]. Several publications analyze the choice of modeling approaches for managing urban agglomerations with a focus on the development of the transport system [6–10].

Under these circumstances, the development of a communication mechanism and a model of interaction between the population and government authorities aimed at the development of the metropolis's transport system — taking into account the interests and needs of stakeholders (including at the municipal level)—is of significant scientific and practical importance. For example, it is worth noting that increasing residents' satisfaction with transport services has been highlighted both as a key objective and as an indicator for evaluating the effectiveness of the implementation of the "Transport System Development Strategy of Moscow and the Moscow Region until 2035,[1]" which was approved on December 1. 2021.

In a previous study. the author of this article analyzed methodological approaches to assessing the effectiveness of communications between the Moscow Department of Transport and Road Infrastructure Development and the population in the implementation of strategic projects. The level of informational transparency and accessibility of information about the city's transport system development for citizens was used as a key evaluation criterion [11].

Spanish researchers. examining the conduct of informational communication campaigns in their country related to transport sector development, demonstrated that the transition to a sustainable mobility model encourages greater use of light modes of transport and, consequently, increases the number of vulnerable road users, especially in urban areas. In 2023, this user group — which includes pedestrians, cyclists, personal vehicle users, and motorcyclists — accounted for 46% of road traffic accident fatalities. To reduce this figure, the use of new forms of micromobility information campaigns has been proposed [12].

Reference [13] considers some legal, organizational, and socio-economic aspects of improving the efficiency of local government authorities, including in the area of urban transport development, Interaction between the population and government authorities in this area is a multifaceted process influenced by various factors. The identification of these factors is facilitated by models that justify the most effective decision-making forms at different levels of transport management.

[1] Transport System Development Strategy of Moscow and the Moscow Region until 2035 URL: https://mintrans.gov.ru/documents/7/11694

It should be noted that the interaction between government authorities and the residents of the capital in this area is two-way, since policies and standards for urban transport management must be based on the real needs and capabilities of the population.

Table 1 shows the dynamics of passenger turnover by mode of urban transport in Moscow for the years 2020–2024, while *Table 2* presents its structure.

The data in *Table 2* show that the largest share of passenger transportation in the Moscow metropolitan area is accounted for by the metro and MCC (49.3%), as well as surface urban passenger transport (29.8%).

There are various forms of interaction between government authorities and the population in the transport sector — studying and analyzing these is essential to identify the factors influencing these processes. Modern forms of interaction include the following directions:

1. Information and communication, namely providing the population with information about the history, operation and development of Moscow's transport sector. This information is published on official websites as well as shared through social media channels.

2. Collecting feedback from passengers, which helps determine the topics of greatest interest to them.

3. Survey-based communication methods between the population and the city authorities. It is necessary for monitoring residents' opinions on the transport sector.

4. Development of information platforms for informing and interacting with the population. At the current stage digital solutions are being implemented for this purpose, for example, transport-sharing platforms (carsharing. kicksharing). such as Moscow Carsharing (https://transport.mos.ru/carsharing).

5. Citizen participation in decision-making processes within the transport sector, including public hearings on pressing issues of its development.

6. Involvement of the population in the development of the transport sector and solving its problems.

7. Implementation of partnership programs between government authorities and educational institutions in the transport sector.

8. Implementation of partnership programs between government authorities and businesses in the transport sector.

The analysis of the materials on the research topic allows us to draw the following conclusions:

- The implementation of effective forms of interaction between the population and government authorities is one of the priorities of the "Strategy for the Development of the Transport System of Moscow and the Moscow Region until 2035."
- The development of a system for monitoring this interaction is necessary to ensure a decent quality of life for city residents.
- Effective interaction between the population and government authorities requires studying various factors as well as substantiating the importance of each in the development of interaction models.

FACTORS AFFECTING THE INTERACTION BETWEEN GOVERNMENT AUTHORITIES AND THE POPULATION IN THE TRANSPORT SECTOR

To justify the effectiveness of interaction between the population and government authorities in the development of the urban transport system, it is necessary to identify the influencing factors, which can be classified as follows: financial; accessibility, comfort, and convenience; digitalization; travel speed; transport safety; social and environmental factors; infrastructure development level; organizational and regulatory-legal factors.

These issues are at the forefront of scientific interest for foreign researchers, including Australian scholar P. Ziaesaeidi. His approach to the problem of urban transport development and preserva-

Table 1

Passenger Traffic of Moscow Urban Transport by Mode of Transport

Indicator / Year	2020	2021	2022	2023	2024	2024 к 2020 / 2024 to 2020
Annual passenger traffic. total. billion trips	3.2	3.9	4.1	4.5	4.8	1.5 times
Including:						
Metro. MCC (Moscow Central Circle). billion trips	1.6	2.0	2.1	2.3	2.4	1.5 times
MCD (Moscow Central Diameters). million trips	137	171	182	257	419	3.1 times
Surface urban passenger transport. billion trips	1.0	1.1	1.1	1.2	1.3	1.3 times
Taxi. million trips	390	555	584	621	632	1.6 times
Carsharing. million trips	56	64	67	72	75	1.3 times

Source: compiled by the author based on data from the Unified Transport Portal of Moscow. URL: https://transport.mos.ru/

Table 2

Structure of Passenger Traffic in Moscow Urban Transport by Mode, January 2025

Indicator	Share of passenger traffic by this type of transport, %
Passenger traffic on Metro and MCC	49.3
Passenger traffic on MCD	9.3
Surface urban passenger transport	29.8
Taxi	10.3
Carsharing	1.3
Total:	100.0

Source: compiled by the author based on data from the Unified Transport Portal of Moscow.

tion of green spaces (which have not only ecological but also social significance) promotes the strengthening of social resilience and citizen cohesion through the development of ecologically and socially oriented transport-communication public spaces that meet the needs of the population [14]. In this regard, Russian specialists S.V. Bogachev and N.I. Malis substantiate proposals to expand the authority of local self-government bodies in the environmental sector [15]. The preservation of urban green spaces within the framework of city transport system development is important for reducing environmental pollution, preserving the climate, and ensuring ecological well-being [16].

The publication by S.E. Avram, L. Tudoran and others [17] presents an analysis of the impact of urban transport on noise levels and particulate pollution. It shows that noise pollution and emissions of harmful substances (particulate dust and gaseous combustion products) into the atmosphere depend on the intensity of motor vehicle traffic. For example, in the Cluj-Napoca area (Romania), where this indicator is high, the noise level reached approximately 77 dB due to heavy traffic (214 vehicles/10 minutes) including cars, buses, and trucks. This must be taken into account when developing transport system measures with consideration of the interaction between government authorities and the population.

Let us examine in more detail the factors influencing this interaction by dividing them into groups:

The first group consists of *financial (economic) factors*. These include indicators such as fare cost; availability of discounts or concessions for citizens; associated expenses such as baggage fees, parking charges, etc.; and the cost of owning private transport (if used), including taxes, maintenance, repairs, insurance, depreciation, fuel, and so on. Financial factors influence transport pricing policies, particularly the "fairness" of tariffs for services provided by the transport sector from the population's perspective.

The second group includes *factors of accessibility, comfort, and convenience*. These cover aspects such as the functionality and convenience of routes (number of transfers, proximity of stops), accessibility for passengers with disabilities, availability of infrastructure for private transport use (parking lots, fuel stations, electric vehicle charging points), and comfort (seat comfort, availability of internet, restrooms, etc.). These factors address issues related to the mobility of people with limited movement abilities, the comfort standards of public transport, and accessibility of infrastructure for private vehicles.

A key subject of interaction between government authorities and the population in urban management is road safety, including systems to prevent collisions between vehicles and pedestrians [18].

One of the important parameters of urban transport from the passenger's perspective is the time spent traveling [19], especially when assessing the effectiveness of implemented digital management systems (intelligent transport systems). Their use in several countries (including China, Russia, and others) now allows for accurate prediction of trip duration, which is crucial for traffic management and improving urban transport mobility.

The third group of factors includes the *level of digitalization*, which is reflected in the use of mobile apps for route planning, online notifications about changes in transport operations, and interactive maps showing vehicle movement.

The next group covers *factors related to travel speed* — namely, total travel time, adherence to schedules, and waiting time for transport.

The fifth group concerns *transport safety* — including vehicle reliability (technical condition), the skill level of industry workers, and the level of crime.

Environmental factors form a separate group, including the ecological friendliness of the transport used, its impact on the environment, and sustainable development. In the context of achieving carbon neutrality for the metropolis and low-carbon urban economic development, this group may also include indicators related to greenhouse gas emissions from vehicles and the use of electric transport [20].

A distinct group of factors characterizes the *level of infrastructure development*. This includes the presence and quality of transport infrastructure (roads, bypasses) and related infrastructure (cafes, stops, ticket offices), as well as the prioritization of public transport over private vehicles.

The next group can be called *social factors*. This group includes recommendations from acquaintances (reference persons), personal experience, and the prestige of using public transport.

Organizational factors include the openness and accessibility of information for making decisions on transport or route choice; setting strategic development goals for the sector considering population needs; and ensuring government control and supervision in this area.

In turn, *the regulatory and legal factors* influencing the sector are represented by the *following standards*: transport safety; quality of service delivery; competence of industry personnel; technical regulations governing the condition of vehicles and transport infrastructure; as well as environmental regulations applicable to the city's transport sector.

RESEARCH METHODOLOGY

To assess the level of influence of the factors listed above, a sociological survey of Moscow residents was conducted in February–March 2025. The sample size was 480 people. Respondents were selected based on the following criteria: residing in Moscow and using city or private transport at least 2–3 times per month. To obtain representative data, a generational approach was applied, with age quotas established as follows: 14–25 years — 120 respondents; 26–41 years — 120 respondents; 42–58 years — 120 respondents; 59–81 years — 120 respondents. This approach allowed consideration of the characteristics of all age groups and balanced the sample population. The characteristics of respondents from different generations, based on the principles of the generational theory by N. Howe and W. Strauss, are presented in *Table 3*.

When developing a model for the interaction between the population and authorities aimed at improving the transport system, it is important to consider that the challenges related to the devel-

Table 3

Characteristics of Survey Respondents on the Development of the City's Transport System by Generation Theory

Generational Theory	Year of Birth	Age in 2025. years	Brief Description
Silent Generation	1925–1944	81–100	Characterized by conservatism and restraint. shaped by growing up during economic hardships and wartime.
Baby Boomers	1944–1967	58–81	Known for high activity and optimism; they established new social and cultural norms in the post-war period.
Generation X	1967–1984	41–58	Noted for independence and skepticism toward traditional authorities amid economic instability.
Generation Y (Millennials)	1984–2000	25–41	Technology- and diversity-oriented; actively support social change and environmental sustainability.
Generation Z (Zoomers)	2000–2011	14–25	Distinct for digital literacy and activism, with a flexible approach to identity.
Generation Alpha (Gen A)	2011–...	14 and younger	Growing up fully immersed in a digital environment, which significantly shapes their worldview and tech skills.

Source: compiled by the author based on RBC materials. URL: https://trends.rbc.ru/trends/education/6156efb59a79477bf9ca5893?from=copy (accessed on 23.03.2025).

opment of a megacity are typically multi-objective and intended to satisfy the needs of various stakeholder groups within the urban environment (authorities, different social groups, industrial enterprises and organizations, etc.).

The complexity of addressing these tasks stems from conflicts arising due to the differing goals of the participants involved in the city's transport infrastructure. Additionally, there is a broad range of both external and internal economic. Environ-

Table 4

Influencing Factors and Their Significance in the Interaction Between the Public and Government Authorities for the Development of Moscow's Transport System

№	Influencing factor	Degree of significance of factors influencing the interaction between the public and government authorities in the metropolis
1.	Safety and reliability of transport vehicles	3.75
2.	Financial expenses (fare cost, related expenses)	3.61
3.	Travel speed	3.61
4.	Level of development of transport infrastructure (roads, bypasses)	3.55
5.	Accessibility, comfort, and convenience of transport usage	3.53
6.	Qualification level of transport industry workers	3.43
7.	Openness /accessibility of information for decision-making on transport/ route choice	3.38
8.	Environmental situation	3.36
9.	Level of communication between transport management authorities and the public	3.25
10.	Regulatory and legal framework for the transport sector	3.22
11.	Level of digitalization of the transport sector	3.22
12.	Level of development of supporting infrastructure	3.21
13.	Personal experience of use, recommendations from acquaintances	3.11

Source: compiled by the author based on the results of a survey of the population of a metropolis.

mental, social, technological, organizational, and political factors, many of which involve a certain degree of uncertainty and risk.

RESEARCH RESULTS

The results of the sociological survey conducted by the author among the population of the Moscow agglomeration showed that the metro was the most popular mode of transport, chosen by 55% of respondents. The use of bicycles and scooters was more common among young people aged 14 to 25 than other age groups.

To assess the importance of each of the factors listed above for the respondents, they were ranked by degree of significance, where 5 represents the most significant factor and 1 the least significant (see *Table 4*).

The data in *Table 4* indicate that the most important factors for city residents are the safety and reliability of transport vehicles, financial expenses (fare cost and related expenses), travel speed, the level of development of transport infrastructure, and the accessibility, comfort, and convenience of transport usage.

To identify the relationships and levels of influence of these factors on management decision-making in the transport sector, a correlation analysis was conducted. The results are presented in *Table 5*.

As part of the study, a correlation analysis was conducted on the factors influencing the interaction between government authorities and the public in the field of urban transport (see *Table 6*).

In particular, a strong correlation was found between the high cost of owning private transport (F1) and the use of transport infrastructure (F3), as well as the low availability of infrastructure for electric vehicles (F2). This situation can lead to financial difficulties for private vehicle owners when using their transport.

This reflects a key contradiction and problem in the sector: on one hand, increasing expenses related to owning private transport; on the other, difficulties in switching to more economical personal transportation options due to insufficient convenient infrastructure.

It may also be important to consider the lack of adequate public information as one of the key barriers slowing down the adoption of more economical and environmentally friendly types of urban transport.

The correlation significance of the following factors — accessibility, comfort, and convenience of transport use (F5), travel speed (F7), and safety and reliability of transport vehicles (F8) — reflects specific consumer priorities among the population in this area. Essentially, these represent the minimally acceptable conditions that must be met for the further development of urban transport. It is worth noting that no significant correlation was found between these factors and the aforementioned cost-related factors.

It should be emphasized that the impact of price (as an economic factor) is particularly noticeable — according to the survey, it ranks as the second most important factor. However, no correlations were found between financial expenditures and other factors.

This may indicate satisfaction with the current pricing level and pricing policy of transport services in the capital.

Correlations between regulatory governance of transport (F14) and the level of communication between transport management authorities and the population (F15) are justified by the importance of the first factor for the effectiveness of the second, highlighting the recognized need for significant refinement of the regulatory framework to establish effective communication between Moscow's government bodies and its residents.

The identified significance of openness and accessibility of information about the transport sector corresponds with the population's demonstrated interest in obtaining information not only about its development but also about the qualifications of sector employees. This is confirmed by correlations among factors such as the level of development of transport infrastructure

Table 5

Ordinal Numbers of Factors Influencing the Development of the Megacity's Transport System

Sequence number of the influencing factor	Name of the factor
F1	High cost of owning private transport (taxes, maintenance, repair, insurance, depreciation, fuel, etc.)
F2	Low availability of infrastructure for private transport use (parking, gas stations, EV charging)
F3	High cost of using transport infrastructure (toll roads, parking, etc.)
F4	Financial expenses (fare cost, related expenses)
F5	Accessibility, comfort, and convenience of transport usage
F6	Level of digitalization in the transport sector
F7	Travel speed
F8	Safety and reliability of transport vehicles
F9	Environmental situation
F10	Personal experience of use, recommendations from acquaintances
F11	Level of development of transport infrastructure (roads, bypasses)
F12	Level of development of related infrastructure (parking. cafes)
F13	Openness/availability of information for making decisions about transport/route choice
F14	Level of qualification of transport sector workers
F15	Regulatory and legal framework of the transport sector
F16	Level of communication between transport management authorities and the public

Source: compiled by the author based on the results of sociological surveys of the population of the Moscow metropolis

(F11), openness/accessibility of information (F12), and the qualification level of transport sector employees (F13).

This approach can be utilized within the public administration system. Reference [21] proposes enhancing the interaction between municipal authorities and the population in addressing urban management tasks based on program-targeted management, which implies linking planned activities to financial resources, targeting initiatives, and assessing cost-effectiveness.

Examples of partnership programs and projects involving government authorities, businesses, and the public in the transportation sector of the

Table 6

Results of Correlation Analysis of Factors Affecting the Interaction Between Government Authorities and the Public in Urban Transport

Correlation level of factors influencing the interaction between government authorities and the public in the field of urban transport																
Influencing factor	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**	**F9**	**F10**	**F11**	**F12**	**F13**	**F14**	**F15**	**F16**
F1	1	0.57	0.657	0.422	0.215	0.141	0.189	0.224	0.145	0.084	0.243	0.293	0.27	0.219	0.198	0.198
F2	0.57	1	0.676	0.299	0.242	0.192	0.227	0.24	0.233	0.198	0.304	0.381	0.279	0.206	0.286	0.262
F3	0.657	0.676	1	0.392	0.194	0.208	0.226	0.25	0.24	0.167	0.277	0.328	0.236	0.227	0.201	0.183
F4	0.422	0.299	0.392	1	0.346	0.235	0.286	0.302	0.133	0.143	0.246	0.216	0.351	0.251	0.215	0.287
F5	0.215	0.242	0.194	0.346	1	0.356	0.542	0.528	0.354	0.381	0.539	0.29	0.468	0.446	0.423	0.364
F6	0.141	0.192	0.208	0.235	0.356	1	0.364	0.371	0.365	0.363	0.361	0.448	0.387	0.41	0.385	0.37
F7	0.189	0.227	0.226	0.286	0.542	0.364	1	0.564	0.269	0.399	0.483	0.328	0.391	0.428	0.359	0.361
F8	0.224	0.24	0.25	0.302	0.528	0.371	0.564	1	0.354	0.409	0.571	0.293	0.477	0.466	0.413	0.388
F9	0.145	0.233	0.24	0.133	0.354	0.365	0.269	0.354	1	0.345	0.338	0.256	0.332	0.386	0.338	0.299
F10	0.084	0.198	0.167	0.143	0.381	0.363	0.399	0.409	0.345	1	0.456	0.392	0.359	0.448	0.376	0.367
F11	0.243	0.304	0.277	0.246	0.539	0.361	0.483	0.571	0.338	0.456	1	0.434	0.605	0.523	0.497	0.434
F12	0.293	0.381	0.328	0.216	0.29	0.448	0.328	0.293	0.256	0.392	0.434	1	0.457	0.414	0.373	0.41
F13	0.27	0.279	0.236	0.351	0.468	0.387	0.391	0.477	0.332	0.359	0.605	0.457	1	0.518	0.494	0.391
F14	0.219	0.206	0.227	0.251	0.446	0.41	0.428	0.466	0.386	0.448	0.523	0.414	0.518	1	0.645	0.636
F15	0.198	0.286	0.201	0.215	0.423	0.385	0.359	0.413	0.338	0.376	0.497	0.373	0.494	0.645	1	0.63
F16	0.198	0.262	0.183	0.287	0.364	0.37	0.361	0.388	0.299	0.367	0.434	0.41	0.391	0.636	0.63	1

Source: compiled by the author based on the results of sociological surveys of the population of the Moscow metropolis.

Moscow metropolis include the Moscow Transport Innovations Fund (established jointly with JSC "ROSNANO," which invests in promising transport projects to support high-potential technological products), and the Moscow Transport Innovations initiative, which supports startups within the capital's transport complex.

CONCLUSIONS

During the study, factors influencing the interaction between the population and government authorities in the transportation sector of Moscow were identified and structured. This will further enable:

- the development of tools for monitoring the implementation of the "Strategy for the Development of the Transport System of Moscow and the Moscow Region until 2035";
- the creation of models for interaction between government authorities and the population in this sector;
- the application of the proposed approach in tasks requiring modeling to justify and make management decisions, including at the municipal level for the modernization of urban agglomeration facilities taking into account citizens' opinions [22].

Moreover, the approach presented in this article allows for the development of strategic guidelines for the future development of the metropolis's transport complex.

The following conclusions were drawn from the study:

1. The environmental factor is one of the most pressing issues at the current stage of interaction between the population and government authorities. Residents express interest in eco-oriented types of transport (including personal transport), but the lack of sufficient information is one of the key obstacles to their development.

2. Consumers prioritize accessibility, comfort, and convenience of transport use, travel speed, safety, and reliability of vehicles. Ensuring these conditions forms the foundation for effective interaction among all interested groups in this sector.

3. Successful interaction between government authorities and the population in the transport sector requires the development of a normative-legal framework governing its functioning.

4. Establishing effective forms of such interaction contributes to improving the quality of life standards for urban residents.

The results of this study can be used to improve the system for monitoring urban management development at the municipal level [23].

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ABOUT THE AUTHOR

Yulia Yu. Temnikova — Postgraduate student of the Department of Public and Social Administration, Plekhanov Russian University of Economics, Moscow, Russian Federation; Advisor to the Deputy Mayor of Moscow on Transport and Industry, Deputy Head of the Moscow Metro, Moscow, Russian Federation
https://orcid.org/0009-0001-8583-8624
temnikova_yuliya@internet.ru

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Improving the System for Evaluating the Efficiency and Performance of Civil Servants

A.A. Bakulina, N.A. Zavalko, N.L. Krasyukova
Financial University under the Government of the Russian Federation, Moscow, Russian Federation

ABSTRACT

This article addresses the pressing issue of improving the system for evaluating the efficiency and performance of civil servants within the context of public administration development and enhancing the quality of public services. The aim of the study is to develop proposals for modernizing the existing evaluation system for civil servants based on a fundamental analysis of theoretical approaches, domestic practices, and international experience. The work presents a comprehensive analysis of both the key categories and approaches used in this field, as well as the current regulatory and legal framework. The current state of Russia's civil servant evaluation system is examined, revealing key issues such as procedural formalism, subjectivity, weak connection with HR processes, insufficient evaluator competence, and underdeveloped information and analytical systems. Advanced international practices in civil servant evaluation are reviewed, including those in the United States, the United Kingdom, Germany, France, and Canada. The article proposes main directions for improvement: the implementation of results-based management using key performance indicators (KPIs); the development of a competency-based approach; digitalization of evaluation procedures; and strengthening the link between evaluation outcomes and motivation mechanisms. The study's **methodology** is grounded in scientific methods such as analysis and synthesis. The **results** can be used in the modernization of the civil servant evaluation system, as well as in the development of legal and methodological documents in this field.

Keywords: civil service; performance evaluation; efficiency; competency-based approach; results-based management; digitalization; motivation of civil servants; international experience

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INTRODUCTION

The urgency of improving the system for evaluating the efficiency and effectiveness of civil servants stems from the dynamic development of public administration and the increasing demands for the quality of public services in the contemporary context. There is a pressing need for systematic transformation of human resource management mechanisms within government bodies, with an emphasis on enhancing the objectivity and transparency of attestation procedures, and on the adoption of advanced technologies and methodologies that provide a comprehensive understanding of each employee's potential and achievements.

A detailed study of the theoretical foundations and practical organization of public service activities has revealed key trends, problem areas, and growth opportunities in this field. A comprehensive analysis of existing approaches, tools, regulatory frameworks, and best international practices has provided a solid foundation for developing proposals aimed at qualitatively improving the evaluation system, thereby fostering greater professionalism and motivation within the civil service workforce.

Issues of public evaluation as a basis for motivating civil servants have been examined by I.S. Shcherbina and L.N. Zakharova [1], while M.A. Drobot explored pedagogical modeling and the assessment of the effectiveness of forming the socio-legal stance of future civil servants [2]. The qualification exam as a means of assessing civil servants' performance was the subject of study by E.R. Biryukova [3], and S.V. Dukhnovsky investigated methodologies for evaluating self-perception as a professional [4].

With the advancement of digitalization, there has emerged a need for a more detailed analysis of the application of modern technologies within the public service system, a topic addressed by M.V. Rybakova and N.A. Ivanova [5]. The article by L.A. Zhigun and D.V. Simutova reflects issues related to the effectiveness of public service [6], where the authors adopt the identification of modernization features in the management system as the starting point for evaluation.

The application of digital technologies in evaluating the work of civil servants has been studied by M.A. Krotova, T.I. Kozyubro, and A.O. Alimova [7]. According to their view, when assessing the effectiveness of management processes, it is essential to consider the impact of digitalization on the content and structure of employees' activities in this field, as this factor may lead to significant socio-economic effects.

A. Yu. Brysev and T.M. Polushkina note that currently Russia lacks a mechanism for conducting civil servant attestation based on performance outcomes [8]. These scholars drew attention to foreign experiences and proposed adapting them to domestic practice, recommending the use of evaluation and labor incentivization as key tools.

S.N. Keramova, having conducted a comparative legal analysis of issues in the civil service institution in the Russian Federation, the United States, the United Kingdom, France, and Germany, suggests applying international best practices to improve administrative legislation regulating the civil service system (for example, the use of modernized administrative regulations with specific criteria for assessing civil servants' effectiveness). She also advocates for the creation of a senior civil service cadre to address institutional challenges and establish mechanisms for cooperation between government authorities and civil society representatives, which should be integrated into the Russian public administration system [9]. Following international precedents, S.N. Keramova proposes introducing a performance evaluation system in Russia based on three components: a detailed description of task outcomes specified in individual annual development plans; monitoring of results in accordance with relevant standards and normative legal acts (NLAs); and available comments or data on specific human factors.

Having reviewed these scientific contributions, the present study considers it necessary to:

• analyze the theoretical foundations and normative-legal documents governing the evaluation of civil servants' performance in recent years;

• examine existing methodologies and criteria for assessing the effectiveness of civil servants in Russian practice;

• conduct a comparative analysis of domestic and foreign experience in this area;

• identify major problems and shortcomings of the current evaluation system through surveys of civil servants and statistical data analysis;

• determine key factors influencing the effectiveness of civil servants' work;

• develop practical recommendations for improving the evaluation system, taking into account modern management technologies and digital solutions.

RESEARCH METHODOLOGY

For a comprehensive study of the system for evaluating the effectiveness and performance of civil servants, it is advisable to analyze the main existing methodologies applied within government bodies; identify key factors influencing the effectiveness of civil servants' work; uncover the problems accumulated within the current evaluation system; examine advanced international practices in this field; and outline the primary directions for improving the evaluation system of civil servants' effectiveness and performance, taking into account contemporary management approaches and digital technologies.

RESEARCH RESULTS

Theoretical Foundations of Evaluating Civil Servants' Effectiveness

Before proceeding to a detailed examination of the theoretical and methodological aspects of evaluating the performance of civil servants, it is essential to clearly define the core categories of effectiveness and performance within the context of professional activities in government bodies.

Effectiveness is traditionally understood as the ratio between achieved results and expended resources. In the context of public service, this refers to the optimal utilization of human, financial, material-technical, informational, and other resources to maximize positive managerial impact on socio-economic processes and the fulfillment of strategic development objectives at the territorial level.

Performance, in turn, characterizes the degree to which planned goals are accomplished and established indicators are met, reflecting the alignment of outcomes with societal expectations and needs. This criterion is closely linked to goal-setting, indicating the success in implementing priority directions of state policy, national projects, and government programs.

Effective and high-performing civil service activity implies achieving socially significant outcomes while minimizing the consumption of all types of resources, which presupposes a combination of high professionalism, innovative thinking, initiative, and accountability.

In the theory and practice of human resource management within the public service, several fundamental approaches to personnel evaluation have developed, differing in their objectives, methodologies, and tools:

1. Qualification-based approach, focused on determining the degree of an employee's compliance with the requirements of the position in terms of education level and profile, work experience, skills, and abilities. Key assessment procedures include certification, qualification exams, and competitive selection.

2. Personality-psychological approach, which emphasizes diagnosing professionally significant traits, motivational characteristics, and value orientations. Information is gathered through personality questionnaires, psychological tests, interviews, and expert evaluations.

3. Activity-based (functional) approach, involving the analysis of the content and outcomes of professional activities. This includes decompos-

ing the functional responsibilities of the position, evaluating quantitative and qualitative parameters of task performance, as well as the complexity and novelty of the tasks undertaken.

4. Competency-based approach, which has actively developed in recent years and focuses on a comprehensive assessment of knowledge, skills, and professional-personal qualities, taking into account the specifics of the position and the strategic objectives of the government body. This approach involves the use of competency models that reflect the benchmark requirements for employees across various categories and groups [10].

Each approach has its own specific features and areas of application. In practice, it is advisable to combine these approaches to obtain a multidimensional and objective evaluation of human resource potential.

The organization of assessment activities in the public service is governed by a comprehensive set of normative legal acts at both the federal and regional levels.

The foundational legal document is the Federal Law "On the State Civil Service of the Russian Federation" dated July 27, 2004, No. 79-FZ, which establishes the legal, organizational, and financial-economic foundations of the state civil service.[1] It defines the procedures for entry into, tenure, and termination of civil service, codifies the main rights and duties of civil servants, and guarantees their legal and social protections. The law mandates the conduct of attestation of civil servants to assess their compliance with the positions they hold, as well as the use of competitive procedures during recruitment and the formation of personnel reserves.

The detailed procedure for conducting attestation is regulated by the Decree of the President of the Russian Federation dated February 1, 2005, No. 110 "On the Conduct of Attestation of State Civil Servants of the Russian Federation.[2]" This document outlines the goals, objectives, and frequency of attestation; requirements for the formation of attestation commissions; main stages and assessment procedures; as well as the "Procedure for the Assignment and Retention of Class Ranks of the State Civil Service of the Russian Federation to Federal State Civil Servants" dated February 1, 2005, No. 113 (as amended on March 1, 2024[3]) [11].

In addition, a number of methodological tools have been developed, such as the "Methodological Toolkit for Implementing a System of Comprehensive Evaluation of Professional Service Activities of State Civil Servants" (approved by the Ministry of Labor of the Russian Federation) and the "Methodology for Comprehensive Assessment of the Professional Service Activities of a State Civil Servant[4]" [12].

Within their established competencies, regional government bodies adopt their own normative acts that specify evaluation procedures at the regional level. Thus, a multi-tiered legal framework has been formed, creating the necessary conditions for the full functioning of the evaluation institution within the state civil service.

Analysis of the Current System for Evaluating Civil Servants

Currently, the procedures for assessing the professional performance of civil servants are conducted using the following methods:

[1] Federal Law No. 79-FZ of July 27, 2004 "On the State Civil Service of the Russian Federation. URL: https://сосновый-бор.78.мвд.рф/document/18041233

[2] Decree of the President of the Russian Federation No. 110 dated February 1, 2005 "On Conducting Certification of State Civil Servants of the Russian Federation" (as amended). URL: https://base.garant.ru/187828/

[3] Decree of the President of the Russian Federation No. 113 dated February 1, 2005 (edited on March 1, 2024) "On the Procedure for Assigning and Retaining Class Ranks of the State Civil Service of the Russian Federation to Federal State Civil Servants." URL: https://www.consultant.ru/document/cons_doc_LAW_51534/69e330f1e987bd708981767347a893d061cad236/

[4] Letter of the Ministry of Labor of the Russian Federation dated June 14, 2016 No. 18–1/10/V-3980 "On the Methodology for Comprehensive Evaluation of Professional Service Activities of a State Civil Servant." URL: https://legalacts.ru/doc/metodika-vsestoronnei-otsenki-professionalnoi-sluzhebnoi-dejatelnosti-gosudarstvennogo-grazhdanskogo-sluzhashchego/

1. Attestation. Conducted once every three years to determine the civil servant's compliance with the position held. This process involves the evaluation of the civil servant's professional activities by an attestation commission based on submitted documents and the results of an interview.

2. Qualification Exam. Administered when considering the assignment of a civil service class rank at the employee's initiative, no later than three months after the submission of a written application. This exam assesses the employee's knowledge, skills, and abilities in a session of the commission responsible for assigning class ranks.

3. Inclusion in the Personnel Reserve. Conducted based on competition results to form a pool of candidates for filling civil service positions. The competitive procedure includes testing and an individual interview.

4. Annual Evaluation of Professional Service Performance. Performed to determine the effectiveness of a civil servant's work during the reporting period by comparing established targets with achieved results [13].

Thus, the current evaluation system is founded on a combination of various personnel management technologies covering key stages of civil service progression. At the same time, practice shows that the existing toolkit does not always ensure a comprehensive and objective analysis of civil servants' competencies and performance outcomes.

The current regulatory framework provides for the use of a range of criteria, which, according to the Methodological Toolkit for Implementing Comprehensive Assessment, include (see *Fig. 1*):

1. The degree of complexity, urgency, and quality of tasks performed by employees as assigned by their supervisors, as well as indicators of work discipline.

2. The quantity and quality of drafted official documents and other materials prepared in accordance with job responsibilities and assignments.

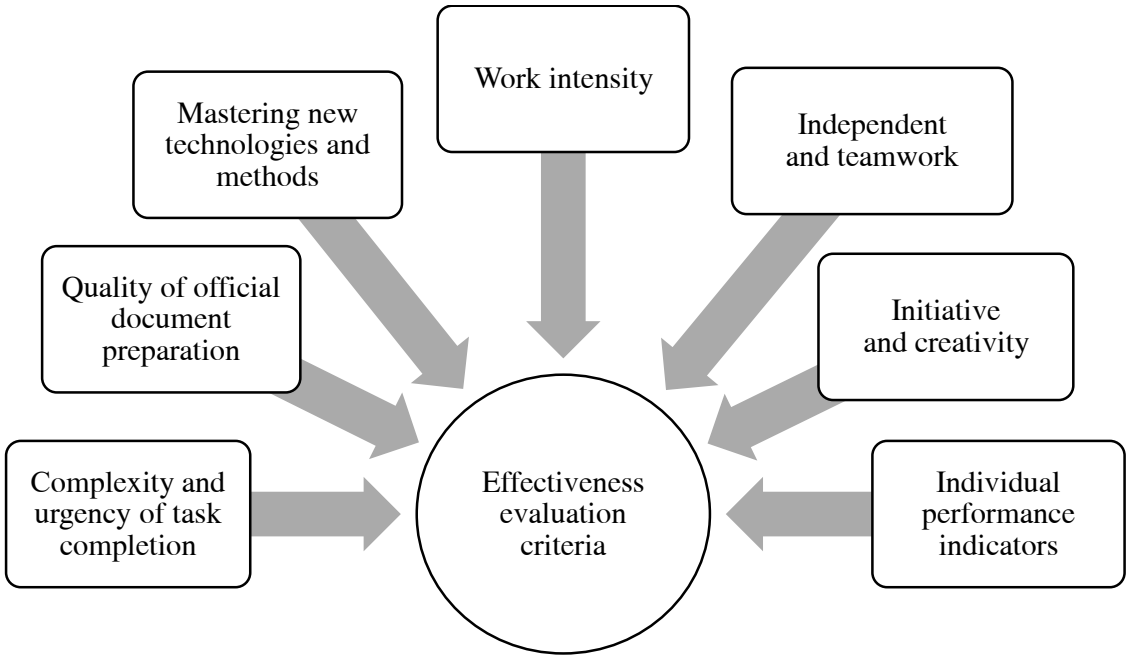

Fig. 1. **Key Criteria for Evaluating Civil Servant Efficiency**

Source: developed by the author based on the data of the Methodology for a comprehensive assessment of the professional performance of a state civil servant. URL: https://www.garant.ru/products/ipo/prime/doc/71358518/ (accessed on 10.02.2025).

3. The ability to quickly master new technological and informational tools and work methods.

4. Work intensity: overtime activities, handling large volumes of information, etc.

5. The degree of independence in completing assigned tasks, the ability to work collaboratively in a team, and coordinate one's actions.

6. Responsibility, initiative, creativity, and similar qualities [14].

Individual performance indicators, established for each employee according to the specifics of their functional duties, are also taken into account. Overall, the proposed set of criteria encompasses key competencies and parameters of professional activity; however, in practice, their application is complicated by a number of challenges.

Figure 1 illustrates the diversity of parameters used to assess the effectiveness of civil servants. Both quantitative work outcomes (such as volume and timeliness of task completion) and qualitative characteristics reflecting the level of professionalism, innovativeness, and organizational skills of the employee are taken into account. Personal qualities — responsibility, communication skills, and a creative approach to work — also play a significant role. At the same time, both universal and position-specific indicators related to the nature of the role are applied.

However, it is important to note the complexity involved in operationalizing and measuring some of these criteria, as well as their susceptibility to subjective interpretation. Further efforts are required to refine and specify the assessment parameters and to develop reliable methodological tools for their evaluation.

Despite the legal framework and methodological elaboration of assessment procedures, several practical issues have been identified that reduce the potential of this institution.

First, there is a predominance of formalistic approaches and insufficient consideration of the substantive aspects of work. Assessments often rely on superficial document analysis without in-depth examination of the employee's actual contribution to the achievement of organizational goals. Actual performance of duties is frequently substituted by formal compliance with job regulations.

Second, subjectivity and a lack of transparency in assessment procedures are evident, alongside an absence of feedback mechanisms. The opinion of the immediate supervisor plays a decisive role in the absence of clear and measurable criteria. Employees are not always aware of the parameters by which their professionalism and work results are evaluated.

Third, there is a weak linkage between assessment results and other human resource processes. Recommendations from attestation and competition commissions are advisory in nature and are not consistently factored into decisions regarding career advancement, financial incentives, or staff rotation, thus diminishing the motivational potential of the assessment.

Fourth, the insufficient competence and engagement of evaluators is a concern. Commission members do not always possess adequate qualifications in modern personnel management techniques or the skills to apply the required assessment tools. The routine nature of the procedures fosters a formal attitude and underestimation of the role of assessment activities in public service personnel management.

Fifth, there is an overreliance on "one-off" assessment procedures without continuous monitoring of professional performance. Evaluations are often limited to the period of attestation or competition, lacking comparison of interim and final results or analysis of the employee's competency development dynamics [15].

It is also important to note the underdevelopment of information-analytical systems that support the collection, processing, and utilization of data. The absence of unified standards and formats for personnel information complicates the integration of assessment procedures into

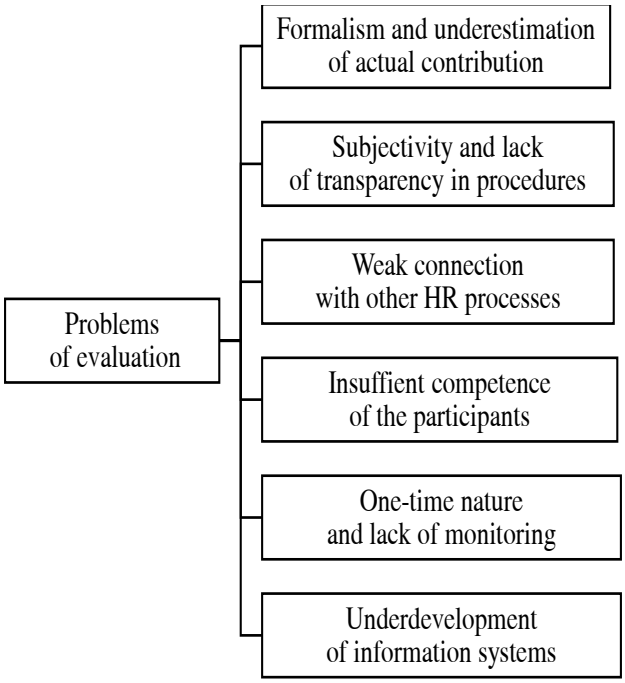

Fig. 2. **Major Problems in the Civil Servant Evaluation System**

Source: developed by the author based on the data of the Methodology for a comprehensive assessment of the professional performance of a state civil servant. URL: https://mintrud.gov.ru/ministry/programms/gossluzhba/16/4/2 (accessed on 11.02.2025).

the electronic personnel document management system (see *Fig. 2*).

Figure 2 illustrates the main problematic areas of the evaluation system within the civil service. Formalism, subjectivity, and fragmentation hinder the ability to obtain an accurate understanding of the professional level and development needs of civil servants. Furthermore, the weak integration of evaluation results into career advancement and financial incentive processes undermines staff motivation and fosters complacent attitudes toward attestation and similar procedures. Collectively, the factors depicted in *Fig. 2* significantly reduce the objectivity, effectiveness, and credibility of the evaluation processes, preventing them from fully realizing their potential as a tool for managing human resource functions. A comprehensive modernization of the evaluation system is required, taking into account the best domestic and international practices.

Foreign Experience in Evaluating the Effectiveness of Civil Servants

A comparative analysis of foreign practices for assessing the performance and effectiveness of civil service personnel is of considerable interest for improving the domestic model. Attention should be given to the experiences of the following countries:

1. United States, where a comprehensive system of professional performance evaluation covers all federal employees. Legislation mandates the development of individual work plans for each position, including key performance indicators (KPIs) and prioritization of goals. Evaluations are conducted annually on a 5-point rating scale by comparing actual achievements with planned objectives, considering both quantitative and qualitative parameters. Results influence career advancement, allocation of bonus funds, training, and personnel rotation.

2. United Kingdom, where the evaluation of civil servants' professional development is based on a competency model. Assessments are conducted through an annual interview with supervisors, analyzing yearly performance outcomes and identifying further training needs. Each official is assigned annual tasks with specific performance targets. Based on evaluations, individual competency development plans are formed. Personnel are categorized into top performers, reliable professionals, and underperformers requiring training.

3. Germany employs an evaluation system based on both qualification and behavioral criteria. It takes into account job performance outcomes as well as personal qualities essential for effective work. A rating scale enables comparison among employees. Immediate supervisors assess subordinates according to criteria such as goal orientation, competence, initiative, communication skills, and willingness to learn. Evaluations occur annually, as well as during promotions and inclusion in the talent pool.

4. France uses an individualized functional approach to evaluation. Each civil servant is as-

Table 1

Best International Practices for Evaluating Civil Servants

Country	Key features of the assessment system
USA	Legally established individual KPIs
	Annual assessment using a 5-point rating scale
	Results influence career progression and bonuses
United Kingdom	Competency-based approach
	Annual interview with the supervisor
	Individual development plans
Germany	Combination of qualification and behavioral criteria
	Ranking comparison of employees
	Assessment during promotion
France	Individualized functional approach
	Consideration of task complexity and priority
	Emphasis on evaluation of managers
Canada	Performance management system
	Cascading of goals
	Wide range of assessment methods

Source: developed by the author based on data from [17].

signed functional responsibilities differentiated by complexity and priority for the authority. The quality and timeliness of task execution, practical application of professional knowledge, and communication skills are assessed. Special attention is given to evaluating managers, focusing on leadership competencies and team management abilities. Outcomes determine bonuses and allowances and influence career progression.

5. Canada features an integrated personnel performance management system with a cascading evaluation process: organizational goals are decomposed down to units and individual employees. Competency models tied to activity types and position levels are applied. A wide range of methods is used — KPIs, management by objectives, and the "360-degree" feedback method. Evaluation results serve as the basis for dialogue between supervisors and subordinates on performance and professional development [16].

The best foreign practices for evaluating civil servants are summarized in *Table 1*. The presented data indicate that in developed countries (despite national specifics) there are some common principles and trends:

1) comprehensive and regular assessment covering all categories of employees;

2) focus on evaluating results in relation to goals and functions;

3) individualization of indicators taking into account the specifics of the work performed;

4) combination of quantitative and qualitative criteria;

5) expansion of evaluators to include immediate supervisors, colleagues, subordinates, and external experts;

6) linking assessment results to training, career advancement, and remuneration;

7) using assessment as a tool for motivation and communication between managers and subordinates [18].

It is advisable to consider such experience in the process of reforming the domestic personnel policy in the civil service. At the same time, direct borrowing of foreign models is unlikely to be effective without adapting them to Russian institutional conditions and management culture.

In recent years, innovative methods and technologies for assessing civil servants have gained notable popularity abroad, aimed at increasing the objectivity and predictive power of results. The following approaches are particularly noteworthy:

1. Competency-based assessment, i.e., the development of professional-qualification models for groups of positions that reflect the requirements for knowledge, skills, and personal qualities. Competencies are ranked by priority. The assessment is conducted as a multifactor analysis of the quality and progress in mastering competencies using psychological tests, case studies, and interviews.

2. 360-degree assessment, which involves gathering information about an employee from multiple sources — immediate supervisors, colleagues, subordinates, and in some cases, external clients (citizens, business representatives). The goal is to create a multidimensional "portrait" of the employee based on competencies and management style. This method is especially effective for evaluating managers.

3. Assessment center, where the evaluation is built as a set of complementary tests and procedures simulating key aspects of the employee's work. Various situational exercises and simulation games are used to determine professional and personal potential. The focus is on identifying competencies through behavioral indicators.

4. Project-based approach, which ties performance assessment to key projects and programs implemented by the government body. Objectives and indicators are set for managers and specialists to characterize their contribution to achieving final socially significant outcomes. The emphasis shifts from ongoing processes to strategically important activities.

5. Digital methods, involving the development of personnel accounting and assessment information systems based on cloud technologies, Big Data, and artificial intelligence. Electronic databases are created to aggregate information on competencies, performance results, and development potential of employees. Digital diagnostic and feedback services are used [19].

Innovative methods are aimed at obtaining a dynamic, multidimensional assessment that integrates the current state and development potential of the civil servant (see *Fig. 3*).

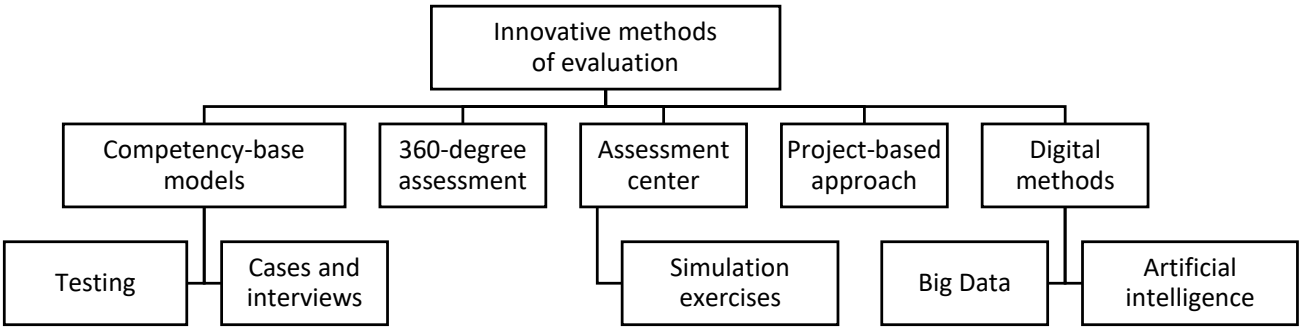

Fig. 3. **Innovative Methods of Civil Servants Evaluation**

Source: developed by the author based on data from [20].

The focus is placed on linking individual competencies with the organizational strategy and cascading goals down to personal objectives. The toolkit is expanded through the use of interactive, game-based, and projective methods. Digital solutions enable a shift from fragmented, one-off assessment procedures to the creation of continuously updated information-analytical databases that support monitoring the professional development of civil service personnel.

Analysis of the best foreign practices highlights several elements and approaches that can be applied to modernize the domestic system of civil servant evaluation. The following prospects stand out in this context:

1. Transition to individualized assessment based on aligning the goals and objectives of government bodies and departments with the KPIs of specific positions and employees. This implies linking organizational long-term planning with an individual's professional development strategy.

2. Combining the evaluation of results and competencies. Alongside quantitative and qualitative achievements, it is important to analyze the dynamics of professional and personal growth of the employee, their compliance with knowledge, skills, abilities, and personal qualities requirements, as well as to forecast their potential for further advancement.

3. Differentiating criteria and assessment methods depending on categories and groups of positions, highlighting specific competencies for managers, assistants, and specialists. Competency modeling of job requirements allows for specifying the subject of evaluation, making it more targeted and substantive.

4. Expanding the methodological toolkit of assessment by actively using projective and simulation techniques that better reveal the personal and business qualities of employees. Implementing modern personnel technologies (in particular, assessment centers) makes it possible to simulate real professional situations and identify behavioral responses and competencies.

5. Introducing mechanisms for feedback and counseling aimed at assisting civil servants in professional self-realization and development. Assessment should become not merely a statement of results but a starting point for building personalized career growth and training trajectories.

6. Digitalizing assessment processes, including creating electronic services for collecting and analyzing performance data, forming ratings and portfolios of civil servants. Integrating assessment procedures with HR information systems and personnel development programs.

At the same time, when adopting foreign models, it is important to adapt them to the sociocultural and institutional realities of the Russian public administration. The implementation of innovations requires a shift in managerial mindset and organizational culture, as well as the readiness of both leaders and employees to perceive evaluation as an important source of professional development rather than merely a control procedure. It is also necessary to take into account the resource constraints of the Russian civil service, which call for a phased and carefully calibrated approach to modernizing personnel processes.

Directions for Improving the Evaluation System

One of the key directions in developing the evaluation system is the transition to results-based management through the cascading of goals and KPIs. This involves developing a strategic goal map for each government agency that reflects priority areas of activity tied to ultimate socially significant outcomes. Based on this map, these goals are decomposed down to the level of structural units and individual positions, for which corresponding indicators are defined.

KPIs (Key Performance Indicators) are quantitatively measurable metrics that allow assessment of the degree to which goals and objectives are achieved. Each KPI should be specific, achievable, and relevant to the goals at the corresponding level. Together, the KPIs form a balanced system representing key aspects of the agency's and in-

dividual employee's activities — such as productivity, efficiency, quality of services provided, and consumer satisfaction.

Examples of KPIs for managers may include:

1) The proportion of government programs in which planned results have been achieved;

2) The level of citizen satisfaction with the quality of public services provided;

3) The number of control and supervisory activities that revealed violations;

4) The reduction in the time required to provide government services electronically.

For specialists, the indicators may include:

1) The proportion of documents prepared in compliance with established requirements;

2) The number of analytical reports and expert opinions prepared;

3) The number of citizen and organizational appeals reviewed on time;

4) The efficiency of funds utilization for the implementation of projects and programs.

An approximate structure of the KPI system for a government agency is shown in *Fig. 4*.

It is important that performance indicators are established with the active participation of employees and take into account the specifics of their functional roles. It is advisable to provide several levels of KPIs corresponding to basic, advanced, and high results, which will serve as motivation to achieve ambitious goals. KPI assessments should be conducted regularly, at least once every six months, with discussions of the results achieved with the employees. The impact of these assessments should extend to a wide range of HR decisions — bonuses, career appointments, inclusion in talent pools, and training assignments.

Implementing results-based management requires comprehensive organizational changes, including formalizing the process of developing and evaluating KPIs, training managers and employees, and automating data collection and analysis processes. Pilot projects in government bodies are advisable for testing, with subsequent scaling of best practices.

In a competency-based approach to evaluation, the focus is on the set of knowledge, skills, abilities, personal qualities, and behavioral characteristics necessary for effective job performance. The primary tool is competency models — comprehensive requirements for qualifications and personal potential for positions of various categories and profiles.

Currently, at the federal level, a basic model is applied that includes systems thinking, strategic vision, change management, team leadership, and others. This model is essentially a framework and

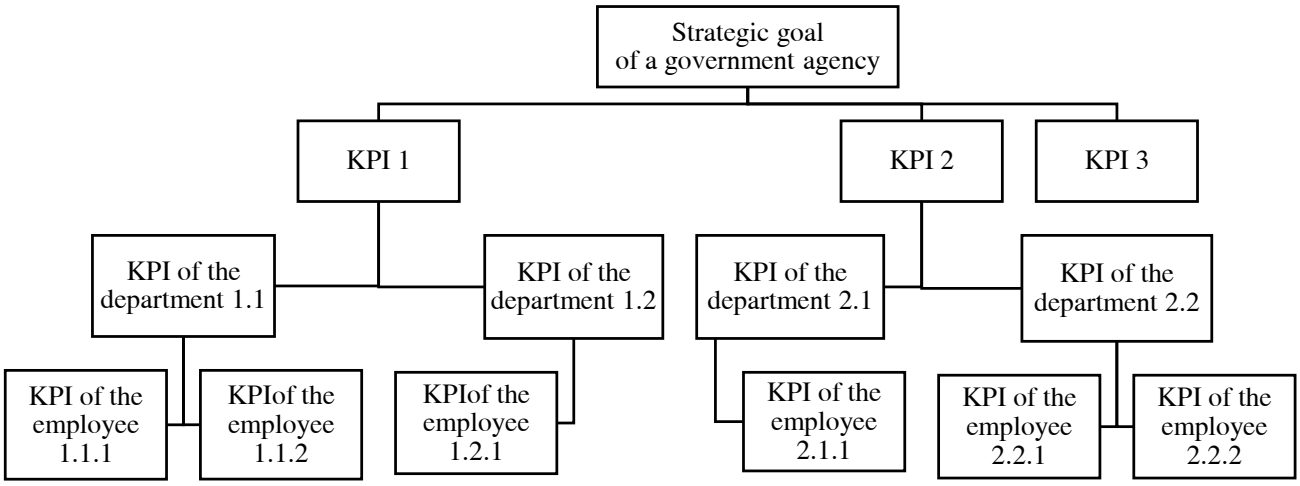

Fig. 4. **Example Structure of a KPI System for a Government Agency**

Source: developed by the authors.

Table 2

Sample Structure of Competency Models by Position Categories

Job Category	Key Competencies
Senior Executives	Strategic leadership
• Resource management	
• Decision-making under uncertainty	
• Interagency communication	
• Innovation	
Middle Managers	Systematic organization of activities
• Project and change management	
• Development of subordinates	
• Motivation and engagement	
• Customer orientation	
Assistants, Advisors	Expert-analytical activities
• Political awareness	
• Effective communication skills	
• Flexibility and adaptability	
Specialists	Application of specialized knowledge and skills
• Regulatory work	
• Process administration	
• Data management	
• Result orientation	

Source: developed by the authors.

requires substantial refinement, taking into account functional specifics and the level of positions.

A promising direction is the development of competency models for typical categories of civil service positions, such as:

1. Senior Executives. Their key competencies include strategic leadership, resource management, decision-making under uncertainty, building interagency communication, and innovation.

2. Middle Managers, whose priority competencies are systemic organization of activities, project and change management, development of subordinates, motivation and engagement, and customer orientation.

3. Assistants and Advisors, who should possess significant competencies such as expert-analytical skills, political awareness, effective communication skills, flexibility, and adaptability.

4. Specialists, characterized by professionally important competencies including application of specialized knowledge and skills, regulatory work, process administration, data handling, and result orientation.

An approximate structure of competency models by job categories is presented in *Table 2*.

For each competency, several levels of development should be defined (for example, insufficient, basic, advanced, expert), each associated with specific behavioral indicators. For instance, in the competency of decision-making under uncertainty, an expert-level indicator might be the ability to find unconventional courses of action despite limited information and to take responsibility for their implementation. A basic-level indicator, on the other hand, could be the ability to analyze a situation using a known algorithm and choose a solution from existing alternatives.

Competency diagnostics should be based on a multifactorial analysis combining the assessment of the immediate supervisor, results of testing and interviews, as well as case studies and practical assignments. Modern digital tools can significantly improve the accuracy and objectivity of the evaluation process and enable visualization of competency profiles.

It is advisable to use assessment results for developing individual professional development plans for civil servants that highlight growth areas and priority training directions. To ensure continuity and uniform approaches, it is important to integrate competency models into the system of recruitment, adaptation, and motivation of civil service personnel.

Qualitative improvement of the civil service assessment system is impossible without comprehensive digitalization of personnel processes. The implementation of modern databases, services, and platforms is designed to ensure:

1. The creation of a unified information space in the field of personnel records and document management, integrating data on staff, their competencies, performance results, and professional development needs.

2. Automation of the processes for setting target indicators, collecting, and verifying reporting data on their achievement. Timely notification of employees and managers about the progress and results of KPI fulfillment.

3. Digitization of assessment procedures, including testing, surveys, and competency-based interviews. Use of remote evaluation and interaction tools.

4. Intelligent analysis of big data on civil servants' performance and competencies, formation of predictive models of effectiveness, identification of typical profiles and career development trajectories.

5. Provision of analytical services to managers and HR departments for making informed management decisions — personnel selection and placement, training planning, forecasting personnel risks and needs.

6. Development of digital communications between managers and subordinates, including online channels for task setting, monitoring progress, and providing developmental feedback.

7. Creation of digital competency and achievement profiles for civil servants, ensuring transparency of assessment results and accessibility of information for interested parties.

The key directions for digitalizing the civil servant assessment process are shown in *Figure 5*.

Implementation of these measures requires the development of the information technology infrastructure of government bodies, ensuring integration of personnel databases with nationwide services and platforms. A key condition for digital transformation is raising the level of competencies of managers and HR specialists in this area, and their readiness to use analytical tools for assessing and developing civil service personnel.

It is important to establish a legal framework for the application of these technologies, develop necessary standards and regulations, and ensure compliance with information security and personal data protection requirements. Pilot

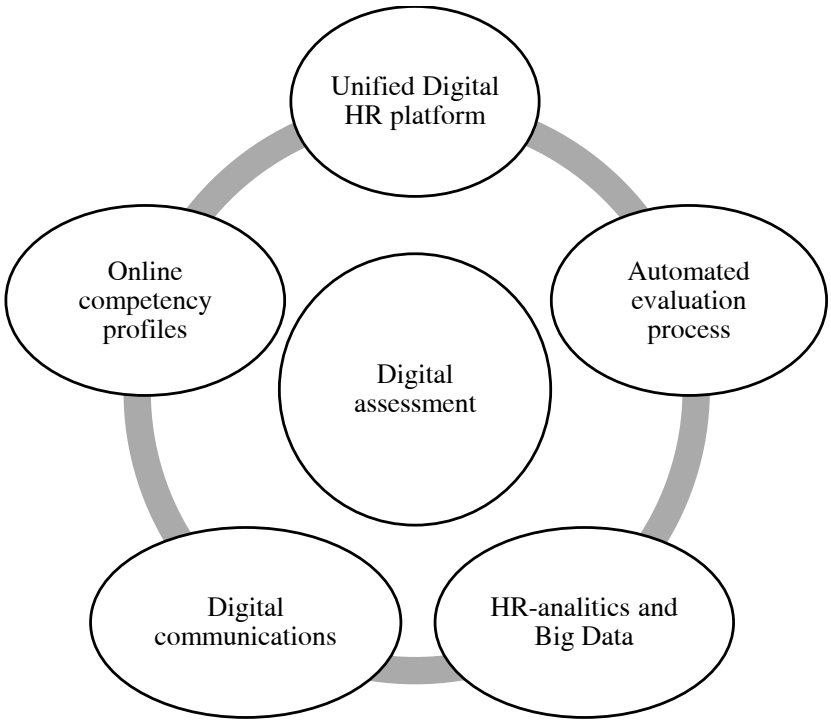

Fig. 5. **Key Areas for the Digitalization of Civil Servant Evaluation**

Source: developed by the authors.

projects are advisable for testing digital solutions, accompanied by thorough analysis of their effectiveness and potential risks.

The effectiveness of the assessment system largely depends on its linkage with civil servants' motivation mechanisms. It is crucial to overcome a formalistic approach, where assessment results have little real impact on management decisions. Assessment should become the foundation of a meritocratic principle, promoting the most competent and effective employees.

One of the key directions is to link remuneration (including bonuses and rewards) to performance indicators and the level of professional competency development. The introduction of flexible financial incentive systems is advisable, comprising fixed and variable pay components depending on individual and group performance levels and dynamics. At the same time, transparency and objectivity of the payment system must be ensured, with clear ties to socially significant outcomes of the work performed.

The influence of assessment on job promotion and career development of civil servants should be strengthened. When filling leadership positions and including candidates in the talent pool, priority must be given to those with high personal ratings confirmed by professional achievements. Regular comprehensive evaluation should become a key criterion in determining an employee's career prospects and growth potential.

It is necessary to align assessment results with professional development and training programs — personalized educational trajectories should be built based on identified competency levels and development areas. Acquiring new knowledge and skills should be regarded as a significant contribution to improving personal effectiveness and incentivized with career and financial bonuses.

Finally, non-material motivation tools should be actively employed based on assessment results. Moral encouragement of top performers, public recognition of their achievements, and involvement in important projects are all aimed at fostering a

Table 3

Main Directions for Enhancing Civil Servant Motivation Based on Evaluation Results

Directions of motivation	Key tools
Material Incentives	• Linking remuneration to KPIs. • Differentiation of bonuses and rewards based on assessment results.
Career Development	• Considering ratings and competencies in promotions. • Prioritizing top candidates when selecting for the talent pool
Professional Growth	• Developing training programs based on assessment outcomes. • Rewarding acquisition of new competencies.
Non-material Incentives	• Public recognition of the best employees' achievements. • Involvement in priority projects.

Source: developed by the authors.

positive image of assessment as a mechanism for professional growth and self-realization. This will create strong incentives for competency development and increased individual performance.

The main directions for developing civil servants' motivation based on assessment results are presented in *Table 3*.

Thus, the formation of a comprehensive motivation system based on assessment results requires systemic changes in the regulatory framework and HR practices of the civil service. It is necessary to legally enshrine the principles of meritocracy, linking the evaluation of competencies and performance with the application of both material and non-material incentives. Subordinate regulations and methodological documents should specify the algorithms and criteria for differentiating personnel decisions based on assessment indicators.

Equally important are organizational efforts to overcome inertial departmental practices and to foster a culture of meritocracy. Leaders at all levels must demonstrate a commitment to the principle of selecting and promoting the best employees, actively using assessment results in managing the careers of their subordinates and explaining the connection between these results and opportunities for professional growth and recognition of achievements.

CONCLUSIONS

The conducted study allows us to formulate several key conclusions regarding the directions and mechanisms for improving the system of assessing the efficiency and effectiveness of civil servants in the Russian Federation:

1. The current assessment model is characterized by the predominance of formal procedures with insufficient substance and objectivity of the evaluation tools. A shift is needed from merely defining current results to a comprehensive analysis of competencies and development potential of civil servants.

2. The key guidelines for modernization should include the introduction of results-based management based on the cascading of goals and KPIs; adoption of project-based and competency models; expansion of assessment procedures and technologies; and strengthening the motivational and career effects of the assessment.

3. Digitalization of the assessment process and creation of integrated information-analytical sys-

tems for the collection, processing, and analysis of HR data are of fundamental importance. Mastering predictive analytics technologies and building individualized competency profiles and development trajectories will be required.

4. The effectiveness of assessments largely depends on their integration into the HR management system within the civil service. It is crucial to link assessment procedures with technologies for recruitment, selection, adaptation, development, and retention of highly qualified specialists.

5. Implementing new assessment approaches requires systemic organizational changes and resource support. Strengthening the analytical and methodological functions of HR departments, fostering a culture of trust and engagement, and developing feedback and consulting tools are necessary.

6. Improvement of the assessment institution is impossible without establishing an appropriate regulatory framework. Clarification of key provisions in civil service laws, development of a set of subordinate regulations and methodological tools defining the principles, procedures, and order of assessment activities will be needed.

7. The large-scale restructuring of the assessment system must be carried out gradually, relying on pilot projects and organizational learning mechanisms. Thorough development and testing of new approaches, analysis of law enforcement practices, and dissemination of best practices throughout the government apparatus are important.

8. Political will from the country's leadership is particularly critical, as is the readiness to overcome departmental barriers and resource constraints to fundamentally improve the efficiency and effectiveness of the national civil service. The assessment should be shaped as an effective tool for professional development and career advancement.

Addressing these tasks will strengthen meritocratic principles in civil service personnel policy, creating a professional and compact cadre of modern managers focused on achieving national development goals. Without a qualitative revision of the philosophy and technologies of assessment, it is impossible to cultivate the ideas of continuous improvement and the resilience of the government apparatus amid dynamic external changes.

Due to the complexity and scale of the problem, further intensification of scientific research and applied development in the field of civil service assessment is required. Special attention should be paid to synchronizing assessment tools with the latest advances in HR management, as well as adapting the best foreign assessment practices to Russian specifics.

A consensus must be reached within the scientific and expert community regarding the key parameters of the target model for the assessment system, as well as a roadmap for its phased implementation in government agencies. Multifaceted informational and educational efforts are required to positively position the upcoming reforms among civil servants and the public.

Only through the joint efforts of scholars, legislators, management practitioners, and civil society institutions can the long-overdue transformation of the assessment institution be accomplished, elevating it to a qualitatively new level that is adequate to the tasks and challenges of the current stage of development of the Russian state.

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ABOUT THE AUTHORS

Anna A. Bakulina — Dr. Sci. (Econ.), Prof. of the Department of State and Municipal Management, Financial University under the Government of the Russian Federation, Moscow, Russian Federation
https://orcid.org/0000-0001-8016-3093
AABakulina@fa.ru

Natalya A. Zavalko — Dr. Sci. (Econ.), Prof. of the Department of State and Municipal Management, Financial University under the Government of the Russian Federation, Moscow, Russian Federation
https://orcid.org/0000-0001-8002-8289
NAZavalko@fa.ru

Natalya L. Krasyukova — Dr. Sci. (Econ.), Prof. of the Department of State and Municipal Management, Financial University under the Government of the Russian Federation, Moscow, Russian Federation
https://orcid.org/0000-0003-2633-4116
Corresponding author:
NLKrasyukova@fa.ru

Authors' declared contribution:
A.A. Bakulina — development the paper's concept, formulation of the research hypothesis, participation in preparing experiments, exegesis of the results, proposals for evaluating the effectiveness and efficiency of civil servants' performance.
N.A. Zavalko — statement of the issue, literature critical analysis, formation of conclusions.
N.L. Krasyukova — substantiation of the indicators' choice, analysis of modern information systems, services and platforms.

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ORIGINAL PAPER

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State Planning in Russia: Challenges of Aligning Strategic Priorities with Budgetary Constraints and Pathways to Solutions

T.I. Vinogradova
St. Petersburg University of Management Technologies and Economics, St. Petersburg, Russian Federation

ABSTRACT

This paper examines the system that integrates two types of planning: strategic (long-term goals) and budgetary (resource allocation). The aim of the study is to identify existing challenges in coordinating these two planning types and to propose solutions for their effective alignment, based on an analysis of the evolution of state planning in the Russian Federation from 1991 to 2024. The research methodology includes systems analysis, evaluation of regulatory documents, and expert data, drawing on the concepts of Results-Based Management and digital transformation. The empirical basis consists of reports from the Accounts Chamber of the Russian Federation, PEFA instruments, and IMF recommendations on the digitalisation of public financial management. The results show that, despite the reforms implemented between 2004 and 2021, a misalignment between strategic and budgetary indicators persists, along with departmental fragmentation, vulnerability to external shocks, digital threats, regulatory inconsistencies, and a shortage of qualified personnel. To address these imbalances, the author proposes improving indicator development through multi-level KPIs supported by machine learning and blockchain; establishing an interdepartmental scenario modeling platform based on artificial intelligence; implementing adaptive budgeting; and unifying the regulatory framework through a State Planning Code. The findings highlight that successful modernization depends on the synchronized development of technology, institutions, and human capital. However, even with the implementation of the proposed measures, a complete resolution of these issues is unlikely due to systemic inertia and external risks. The paper emphasizes the need for a comprehensive approach that combines digitalisation, regulatory reform, and the strengthening of data-driven governance. A complete solution to the identified problems also requires overcoming structural imbalances and investing in institutional capacity-building, particularly under conditions of ongoing uncertainty. The study's findings are intended for state programmes developers, digital architects in the public sector, and institutional reform experts seeking to bridge the gap between long-term strategies and budgetary realities through the integration of advanced technologies (AI, blockchain) and adaptive management practices.

Keywords: Results-Based Management framework; state planning; strategic planning; budgetary planning; state programs; digitalization; adaptive budgeting

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INTRODUCTION

The process of adaptation to conditions of global uncertainty, caused by geopolitical risks, sanction-driven restrictions and technological shifts, requires the Russian economy to modernise the system of state planning, which is becoming the principal instrument for coordinating actions of the state, business and civil society to achieve their long-term objectives.

The term "state planning" is commonly used in scientific literature. In general, this term refers to a complex process involving forecasting and analysis (including socio-economic modelling), the formation of strategies and programmes, target-setting and performance monitoring, budgetary planning, as well as the control and evaluation of plan accomplishment. This approach combines a wide variety of public administration stages and tools, and many Russian authors have addressed this issue in their research [1–10]. However, this article takes a focused approach to state planning in a narrower sense, regarding it as a system of two components: strategic planning (specifying directions of development, long-term goals, and priorities of state policy) and budgetary planning (providing the resources for strategic and programme objectives). Such a point of view is consistent with the concepts and methodologies of Results-Based Management, Programme-Based Budgeting [11–17], and Medium-Term Budget Planning [18–21], all of which focus on the need to link strategic priorities with budgetary resources, as well as help solve the problems related to their coherence and balance [22–25].

The author of this article aimed to identify the challenges that arise in establishing a link between strategic and budgetary planning in the Russian Federation, and to propose solutions for overcoming them based on the analysis of the evolution of the state planning system in the post-Soviet period (1991–2024). The latter, which comprises strategic planning (long-term objectives), state programmes (medium-term instruments) and budgetary planning (resource provision) was the subject of this research.

METHODOLOGY OF RESEARCH

This research employed an interdisciplinary approach, combining the theoretical concepts of state planning, Programme-Based Budgeting, and the digital transformation of the budgetary process with data of their practical application in Russia and international experience.

The methodological foundation was provided by academic articles focusing on strategic planning as a tool for developing socio-economic policy [2, 8, 26–33], as well as the concept of Programme-Based Budgeting, which provides a link between strategic priorities and budget allocation [14, 15, 17, 20–21, 34–35].

The empirical data include expert reports and official reports from the Accounts Chamber of the Russian Federation, [particularly, analyses of the implementation of state programmes and assessments of their alignment with strategic goals].[1] This research also drew on materials on digitalisation of public administration from the TAdviser SummIT 2024[2] Conference [36] to examine the results of piloting digital tools for strategic and budgetary planning.

The author of the given article relies on proven international tools for assessing public financial management. One of these is the Public Expenditure and Financial Accountability (PEFA),[3] [37] a framework that has proven effective in many

[1] Bulletin of the Accounts Chamber of the Russian Federation. State Administration. Special Issue. 2024. URL: https://ach.gov.ru/upload/iblock/939/do4a89d041xnqo38hb8jsqwiykjbjbqm.pdf#page=85; Conclusive Statement of the Accounts Chamber of the Russian Federation on the Report on the Execution of the Federal Budget for 2023 17.06.2024 No. ZSP-68/24 (approved by the Board of the Accounts Chamber of the Russian Federation (Protocol No. 41K of 14.06.2024). URL: https://ach.gov.ru/upload/iblock/408/1ya157v6llliuulgrbvgzpnnb4n1newb.pdf

[2] About the "Best IT Practices in Russia" TAdviser SummIT 2024 Conference. URL: https://clck.ru/3JYJVM

[3] PEFA. Framework for Assessing Public Financial Management. World Bank: 2016. URL: https://www.pefa.org/sites/default/files/PEFA_2016_Framework_Final_WEB_0.pdf

countries throughout the world as a reliable analytical method that ensures a structured approach to evaluating the budgetary process. Within the framework of the study special attention was paid to two PEFA components: "policy-based budgeting" and "predictability and control in budget performance". These components contribute to assessing alignment of the state's strategic priorities and their financial provision, as well as identifying existing barriers.

An additional methodological basis for analysing digital tools in state planning was the document of the International Monetary Fund "Digital Solutions Guidelines for Public Financial Management" [38]. This document presents a comprehensive approach to the digital transformation of the budgeting process, encompassing the use of artificial intelligence (AI), digital platforms, automated data analysis, and unified reporting systems. These technologies offer the potential to resolve the identified coordination problems between strategic and budgetary planning, thereby increasing transparency, forecasting accuracy, and the efficiency of public spending. The application of these approaches has helped to find solutions based on international experience and to propose their use in domestic practice.

The author of the article applied systems analysis to determine the relationship between strategic and budgetary planning as elements of a unified public administration system, while using the historical-logical method to examine how approaches to the interaction between strategic goal setting and the budgeting process have changed over time. The study also involved an analysis of legislation on strategic planning and state programmes, as well as reports from the Accounts Chamber of the Russian Federation. Expert methods were used to provide an additional assessment of the practical implementation of the mechanisms mentioned above, supplementing formal data with facts and recommendations.

A key limitation for the research turned out to be the limited availability of information sources regarding the use of digital tools in public authorities. This contributed to making up some conclusions based on the open-data analysis, which requires further empirical verification.

RESULTS OF THE RESEARCH

Evolution of the State Planning System in Russia

In the early 1990s, the country abruptly abandoned the rigid planning mechanisms and switched to the market economy, which led to decentralisation of authority and a change in the forms of state control. Regions were empowered to make independent decisions regarding their socio-economic development.

In 2004, within the framework of ongoing public administration reforms, the state introduced the results-based planning method, and created targeted programmes aimed at linking individual priorities with their financing. Although such programmes had been developed at the federal level ever since the mid-1990s, they had previously existed in a fragmented manner and were funded on a residual basis. The budgetary process reform of 2004–2006, along with the subsequent implementation of these programmes up to 2012 sharpened the focus on expenditure performance, transparency, and accountability.

Other aspects of the reforms included developing mechanisms for strategic expenditure, optimizing the delivery of public services, eliminating red tape, reducing document processing times, and increasing the accessibility of information of public bodies for citizens [8]. These measures made the governance system more open and transparent, thereby enhancing public trust in state institutions.

The introduction of a three-year rolling budget in 2007, although not regarded as direct element of the Results-Based Management framework, was an important step in modernising the state planning system. The formulation of budget fore-

casts for a three-year period made it possible to take into account macroeconomic risks and increased the predictability of the budgetary process [15].

Simultaneously, methods for planning and evaluating the performance of state bodies were refined, including performance reports, which acquired the status of an important management and monitoring tool [10].

Resolution No. 588 of the Government of Russia "On Approval of the Procedure for the Development, Implementation and Evaluation of the Efficiency of State Programmes of the Russian Federation" approved the methodology for their implementation.[4] Decree No. 596 of the President of Russia "On Long-term State Economic Policy" strengthened the role of state programmes and defined Russia's long-term socio-economic development priorities, which were to guide the development and implementation of these projects.[5]

It is worth noting that documents that set the direction for national goals and projects covering the 2019–2024 and up to 2030 periods played a special role in strategic goal-setting and in ensuring a comprehensive approach to the country's development. Presidential Decree No. 204 of 7 May 2018, defined medium-term national goals and objectives, while Decree No. 474 of 21 July 2020 defined long-term national goals and objectives, covering the development of human potential, improving the quality of life, and accelerating economic growth.[6] In 2024, a new Decree was issued updating priorities and key indicators through 2036.[7]

The Federal Law No. 172-FZ "On Strategic Planning in the Russian Federation" (hereinafter referred to as 172-FZ)[8] adopted on June 28, 2014, formalised the strategic management system by establishing the key elements of state planning and their hierarchy. This law defined the role of state programmes as the linking element between the long-term objectives established in the strategy of socio-economic development and the specific activities aimed at their achievement.

In practice, however, the implementation of these federal-level projects was hindered by several systemic problems, including overlapping functions, the inefficient use of resources, and conflicts of interest between developers and implementers [16, 29]. In light of this, in 2021, the Russian Government revised its approach to developing state programmes in order to improve their effectiveness by introducing a more compact and structured format. The legal basis for these changes was the Resolution No. 786 of the Russian Government, as well as the Methodological Recommendations[9] of the Ministry of Economic Development. The innovations included rules allowing for the reallocation of up to 10 per cent

[4] Resolution of the Government of the Russian Federation No. 588 dated August 2, 2010 "On the Approval of the Procedure for the Development, Implementation and Evaluation of the Effectiveness of State Programmes of the Russian Federation". URL: http://pravo.gov.ru/proxy/ips/?docbody=&prevDoc=102349190&backlink=1&nd=102140511&rdk=0

[5] Presidential Decree of the Russian Federation No. 596 of May 7, 2012 "On Long-Term State Economic Policy". URL: http://www.kremlin.ru/acts/bank/35260

[6] Presidential Decree of the Russian Federation No. 204 of 7 May 2018 "On National Goals and Strategic Objectives of the Development of the Russian Federation for the Period Until 2024". URL: http://www.kremlin.ru/acts/bank/43027; Presidential Decree of the Russian Federation No. 474 of 21 July 2020 "On National Goals of the Development of the Russian Federation for the Period Until 2030". URL: http://www.kremlin.ru/acts/bank/45726

[7] Presidential Decree of the Russian Federation No. 309 of 7 May 2024 r. 2020 "On the National Development Goals of of the Russian Federation for the Period Until 2030 and a Perspective to 2036". URL: http://www.kremlin.ru/acts/bank/50542

[8] Federal Law No. 172-FZ of 28 June 2014 "On Strategic Planning in the Russian Federation". URL: http://pravo.gov.ru/proxy/ips/?docbody=&firstDoc=1&lastDoc=1&nd=102354386

[9] Resolution of the Government of the Russian Federation No. 786 of 26 May 2021 "On the System of Management of State Programmes of the Russian Federation" (as amended and supplemented). URL: https://base.garant.ru/400820533/; Order of the Ministry of Economic Development of the Russian Federation No. 500 of 17 August 2021 "On Approval of the Methodological Recommendations for the Development and Implementation of State Programmes of the Russian Federation". URL: https://www.garant.ru/products/ipo/prime/doc/402601751/

of funding within state programmes for operational adjustments; a differentiation between project-based activities (capital investments) and process-based activities (current expenditures); and a refinement of the programme structure to enhance control [35].

It should also be noted that since 2018, as part of the "Digital Economy" national project, digital technologies have been introduced to optimise public administration processes and improve the quality of public services. These technologies accelerate decision-making, improve coordination between levels of government, and ensure greater accessibility of information to citizens.

Digital platforms enhance the ability of the government to collect and analyse vast amounts of information about citizens, businesses, and the economy as a whole. This enables the identification of trends, the forecasting of developments and the management of risks, as well as the development of more accurate plans and programmes. For example, analysing information on electricity consumption can help optimise energy networks, while analysing population migration data can inform infrastructure development plans in specific regions.

Personalised, data-driven services are more effective and contribute to greater citizen satisfaction. Notifications about upcoming payments and suggestions for customised educational or healthcare plans are generated automatically. The transition to the e-Budget system, as part of the "Digital Economy" national project has optimised the programme formation process: the coordination of parameters, including funding, is now conducted digitally, reducing time costs and lowering the risk of errors. The system integrates data with the SAIS,[10] enabling real-time monitoring and ensuring that financing is aligned with results. The strict linking of state programmes to the budget forecast since 2023 eliminates inconsistencies between long-term plans and operational objectives.

It can be said that the steps taken — from adoption the Federal Law No. 172-FZ, to the 2021 reform of state programmes, and to the introduction of digital platforms — have considerably strengthened the interrelationship between strategic and budgetary planning. The new simplification of programme structures, the introduction of flexible mechanisms for reallocating funds, and data integration through the e-Budget system have contributed to reducing the gap between long-term objectives and their financial coverage. Digitalisation has not only automated these processes, but also laid the foundation for data-driven management.

Despite the obvious progress, several limitations persist, such as a reliance on manual operations in data processing, the inadequate adaptation of federal requirements to regional specifics, and fragmented digital solutions that complicate end-to-end analysis. This highlights the need for further study of the issues concerning the kinkage between strategic and budgetary planning, and for the development of effective solutions.

Problems of state planning in the Russian Federation and proposed solutions

Inconsistency between indicators of strategic documents and budget parameters

The scientific literature and expert reports of the Accounts Chamber of the Russian Federation point out inconsistencies in the objectives found in various strategic documents, ranging from national projects to state programmes and the public financial management system[11] [39]. An

[10] SAIS — The State Automated Information System "Management".

[11] Report on the Work of the Accounts Chamber of the Russian Federation in 2023. URL: https://ach.gov.ru/reports/report_2023; Bulletin of the Accounts Chamber of the Russian Federation. State Administration. Special issue. 2024. URL: https://ach.gov.ru/upload/iblock/939/do4a89d041xnqo38hb8jsqwiykjbjbqm.pdf#page=85; Conclusion of the Accounts Chamber of the Russian Federation on the Report on the Execution of the Federal Budget for 2023, 17 June 2024, No. ZSP-68/24 (approved by the Accounts Chamber of

excessive focus on quantitative indicators often results in resources being allocated to achieving nominal targets, instead of ensuring the essential institutional transformations [40]. In addition, studies point out the superficial nature of the performance indicators of state programmes, which makes it difficult to evaluate their actual impact and leads to discrepancies for their interpretation [28]. The practical consequences of such inconsistency have been reported in the cases of the inefficient expenditure of 19.2 billion rubles of federal funds in 2023, as was revealed by the Accounts Chamber of the Russian Federation.[12]

Besides, due to lack of a unified structure of strategic documents and vague definition of concepts (such as "strategic architecture of planning") resulted to the situation, that government agencies develop their own strategies which are not always matching with their resource capabilities [28]. This fragments the management system into different parts and directions, where long-term risks of inconsistency between strategic priorities and budgetary decisions remain, despite the existence of emergency adaptation mechanisms.

To solve this problem, it is required to enhance furthermore the methodology for forming indicators in order to ensure a logical inter-relationship between them and compliance with the national long-term objectives of development. Although existing methodological guidelines regulate the development and effectiveness evaluation of state programs, and the revision of strategic priorities and reallocation of budgetary resources in recent years have demonstrated the system's capacity for rapid adaptation in crisis situations, state planning under normal conditions remains insufficiently flexible, and revising indicators remains a labor-intensive process. Therefore, it is important to strengthen the dynamic component of the methodology by including mechanisms for prompt adjusting of performance targets based on the analyses of the socio-economic situation.

Introducing a multi-level system of KPIs, synchronised and updated by machine learning algorithms will enable to take into account the changes in macroeconomic conditions, such as exchange rate fluctuations, demographic shifts and sanctions restrictions. This will ensure more accurate forecasting of budgetary requirements and reduce the probability of imbalances between strategic objectives and financial capacity. Using the blockchain technology to fix indicators in an immutable register will enhance transparency in decision-making furthermore by eliminating unwarranted adjustments.

In view of the current initiatives, subsequent improvements of the mechanisms for the integration of strategic and budgetary planning can be based on expanding the functionality of the digital strategic management platform, which is developed as part of the "Digital Strat-Planning project".[13] This work is already underway aimed to eliminate redundant documents, reduce duplicating processes, as well as expand transition from a "document-based" to a "data environment" approach. This will lay the foundation for the automated analysis of interrelationships between strategic and financial documents. In the future, the key task could be the integration of predictive analytics and scenario modelling tools, allowing for the real time assessment of macroeconomic impacts on budgetary parameters and the corresponding adjustment of key priorities. Developing artificial intelligence (AI) and machine learning algorithms within the framework of such a platform will enable to assess more accurately

the Russian Federation Board on 14 June 2024, No. 41K). URL: https://ach.gov.ru/upload/iblock/408/1ya157v6llliuulgrbvgzpnnb4n1newb.pdf

[12] Ibid.

[13] Digital Strategic Planning. Ministry of Economic Development of Russia (official website). (n.d.) URL: https://www.economy.gov.ru/material/directions/strateg_planirovanie/cifrovoe_stratplanirovanie/

the risks of underfunding of state programmes and identify optimal models of resource support for strategic objectives.

In addition to the abovementioned, an expanded expert assessment is required to upgrade the system of regular examination of strategic documents, especially in terms of realistic evaluation of performance targets. Such expert assessment can be provided by involving independent specialists, as well as representatives of business and academic community. In this context, a promising approach is to integrate expertise mechanisms into the digital platform of strategic management aimed to automate this process.

Furthermore, it is necessary to enhance the transparency of the budgetary process including by expanding the practice of public monitoring of spending and use of digital tools [37], such as the Federal Information System for Strategic Planning (FIS SP).

The effectiveness of state planning largely relates to the extent to which its participants assume responsibility for the achievement of the established objectives. Nowadays, control mechanisms for the implementation of plans are not enough well managed in various countries, including Russia. This can lead to adjustment of the original objectives, so that they become simplified, which can have an adverse impact on management discipline when working on long-term projects. In Russia, for instance, Deputy Prime-Ministers and heads of relevant ministries and agencies are in charge to control over the achievement of national project indicators. Besides, members of the government also control over certain KPIs in person, which links their work with the results of the national projects. However, as in many other countries, in case of failure to fulfil tasks, the relationship is not always transparent between formal performance indicators and personnel decisions. To improve the quality of implementation of the objectives determined in strategic documents, it is important to strengthen the interdependence between these objectives through personal responsibility and the results obtained.

The problem of coordination of strategic and budgetary planning within the scope of division of functions

Differences in approaches between the bodies responsible for strategic and budgetary planning can affect the alignment of development objectives and their financing mechanisms. Thus, for instance, the Ministry of Economic Development establishes long-term priorities, meanwhile the Ministry of Finance is in charge to ensure the balanced budget and the efficient use of public resources. This leads to a conflict of logic: strategic documents focus on long-term development, however, the budget framework does not often take into consideration long-term objectives, which complicates the process synchronisation [28]. It is necessary to separate these functions as it creates a system of checks and balances, that prevents unbalanced decisions and ensures control over financial stability. In practice, however, the lack of a clear mechanism aimed to integrate strategic and budgetary planning complicates the coordination of programme documents, and this can result in a discrepancy between strategic objectives and financial capabilities [29]. Differences in methodologies and priorities in federal and regional levels cause supplement problems. Adapting national strategies to local contexts, presents challenges related to both the regulatory framework and resource allocation [8].

To overcome this problem, attempts have been made through the introduction of digital tools, specifically, the “Electronic Budget” system, which facilitates information sharing interaction between agencies. However, technological solutions cannot eliminate differences in institutional priorities: even a common platform may not discourage agencies from championing their own interests.

One of the methods to resolve existing disagreements is to analyse and optimise existing cooperation mechanisms between authorities, to make formalised procedures in order to ensure transparency and publication of decisions taken [37]. Currently, the Ministry of Finance, the Ministry of Economic Development and other agencies interact between each other through collegial bodies, such as government commissions and interdepartmental working groups. Strengthening their role and expanding their authorities to balance strategic and budgetary priorities would enable a more effective coordination.

Contemporary technologies for data analysis can provide additional opportunities for synchronising strategic and budgetary planning. Firstly, machine-learning algorithms can be employed to synchronise KPIs, and in turn, to improve accuracy and correctness of forecasts, as well as to take into account the influence of external factors on budgetary needs [38]. Secondly, the integration of generative adversarial networks into the stress-testing process of strategies would create the conditions for the automatic adjustment of resource allocation in response to changes in the macroeconomic situation. Combining these tools with platform-based solutions that integrate all levels of governance, will enhance the planning system's adaptability and increase its resilience to external shocks.

To overcome institutional disunity, it is necessary as well to sophisticate the regulatory framework and to set up a unified system of requirements and standards for the regulation of the processes of strategic and budgetary planning; such requirements are mandatory for all authorities and must address inconsistencies among existing legislative acts. A significant step in this direction could be the use of natural language processing algorithms to analyse regulatory document texts and automatically detecting conflicts [39]. These measures will ensure a more accurate adjustment for legislative norms and reduce the risks of legal uncertainty.

Risks of reducing the effectiveness of state planning in the context of external shocks

The state planning system of Russia combines elements of adaptability and inertia, which affects its capability to promptly respond to changes in the external environment, including such factors as economic sanctions, pandemics or technological changes. Nevertheless, in times of crisis, the system also demonstrates flexibility, enabling the reallocation of resources and the adjustment of strategic priorities. In the years following 2022, emergency response state mechanisms have supported key industries operating under the pressure of sanctions by expediting the approval of anti-crisis budgetary measures and utilizing digital platforms for real-time monitoring. However, such flexibility is typically maintained only during acute crises whereas in periods of stability planning remains rigidly structured and less responsive to changes that require a proactive approach.

The established budgetary framework limits the ability to make amendments in the state programmes and national projects in response to long-term challenges, such as technological innovation or demographic trends. Although the three-year budget cycle envisages medium-term priorities, revising its parameters requires interagency coordination, which slows down the reallocation of resources. While rapid adjustments are possible in extraordinary situations, however, the lack of flexible mechanisms for adapting strategic objectives can lead to manual management of funding. This was visible during the COVID-19 pandemic, when delays in changing budget expenditure reduced the effectiveness of state support measures [28].

Another challenge remains the limited autonomy of regional authorities in determining strategic priorities [29]. Federal strategies do not always take into account the specific features

of economic development of regions, and the mechanisms for adjusting regional programmes lack sufficiently development. Consequently, regional authorities are compelled to adhere to centralised guidelines, even when they do not fully align with local needs. This reduces the effectiveness of local strategic planning and limits opportunities for flexible management of regional development.

One of the approaches to increase the flexibility of the planning system is to make transition to adaptive budgeting, which involves dynamically adjusting budget parameters according to the changes in economic circumstances. In contrast to the traditional three-year rolling budget, this approach involves continuous monitoring of macroeconomic indicators, as well as social parameters and factors of external pressures, which allow for prompt changes in resource allocation. Automated forecasting systems integrated into the budgeting process are can analyze economic dynamics economic dynamics and propose adjustments to financial priorities based on identified trends. At the same time, the formation of stabilisation funds tailored to specific risks would ensure the availability of provide a reserve for use in crisis situations without compromising the long-term financial strategy [39].

Another element for increasing adaptability could be the integration of Internet of Things technologies into the public administration system. Real-time data collection and analysis would allow for monitoring changes in the economy, infrastructure, and the social sphere, which would ensure a more accurate diagnosis of risks and the early detection of problems. Integrating such tools into the planning process not only increases the accuracy of forecasts but also optimises the allocation of budgetary funds based on the current situation.

In line with the foregoing, the development of scenario modelling and stress testing should be taken into consideration. By studying possible crisis scenarios and preparing specific courses of action for each, it is possible to minimise risks and reduce reaction time to threats. The use of machine learning and AI algorithms in these processes significantly expands analytical capabilities, by identifying potential threats and predicting their consequences with a high degree of accuracy. Generative models applied in stress testing can analyse the impact of various macroeconomic factors and propose optimal response strategies, thereby reducing the likelihood of a crisis scenario.

The integration of all the elements described above into a unified system for managing strategic and budgetary planning will significantly enhance the flexibility of public institutions. The development of mechanisms that ensure rapid reallocation of resources, risk forecasting and adaptation to changes is necessary to enable the state planning system to not only withstand external challenges, but also use crises as an opportunity for economic growth and structural transformation.

Challenges of digitalization

Digitalisation plays a prominent role in the integration of strategic and budgetary planning[14] [8, 9, 22]; however, its implementation is accompanied by risks that require systemic solutions. One of the key challenges is the digital divide caused by disparities in internet access, the high cost of required equipment, and different levels of digital literacy, particularly in small communities and remote areas. In a context where access to digital platforms is becoming the basis for effective interaction between levels of government, such disparities lead to asymmetries in strategic management and budgetary planning, reducing the regions' capacity to use modern management tools.

Additional risks are associated with cyberattacks. State information systems, such as The

[14] About the "Best IT Practices in Russia" TAdviser SummIT 2024 Conference. URL: https://clck.ru/3JYJVM

Electronic Budget system, are increasingly becoming targets for unauthorised access. This creates the threat of confidential data theft. Inadequate attention to cybersecurity issues may therefore undermine the reputation of government digital platforms and limit their effectiveness in managing resources.

Equally important is the resistance to digital transformation from professionals accustomed to traditional ways of working. Adopting modern technologies requires not only mastering new tools, but also changing managerial logic and established approaches to decision-making. Insufficient digital competences coupled with a psychological resistance to change, slows down the introduction of modern tools and limit their potential.

To counteract the above-mentioned challenges, it is necessary to accelerate the development and implementation of an AI-based data quality management system. The system should automatically verify information for compliance with established standards, identify errors, eliminate duplication and contradictions, and, in some cases, supplement missing data by taking context into account [39]. The high-accuracy of information used in strategic and budgetary planning will make it possible to minimize risks associated with incorrect calculations and unjustified decisions.

Another important endeavour is to create regional competence centres for the digitalisation of public administration to train specialists in modern methods of working with digital tools, and provide methodological support during the implementation of new technologies, thereby reducing the imbalance in skill levels across different territories in this area.

Furthermore, coordination mechanisms between different state information systems must be improved to avoid their duplication and increase the speed and efficiency of data exchange.

The integration of strategic and budgetary planning requires the use of a unified platform capable of ensuring data standardisation and the synchronisation of analytical tools. These measures will help minimise digital risks and lay the technological foundation for improving managerial efficiency.

Normative and methodological contradictions

Although the Russian legislative framework for strategic planning continues to evolve, the issue of aligning strategic objectives with budgetary resources remains only partially resolved. While the Federal Law No. 172-FZ law stipulates the need to align strategy and budget, it does not provide clear mechanisms for this alignment. The document lacks a defined sequence of steps that specifies how strategic priorities should be transformed into budget programmes, and what procedures ensure that strategic initiatives are aligned with financial capabilities. There are regulatory acts aimed at regulating these processes in greater detail. The Resolution of the Government of the Russian Federation "On the System of Management of State Programmes of the Russian Federation" establishes rules for the development, implementation, monitoring and evaluation of state programmes, defining their connection to the budgetary process, while Resolution No. 752[15] of the Government of the Russian Federation approves the rules for forming a consolidated annual report on the progress of implementation and evaluation of state programmes, which contributes to transparency and accountability in the use of public funds. However, despite the existence of these documents, practical difficulties

[15] Resolution of the Government of the Russian Federation No. 752 of 15 May 2023 "On Approval of the Rules for the Formation of a Consolidated Annual Report on the Implementation and Assessment of the Effectiveness of State Programmes of the Russian Federation, and the Annulment of Certain Acts and Certain Provisions of Certain Acts of the Government of the Russian Federation" (as amended and supplemented). URL: https://base.garant.ru/406891816/

can arise during their implementation as the methodological recommendations developed by line ministries do not always contain detailed action plans, focusing instead on general principles and targets. Consequently, state programmes are not always properly linked to strategic goals, and the required level of financing is determined based on current budget constraints rather than on definite methodologies.

Thus, to improve the effectiveness of integrating strategic and budgetary planning, it is necessary not only to refine the regulatory framework but also to ensure its practical implementation through detailed methodological guidelines at the level of line ministries, combined with enhanced control over their execution.

The "Fundamentals of State Policy in the Field of Strategic Planning", adopted in 2021, also failed to bridge the existing normative gaps. While the document proclaims the need for a unified architecture of strategic documents, it does not offer mechanisms for determining priorities and their connection with the budgetary process [28]. Consequently, the development of strategic documents and budget programmes is still carried out in parallel, which limits their coherence.

As part of the budgetary process, there are requirements for reporting on the implementation of state programs and control mechanisms from the Accounts Chamber of the Russian Federation. However, these tools relate to budget execution rather than the procedure for aligning strategies and financial commitments. Russian legislation does not provide for sanctions for developing unfunded strategic documents; their financing can remain undefined even after strategies are approved [29]. To eliminate these contradictions, specific procedures for the integration of strategic and budgetary planning must be enshrined in law. One possible approach is to develop a single state planning code that consolidates disparate regulations and establishes common definitions of key concepts such as "strategic planning", "state programme", "national project", and "budgetary forecasting". This document should clearly specify the mechanisms for coordinating strategic goals and budget parameters (including principles for forming performance indicators and resource allocation procedures), as well as the tools for monitoring and evaluation effectiveness, thereby eliminating discrepancies and the duplication of norms and making the planning procedure more transparent and coherent.

An additional measure could be the introduction of an automated system to monitoring and controlling compliance with regulatory requirements. The use of analytical algorithms (including AI) to analyze the text of strategic documents and budget requests would make it possible to reveal discrepancies between declared objectives and envisaged resources, and to monitor compliance with procedures for linking strategy and budget. This would make it possible not only to identify existing deviations but also to propose corrective measures, thereby increasing the managed flexibility of planning and its ability to adapt to changes in the external environment. The introduction of such tools will contribute to clearer coordination among all participants in the strategic and budgetary planning process, thereby reducing the impact of departmental disunity.

The shortage of specialists at the intersection of strategy and budget at the local level

Finally, let us consider the problem of the shortage of personnel with competencies in both strategic and budgetary planning [41], which is especially noticeable at the local level. This directly affects the quality of documents and their alignment with budgetary capacities, making the process of coordinating strategies and budgets less efficient, since — despite the development of information tech-

nology — it is still people who develop and implement the documents.

Solving this issue requires the creation of a comprehensive professional development system that combines digital educational platforms, mentoring mechanisms, and interaction between authorities and educational institutions. Online courses, webinars and virtual masterclasses will provide municipal employees with access to up-to-date knowledge and consultations with leading experts. This will not only raise their level of competence but also create the conditions for the interregional exchange of best practices, ensuring a more even dissemination of advanced experience.

A mentoring system, as one such training format in which experienced specialists share their knowledge and experience with young managers, contributes not only to the development of professional skills but also to the formation of a unified methodological approach to planning at all levels of authority. Combining distance learning with practical work under the guidance of mentors makes it possible to accelerate the training process and to bridge the gap between theoretical knowledge and its application in specific managerial tasks.

Partnerships between the authorities and educational institutions that train professionals in public administration, economics and finance play a paramount role in solving the problem of personnel shortages. Developing specialised training programmes focused on the practical tasks of strategic and budgetary planning will provide graduates with in-demand skills while involving faculty in the analysis of real strategic documents will strengthen the link between academia and management practice. This approach will contribute to the systematic professional development of personnel, the creation of a professional community of specialists in this field, and the elimination of disparities in methods and approaches used in different regions.

CONCLUSIONS

The evolution of the state planning system in Russia since the 1990s reflects a complex transformation from a Soviet planned model to market-oriented mechanisms incorporating elements of strategic management. The abandonment of rigid centralisation in favour of a results-based, programmatic approach (2004–2006), the introduction of a three-year budget (2007) and the adoption of the Federal Law No. 172-FZ in 2014 laid the institutional foundation for integrating strategic objectives with budgetary resources. However, as the given analysis has shown, these measures have not entirely eliminated systemic contradictions. The 2021 reforms aimed at simplifying state programmes, along with digitalisation efforts (such as the implementation of the "Electronic Budget" and "Digital Economy" national project), have enhanced the speed and transparency of processes. Nevertheless, critical issues persist, including information duplication, manual data management and regulatory conflicts.

Challenges such as inconsistent indicators and institutional disunity among agencies are rooted in the system's inertia, a legacy inherited from its prototypes. For example, the fiscal orientation of the budget, established by the reforms of the 2000s, continues to dominate long-term strategic priorities, while the duplication of functions between the federal and regional levels can be traced back to the period of decentralisation of the 1990s. Even the updated decrees of 2024, which set targets until 2036, require adequate synchronisation mechanisms with the budgetary process, which to date remain fragmented.

The solutions proposed in this article are based on both Russian and international experience. The transition to adaptive budgeting and the implementation of AI-powered stress-testing strategies builds on the ideas of the three-year rolling budget and digital platforms introduced

between 2018 and 2023, but supplements them with predictive analytics recommended by the International Monetary Fund. The introduction of blockchain technology to immutably record indicators and create inter-agency digital profiles of territories continues the work of the e-Budget initiative, eliminating data fragmentation. Legislative initiatives as a Single State Planning Code, are designed overcome the regulatory gaps inherent in Federal Law No. 172-FZ by drawing on Public Expenditure and Financial Accountability (PEFA) standards in order to enhance transparency. Nevertheless, digital instruments, including stress-testing of strategies and IoT monitoring, can increase the resilience of the system, but only if institutions evolve in tandem. Otherwise, manual control will continue to prevail in crisis situations.

Due to the weak engagement of local communities, there is a risk that strategies at the municipal level may persist unnecessarily or overlap. AI algorithms for budget forecasting can be hampered by data distortions or a lack of computing power.

The personnel issue remains a key challenge. The experience of 2021–2024 has shown that even sophisticated digital tools, such as an automated monitoring system, are ineffective without specialists, capable of combining strategic thinking with budgetary analytics. In this regard, proposals to create competence centres and partnerships with universities echo the experience of past reforms, where a shortage of qualified personnel has repeatedly hindered the progress of innovations.

The modernisation of the state planning system is a non-linear and high-risk process, requiring a synthesis of accumulated experience, technological capabilities, and international practices.

Even with implementation of all the proposed measures, compromises between flexibility and stability, and between innovation and bureaucratic inertia, are likely. Success will depend not only on technology, legislation, investment in human resources, and cybersecurity, but also on the capacity of the system for institutional learning, which will enable it to adapt to changes while maintaining controllability. In that case, state planning will not only respond rapidly to crises, but also use them as opportunity to implement the structural transformations set out in the updated national objectives for 2036.

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ABOUT THE AUTHOR

Tatyana I. Vinogradova — Cand. Sci. (Polit.), Assoc. Prof. at Management and Public Administration Department, St. Petersburg University of Management Technologies and Economics, St. Petersburg, Russian Federation
https://orcid.org/0009-0003-5128-2060
t9095115@yandex.ru

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Lean Regulation in Public Administration: Preconditions for Implementation and Main Content

I.I. Rakhmeeva[a], M.Yu. Andronov[b]
[a] Ural State University of Economics, Yekaterinburg, Russian Federation
[b] Askort Company, Moscow, Russian Federation

ABSTRACT

This article examines the application of lean thinking approaches in public administration. The relevance of this issue is driven by the state's need to reduce the costs of both regulation itself and decision-making, a goal that is conceptualized in the Unified Plan for Achieving the National Development Goals of the Russian Federation until 2030 and beyond, up to 2036. The purpose of the paper is to substantiate the prospects of introducing lean regulation in public administration in Russia in the medium term. The research addressed several tasks, including a methodological comparison of approaches to collective regulation; defining the concept of lean regulation; and describing the effects of its implementation in public administration, with a focus on organizations in the financial sector. The authors employed a methodology based on theories of collective decision-making, lean management, public-private governance, and new public management. The information base included documents and data from legal reference systems and the official website of the Bank of Russia. The study outlines the future potential of applying the proposed approach. The results may be useful both to government authorities and the management of the Bank of Russia in their operations, as well as to researchers in the field of public administration as a theoretical foundation for applied work. Applying the principles and tools of lean regulation, as proposed by the authors, in public administration practice will improve the effectiveness of managerial decisions while taking into account the specific characteristics of individual sectors.

Keywords: lean regulation; lean management; lean government; public administration technologies; collective management; financial sector regulation; microfinance organizations; smart regulation; public-private governance; new public administration

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INTRODUCTION

The Unified plan for achieving the national development goals of the Russian Federation through 2030 and into the longer term through 2036 (hereinafter referred to as the Unified Plan) provides a detailed breakdown of the targets and tasks associated with each goal. Among the priorities under the national goal of a "Sustainable and Dynamic Economy" is the engagement of enterprises in non-resource sectors, as well as state and municipal enterprises, in projects aimed at improving labor productivity. The systematic implementation of this priority is expected to be supported, among other measures, by:

- reducing the administrative costs for organizations engaged in entrepreneurial and other activities;
- the efforts of state institutions to increase output, including through the introduction of lean production tools.[1]

The Unified Plan also emphasizes the importance of both the transition of government bodies themselves to lean technologies and the reduction of administrative costs as key factors contributing to low productivity.[2] This highlights the urgent need to develop a theoretical and methodological framework for lean regulation in public administration — understood as regulation that continuously seeks to eliminate excessive regulatory barriers.

In this article, the latter is understood as actions aimed at meeting public needs and the interests of the governing entity within the framework of its assigned public responsibilities.

In developed countries today, public administration inherently involves the engagement of interest groups in the decision-making process in order to ensure both fair and effective public choice. This model is characteristic not only of post-Soviet countries — as noted by scholars I. D. Turgel and A. Zh. Panzabekova [2]—but also of Russia. As Russian experts observe, "…it is necessary to develop mechanisms that foster mutual loyalty between government and business. There must be accountability to the local community on the part of both the authorities and businesses" [3, p. 162]. According to I. I. Smotritskaya, "as civil society institutions gradually become more involved in decision-making and the principles of "positive cooperation" are developed, the groundwork will be laid for limiting the potential for erroneous decisions and, consequently, increasing the efficiency of public administration" [4, p. 246].

In practice, the process of collective decision-making faces numerous challenges and constraints. The classics of social choice theory have long asserted that such processes become unfeasible in the presence of more than two alternatives and diverging individual preferences (as shown in Arrow's impossibility theorem).

The surge of practical interest in securing and justifying effective approaches to collective decision-making continues to attract the attention of theorists. Alongside scientific and technological progress, the widespread adoption of information technologies, the transformation of social relations, and successive waves of administrative reform in Russia, there is a growing demand for new principles and tools of public governance. These tools must increase regulatory efficiency while reducing the societal costs of regulation — particularly in conditions of economic stagnation or even stagflation. Over the past decade, Russian scholarship on collaborative decision-making — aimed at achieving a balanced distribution of public benefits and regulatory burdens — has given rise to a range of new concepts and the development of related terminology.

[1] The Unified plan for achieving the national development goals of the Russian Federation through 2030 and into the longer term through 2036. P 169 URL: http://static.government.ru/media/files/ZsnFICpxWknEXeTfQdmcFHNei2FhcR 0A.pdf (accessed on 09.01.2025).

[2] In lean methodology terminology, the Japanese word "muda is used to describe them: it means waste, unnecessary costs, or activities that consume resources but do not creatw value" [1].

This article explores the concept of Lean Regulation (LeanReg) in public administration as one of the potential responses to the challenges facing Russia at the end of the first quarter of the 21st century, with the aim of substantiating the feasibility of its implementation in the medium term.

The research undertaken addressed the following objectives:

1. From a methodological perspective, it compared the most widely used approaches to collective regulation proposed by Russian scholars.

2. It defined the content and core principles of LeanReg.

3. It examined the potential effects of implementing lean regulation in public administration, using organizations in the financial sector as a case study.

THEORETICAL AND METHODOLOGICAL FRAMEWORK

To understand contemporary concepts, it is essential to examine the historical background and methodological premises underlying the current discourse.

At the end of the 19th century, two competing trends emerged in the interpretation of public interest. The first, methodological holism, regarded the category of "collective needs" as a fundamental foundation. The second, methodological individualism, denied the very possibility of interests beyond the aggregation of individual preferences — and it was this approach that dominated for much of the 20th century.

By the late 20th century, this longstanding debate culminated in the scientific community's adoption of methodological relativism, which recognizes the coexistence of both individual and collective preferences, shaped by institutions that structure public choice [5]. Academician A. D. Nekipelov of the Russian Academy of Sciences articulated an important "cyclical trap": "A public choice must be preceded by a public choice on how that choice will be made" [6]. This implies the need to determine either a procedure for binary (pairwise) comparisons by society's members of its potential states, or a decision-making principle based on a social welfare (utility) function [7, p. 40].

In Russia, institutions of collective regulation and decision-making are currently being constructed. Recent administrative reforms have aimed to reorient public administration toward the principles of "smart regulation" [8], public–state governance (good governance) [9], and new public management [10]. A necessary first step is to address the conceptual question of which methodological principles should underpin collective decision-making in public administration. This is crucial, as a mismatch between formal rules and society's informal institutional norms may prevent the reforms from achieving their intended outcomes. Thus, it is imperative to define the type of institutional collective choice model suitable for the Russian context.

Which Model Has a Society Chosen? The answer can be found in the global World Values Survey.[3] According to the Inglehart–Welzel cultural map,[4] Russia is positioned within the group of Orthodox European countries, aligned on the vertical axis of secular values with China, Catholic Europe (e.g., Italy and France), and Anglo-Saxon countries. However, on the horizontal axis — representing survival versus self-expression values — Russia is positioned close to China, opposite to Catholic Europe, and significantly distant from the Anglo-Saxon world. These data reflect the levels of tolerance and trust, civic engagement, and self-expression.

[3] World Value Survey. Research project. URL: https://www.worldvaluessurvey.org/wvs.jsp

[4] The Inglehart–Welzel cultural map of the world is a diagram of cultural orientations based on the research of sociologists Ronald Inglehart, Christian Welzel, and their collaborators.

Societies situated on Russia's end of the spectrum tend to favor authoritarian political views, the imposition of shared values and goals from above, and, accordingly, are more responsive to governance tools based on the principles of holism.

As early as the 19th century, Karl Marx classified the Russian commune as belonging to the "Asiatic" type due to its foundations in collectivism and patriarchal governance [11, p. 701]. The Soviet era deepened this collectivist orientation through active state enforcement. Although 30 years of market reforms in Russia have generally strengthened individualist perspectives, collectivist attitudes have not disappeared. On the contrary, they re-emerged and even intensified during the COVID-19 pandemic, the "special military operation," and in the face of sanction-induced pressures — circumstances in which survival became paramount.

As a whole, it may be concluded that public administration in Russia is likely to be more successful and effective when institutions are built upon the principles of methodological holism.

Table 1 presents a comparison of contemporary concepts of public administration — specifically those based on collective decision-making —developed by Russian scholars. The table also identifies the foundational institutions and practical mechanisms for implementing these concepts, drawing on the practices of Russian public governance.

All of the concepts examined are grounded in the principles of involving civil society in the decision-making process and striving to balance the interests of various stakeholder groups. However, they differ in their ultimate objectives: whether to identify and respond to the expectations of society (an individualist approach), or to jointly shape those collective expectations (a holistic approach).

The authors of the article propose the concept of lean regulation as a response to contemporary challenges. Lean regulation refers to the application of lean technologies in regulatory policy — namely, the organization of decision-making processes (including the optimization of legal norms) and their implementation through the involvement of all stakeholders (including those subject to regulation, their associations, regulatory technology providers, as well as the expert and academic community), grounded in the pursuit of continuous improvement and the elimination of inefficiencies. The current level of development in information technologies and the emergence of big data infrastructure significantly enhances the prospects for implementing lean regulation approaches [18, 19].

It should be emphasized that ultimate responsibility remains with the state, as collective governance does not imply the delegation of functions and responsibilities to civil society, but rather a joint search for solutions, led by highly competent public officials. This approach helps to avoid situations in which, "under the guise of outsourcing and similar tools, government and municipal authorities divest themselves of certain powers, ultimately leading to a weakening of state control and oversight in the corresponding domains" [20, p. 186].

METHODOLOGICAL APPROACHES TO THE DESIGN OF PUBLIC GOVERNANCE INSTITUTIONS WITHIN THE FRAMEWORK OF LEAN REGULATION

As previously mentioned, Russia is currently moving toward greater public involvement in the formulation and discussion of governance decisions. Lean regulation, which is partly based on holistic principles, can offer an effective response to the challenges facing public administration in the country today.

The essence of the lean regulation concept lies in the continuous search for and implementation of opportunities to increase goal attain-

Table 1

Modern Concepts of Public Administration Based on Collective Managerial Decision-Making

Name of the concept (methodological basis)/ Purpose of the management approach	Principles	Features, institutions
Consensus- and Collaboration-Based Democracy (И)а / Reducing the risks of erroneous decisions [12]	•Participation of all societal groups in decision-making •Formation of coalition governments representing the interests of all segments of the population •Inclusion of diverse social segments in the governance process •Proportional political representation	Dialogue institutions; positive cooperation; compromise mechanisms; partial resolution of conflicts between interest groups
Solidarity-Based Governance (Х)b / Adoption of decisions aligned with societal value orientations [13]	•Economic solidarity as a constitutional value •Public choice guided by popular values •Leading (initiating) role of the state in unifying society •High level of civic responsibility	Institutions of solidarity, tolerance, compromise, cooperation, social collaboration, and voluntary associations
Public–State Governance (И) / Meeting public expectations and achieving socially beneficial outcomes [14]	•Shared responsibility between the state, civil society, and the market •Balanced representation of experts and stakeholder groups •Expertise and public recognition of professionals •Opportunity to be heard and obligation of the state to provide a quality response •Openness, transparency, inclusiveness •“Smart” regulation	Institutions of coordination, compromise, internal civic and external oversight, public accountability. The state as a “manager of authority”; digital government as an ecosystem of interaction
Distributed Governance (И) / Developing policies that most accurately reflect social realities [15]	•Use of distributed ledger technologies •Voluntary engagement of specialists from diverse fields	Crowdsourcing mechanisms; coordination institutions; systems for aggregating distributed knowledge
(Neo) Corporatism (Х) / Maintaining a stable societal and distributive system [16]	•Integration of state apparatus, employers, and trade unions •Non-competitive, hierarchically ordered, state-recognized functional interest groups •Monopoly of interest communities over representation in their sphere in exchange for controlled leadership selection and demand articulation	Institutions of coalitions, associations, and trade unions; representative bodies; large industrial groups and state corporations; mechanisms of loyalty to authority; controlled competition
Noosociety (Х)/ Transition to a new industrial society (overcoming civilizational crisis) [17]	•Collective-choice criteria adopted by individuals as personal preferences (noo-values) •Dominance of humanistic culture and idealistic values over material ones •Reliance on knowledge-intensive technologies	Socialization institutions; integration mechanisms; solidarity-based (not competitive) systems

Table 1 (continued)

Name of the concept (methodological basis)/ Purpose of the management approach	Principles	Features, institutions
Moral Economy (X)/ Ensuring interconnected and sustainable societal and economic development based on spiritual and moral foundations	• Priority of the nation's spiritual and moral well-being • Triune system of state, society, and economy • Acknowledgement of each nation's uniqueness, including distinct conceptions of conscience and mission • Morality and conscience as internal behavioral regulators rather than external constraints	Institutions of mutual responsibility and accountability among the state, society, and economic actors; institutions managing national assets and social dividends

Source: compiled by authors based on [12–17].

Note: a- I - individualism; b — X — holism.

ment and eliminate excessive costs associated with the regulation and oversight of entrepreneurial and other economic activities, as well as in the inclusion of all stakeholders — in other words, it is a process of ongoing improvement of regulatory policy [21].

The development of the lean regulation concept is being carried out with reference to the national standards (GOST) on "Lean Production"[5] approved in Russia, and takes into account both domestic [19, 20, 21] and international [22–24] best practices of applying lean technologies in public administration.

The key elements of the lean approach, as identified by the authors, are presented in *Figure 1*.

Value refers to the benefit to society resulting from regulatory policy — for example, the protection of legally safeguarded values,[6] the creation of conditions for effective economic activity, and the improvement of citizens' quality of life.

The value stream in regulatory policy consists of the following major stages:

1. Development of regulatory requirements: defining the goal and potential methods of achieving it; conducting regulatory impact assessment; selecting the most optimal option; drafting the legal norm; formal adoption.
2. Definition of liability for non-compliance.
3. Implementation of legal norms by regulatory addressees.
4. Monitoring and enforcement of compliance.

Analyzing the regulatory policy value stream makes it possible to classify different types of waste (see *Table 2*).

Based on the structure of principles set forth in GOST R 56020–2020 and adapted to the specifics of regulatory policy, a system of

[5] GOST R 56020–2020 — "Lean Production. Fundamental Provisions and Glossary". URL: https://docs.cntd.ru/document/1200174885; GOST R 56407–2023 — "Lean Production. Basic Tools and Methods of Their Application". URL: https://docs.cntd.ru/document/1303625452; GOST R 56404–2021 — "Lean Production. Requirements for Management Systems". URL: https://docs.cntd.ru/document/1200179301; GOST R 56406–2021– "Lean Production. Audit. Questions for Management System Evaluation". URL: https://docs.cntd.ru/document/1200179302?ysclid=m9k5eqjrfm260087326; GOST R 56906–2016 — "Lean Production. Workplace Organization (5S)". URL: https://docs.cntd.ru/document/1200133736; GOST R 56907–2016 — "Lean Production. Visualization". URL: https://docs.cntd.ru/document/1200133737; GOST R 56908–2016 — "Lean Production. Work Standardization". URL: https://docs.cntd.ru/document/1200133738; GOST R 57524–2017 — "Lean Production. Value Stream Mapping" URL: https://docs.cntd.ru/document/1200146135

[6] Federal Law "On Mandatory requirements in the Russian Federation" of 31 July 2020 № 247-FL. Part. 1, p. 5. URL: https://www.consultant.ru/document/cons_doc_LAW_358670/

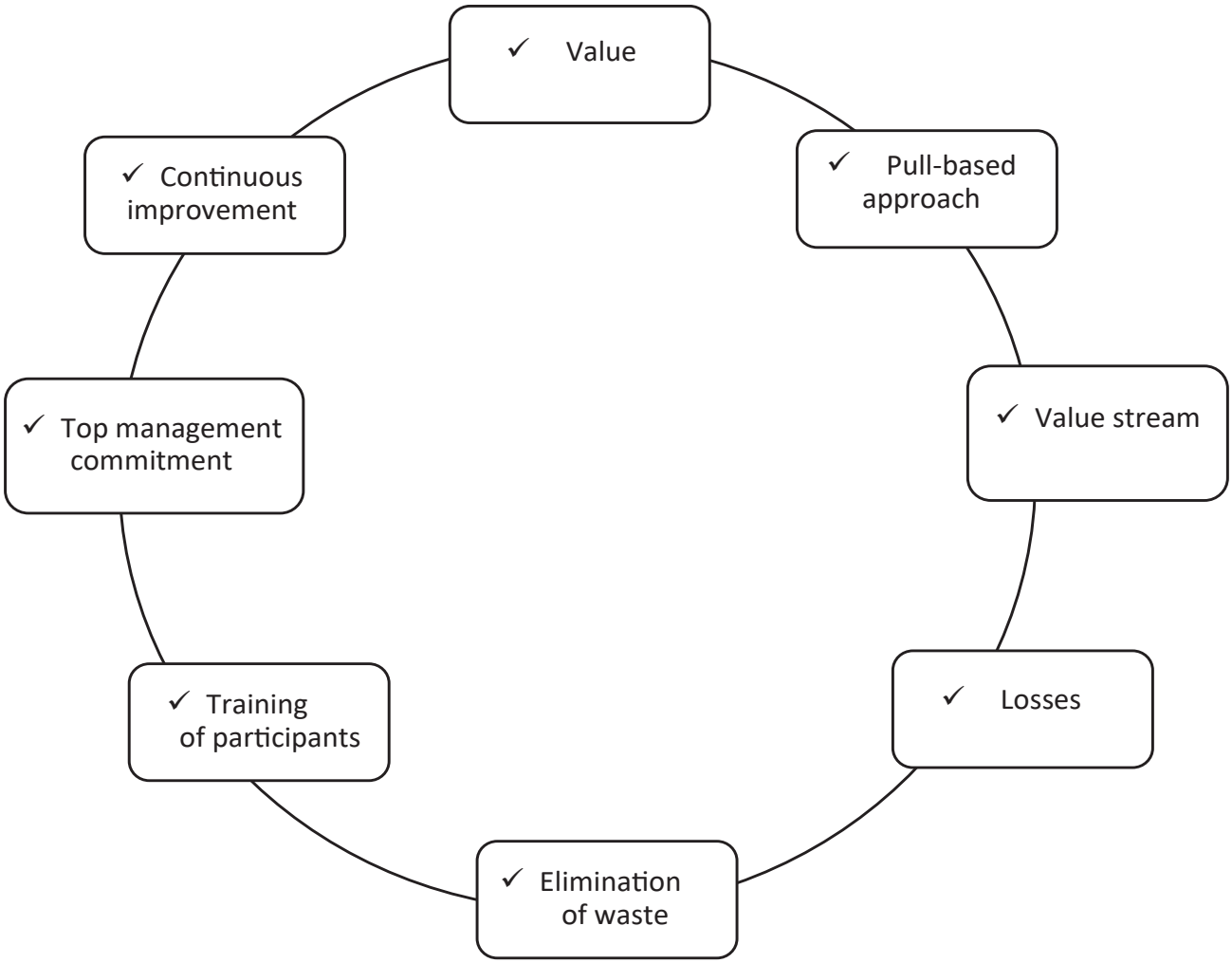

Fig. 1. **Key Elements of Lean Approach**

Source: compiled by the authors based on [1].

Lean Regulation (LeanReg) principles in public administration has been developed (see *Fig. 2*).

RESULTS OF THE PILOT IMPLEMENTATION OF THE LEAN REGULATION CONCEPT

Let us consider a positive example of cooperation between supervised organizations and the Bank of Russia in optimizing regulation, illustrated by its requirements for electronic reporting by microfinance organizations (MFOs).

Thanks to systematic dialogue among the regulatory participants, an element of the compliance process was identified and adjusted, which improved the quality of submitted reports and reduced costs. The success factors included:

- a focus on identifying and eliminating waste ("muda") in the regulation process, with a clear understanding of the goals, value, and outcomes ensured by regulation — corresponding to the principles of "Organizing the value creation flow for society" and "Pull";
- justification of proposals from the united regulated parties — the principle of "Decision-making based on facts";
- the regulator's readiness to accept, analyze, and further implement proposals for improvement — the principles of

Table 2

Classification of Losses in Public Administration

Types of losses by class						
Class 1. Defects in regulatory goal setting						
Uncertainty and lack of verification of the regulatory goal	Discrepancy between the actual result (AR) and the planned result	Inability to assess achievement of the AR by the aggregate of indicators	Inability to evaluate the fulfillment of each AR indicator	Inability to meet deadlines	Disproportion between risks prevented by these mandatory requirements and the requirements themselves	Costs to achieve AR are not minimal compared to other regulatory options
Class 2. Defects in the content of legal norms						
Non-compliance of any element of the norm with the achievement of AR	Element of the norm is not mandatory for achieving AR	Lack of legal certainty	Duplication and contradictions among requirements	Decisions made without involvement of regulatory addressees		
Class 3. Defects in conditions for requirement execution						
Requirements not communicated to regulated entities	Frequent changes in regulatory requirements	Non-technological requirements; inconsistency with current scientific, technical, and technological development	Insufficient conditions for digitalization			
Class 4. Losses in control activities						
Insufficient preventive measures aimed at reducing the risk of harm or damage	Disproportion between selected control measures and the harm (damage) caused or potentially caused to legally protected values					
Class 5. General losses						
Waiting (for information, people, resources, etc.) in the value creation stream	Verification (of results, qualifications, etc.)	Rework (correction of the initial result for any reason)	Duplication (identical actions performed in different places)	Movement (of people, information, etc.)	Inefficiency of actions (unnecessary actions)	Inefficiency of resources

Source: compiled by the authors.

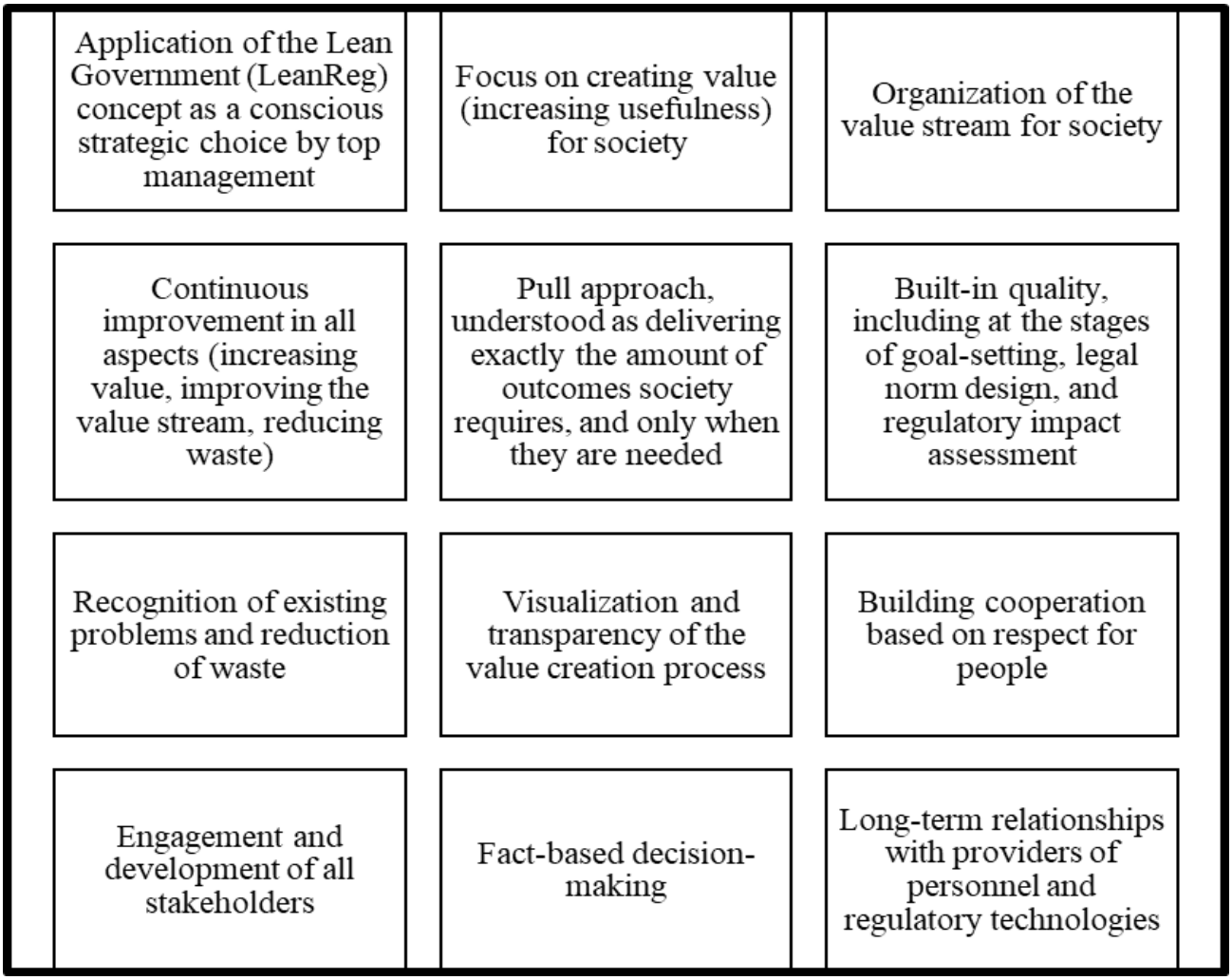

Fig. 2. **System of Lean Regulation Principles in Public Administration**

Source: according to GOST R 56020–2020 "Lean manufacturing. Basic provisions and vocabulary". URL: https://clck.ru/3LSjRG

"Acknowledging existing problems and reducing waste" and "Building interaction based on respect for people."

Let us examine in more detail the regulatory requirement under analysis and the process of its modernization.

The Bank of Russia defines the composition and content of the main reports submitted by microfinance organizations (MFOs[7]). They must submit reports (along with an accompanying letter in the form of an electronic document signed with an enhanced qualified electronic

[7] Bank of Russia Instruction No. 6316-U dated November 16, 2022. URL: https://www.consultant.ru/document/cons_doc_LAW_443215/; Bank of Russia Instruction No. 6789-U dated June 28, 2024 URL: https://www.consultant.ru/document/cons_doc_LAW_481729/; Bank of Russia Regulation No. 613-P dated October 25, 2017 (as amended on September 18, 2023) "On Forms of Disclosure of Information in Accounting (Financial) Reporting of Non-Credit Financial Organizations and the Procedure for Grouping Accounting Ledger Accounts According to Indicators of Accounting (Financial) Reporting" (Registered with the Ministry of Justice of the Russian Federation on December 11, 2017, No. 49204). URL: https://www.consultant.ru/document/cons_doc_LAW_282988/; Bank of Russia Regulation No. 614-P dated October 25, 2017 (as amended on October 2, 2024) "On Forms of Disclosure of Information in Accounting (Financial) Reporting of Microfinance Organizations, Credit Consumer Cooperatives, Agricultural Credit Consumer Cooperatives, Housing Savings Cooperatives, Pawnshops, and the Procedure for Grouping Accounting Ledger Accounts According to Indicators of Accounting (Financial) Reporting" (Registered with the Ministry of Justice of the Russian Federation on December 11, 2017, No. 49202). URL: https://www.consultant.ru/document/cons_doc_LAW_282995/

signature by the person exercising the functions of the sole executive body of the MFO) to the Bank of Russia [via the "Unified Personal Account of the Bank of Russia Information Exchange Participant" (Personal Account[8])] or to a self-regulatory organization (SRO). Structurally, the electronic document must correspond to the file generated by the "Questionnaire Program for Forming and Submitting Reports to the Personal Account" (Questionnaire Program[9]).

For example, quarterly accounting (financial) reports (AFR) include four main forms (Balance Sheet, Income Statement, Statement of Changes in Equity, Cash Flow Statement) and 47 accompanying notes. The AFR contains over 8,150 quantitative indicators across more than 140 tables.

When the time between the release date of the updated Questionnaire Program and the reporting deadline is insufficient for upgrading the industry-specific software used to generate electronic reports, the regulated entities have to prepare reports semi-automatically or manually, which leads to an increase in errors and delays in submitting the AFR. The cause of losses is the late release of the updated Questionnaire Program. However, publishing it earlier is constrained by technological and organizational conditions, as well as the fact that changes to the reporting forms come into effect within a short timeframe. For instance, as of January 1, 2024, the AFR forms changed in accordance with the Bank of Russia's Instruction No. 6527-U[10] dated September 18, 2023. Information about the release of the Questionnaire Program including these changes (version 2.16.4, build 0.0.0.45 dated February 21, 2024) appeared on March 29, 2024.

When making decisions, it is necessary to consider the specifics of the non-bank lending sector, related to the fact that MFOs do not have sufficient resources to develop their own software — their digitalization is supported by several developers of core industry software (IT developers).

During the conference "Online Workshop for Accountants in Microfinance for Representatives of MFOs, Pawnshops, and Credit Consumer Cooperatives (CCCs)," held from June 3 to 6, 2024, the following was determined: the regulator is ready to take on an additional task of providing a preliminary draft of the Questionnaire Program to those IT developers who support the submission of electronic reports. Providing the preliminary release of this document to all regulated entities is considered impractical due to conflicts arising over which version to apply. IT developers learn about the release of a new version 2–4 weeks in advance and simultaneously act as testers for a specific part of the Questionnaire Program.

Let us conduct an economic analysis of the proposals and the expected effects.

MFOs are non-credit financial organizations. The Bank of Russia maintains a state register of MFOs, the current version of which is publicly accessible.[11] As of December 26, 2024, there are 907 active organizations, including 36 microfinance companies (MFCs) and 871 microcredit companies (MCCs).

The key effect of implementing the proposed measures is an improvement in the quality of submitted reports. Additionally, the following cost reductions are ensured:

[8] The procedure for submitting reports through the Personal Account is provided by the Bank of Russia in the video instruction "Submitting Reports to the Bank of Russia". URL: https://cbr.ru/lk_uio/video_instructions/ (accessed on: 26.12.2024)

[9] Programs and materials for the preparation of electronic documents by participants in the information exchange. URL: https://cbr.ru/lk_uio/fcsm/programma-anketa/ (accessed on: 26.12.2024).

[10] Bank of Russia Instruction No. 6527-U dated September 18, 2023 "On Amendments to the Bank of Russia Regulation No. 614-P dated October 25, 2017" (Registered with the Ministry of Justice of the Russian Federation). URL: https://www.consultant.ru/document/cons_doc_LAW_458549/

[11] Register of microfinance market entities URL: https://cbr.ru/microfinance/registry/ (accessed on: 26.12.2024).

Table 3

Fragment of Calculation Results in the Regulatory Impact Assessment Calculator

Regulatory Impact Calculator						
Costs of regulated entities (regulated parties)						**719 331.00**
Temporary costs						**719 331.00**
№	**Action**	**Time per action (t/a), person-hours**	**Frequency per year (fд)**	**Annual time costs, person-hours.**	**Number of calculation units (q)**	**Total amount per year (wд), RUB**
1	Manual entry of financial report indicators	10.00	1.0000	10.000 000	36	703 502.00
2	Resubmission of reports	5.00	0.0450	0.225 000	36	15 829.00
Cost-benefit analysis (net social effect):						**-5 595 642.94**

Source: compiled by the authors.

1. For the regulated entities (MFOs):

1.1. Manual filling (without automatic import from an external source). For the example above (AFR indicators in the Questionnaire Program) — quarterly, whenever a precedent occurs (late update of the Questionnaire Program).

1.2. Resubmission of reports due to increased risk of errors when manually filling in indicators — with a probability of approximately 4% for each AFR submission.

1.3. The overall probability of at least one error in AFR indicators is approximately 5% (estimate based on expert opinion). It is assumed that in approximately 1% of cases the error is not detected by the Bank of Russia.

1.4. Reduction of the time required to correct reports (if necessary).

1.5.Probability of enforcement actions and fines due to late submission of reports.

2. For IT developers:

2.1. Costs for unscheduled work (including releasing an unscheduled version) by the development team specialists of the industry solution, approximately 16 person-hours.

2.2. Decrease in the quality of the released solution.

3. For the self-regulatory organization (SRO):

Costs for urgent work to modify the report submission process.

4. For the regulator:

4.1. Receiving lower quality information, its verification, and sending it back for revision.

4.2. Costs related to possible future errors in reports (as well as monitoring their correction) and enforcement actions.

Based on the list of costs, a monetary evaluation was conducted using the "Regulatory Impact Calculator[12]" developed by the Regulatory Competency Center of the Ural State University of Economics. This calculator takes into account the latest revision of the standard cost methodology approved by the Ministry of Economic Development of Russia. A fragment of the calculation is presented in *Table 3*.

According to the data from *Table 3*, costs will decrease by 5 million rubles. And this is only for 36 organizations regarding one type of reporting (financial statements).

The changes in requirements have been applied in practice since June 2024. After 6 months (November 2024), at the "XXIII National Conference on Microfinance and Financial Inclusion,[13]" initial results were summarized, which included the additional time granted to IT developers for planning and implementing improvements in electronic report submissions, as well as clarifications of certain update elements (for example, the presence of XSD schemas for report forms, precision of indicators, etc.). These changes imply additional costs for the regulator and IT developers, but they contribute to:

- reducing the number of errors in reporting;
- shortening the time required for report submission;
- lowering the costs for regulated entities by more than 5 million rubles.

CONCLUSION AND PROSPECTS FOR THE APPLICATION OF RESULTS

Within the task of comparing modern concepts of public administration presented in the works of Russian scholars and based on collective decision-making, the principles and basic institutions of such theories (concepts) as consensus democracy, public-state governance, distributed governance, solidaristic governance, neocorporatism, noosphere society, and moral economy were compared. The first three theories are based on an individualistic methodological approach and are currently actively developed by Western economists. The latter four (which in the new millennium have become the focus of Russian scientific interest) are built on a holistic approach.

In the case described in the article, the key element of successful improvement of regulatory practice was the development of constructive proposals. To develop a system of continuous improvements, it is necessary to encourage the preparation of such recommendations. At the same time, it is not necessary to impose institutions based on the individualistic concept; if imported, they should be adapted to Russian realities (a scheme of "mixing" institutions) and the inherently holistic approach of collective governance.

During the definition of the content of Lean Regulation (the second task of the study), the authors refined the key elements and the system of principles of the concept. Regulatory policy is a part of public administration. Increasing the degree of cooperativity in collective governance can enhance regulatory effectiveness. Lean Regulation involves the participation of all stakeholders, however, the management of the value creation process must be centralized, i.e., carried out under the single command of the regulatory authority (including to avoid the risks of ineffective discussions).

[12] URL: https://etps.usue.ru/tsentr-regulyatornykh-kompetentsij/o-tsentre-regulyatornykh-kompetentsij/37-tsentr-regulyatornykh-kompetentsij/923-kalkulyator-reguliruyushchego-vozdejstviya/ (accessed on 26.12.2024).

[13] URL: https://наумир.рф/naumir2024/ (accessed on 26.12.2024)

As for the final task, the result of its solution was the financial and organizational effects from the implementation of the proposed approach based on the requirements of the Bank of Russia regarding the submission of electronic reporting by microfinance organizations (MFOs) during the development of the lean regulation concept in public administration.

The positive results presented in the article can be considered partial. The effect of a single improvement is indeed not very noticeable, but it can become significant provided that systematic work is organized to apply lean technologies in regulation and optimize them in accordance with the lean production concept.

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ABOUT THE AUTHORS

Irina I. Rakhmeeva — Dr. Sci. (Econ.), Assoc. Prof., Head of the Department of Economic Theory and Applied Sociology, Ural State University of Economics, Yekaterinburg, Russian Federation
https://orcid.org/0000-0003-1431-7976
Corresponding author:
rahmeeva_ii@usue.ru

Michail Yu. Andronov — Director of Development, Ascort Company, Moscow, Russian Federation
https://orcid.org/0000-0001-9964-6829
MYAndronov@mephi.ru

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Business Reputation of a Social Entrepreneurship Entity: Conceptual Basis of the Concept

T.V. Varkulevich, V.A. Beloglazova
Vladivostok State University, Vladivostok, Russian Federation

ABSTRACT

The article examines the conceptual apparatus of business reputation and analyzes its key features in the field of social entrepreneurship. Particular attention is paid to the role of business reputation in strengthening ties between social entrepreneurship entities and society, as well as its importance in drawing attention to social problems. The purpose of the study was to form the author's definition of business reputation in the context of the theory of social change, facilitating the implementation of new approaches to its assessment and management. The research methods were the analysis and systematization of scientific literature on business reputation and social entrepreneurship; content analysis of publications devoted to social change, as well as data visualization to present the evolution of theories and approaches. The authors of the article describe tools that allow social entrepreneurs to effectively use reputation to promote their initiatives and achieve goals. Despite the high interest in this topic, the scientific literature does not offer a sufficient number of works that consider the evolution of approaches to the assessment and management of business reputation in the context of social entrepreneurship, as well as its role in social change. The results of the study may be useful both for managers of organizations whose activities are related to the social sphere, to raise awareness of the importance of business reputation and its role in achieving social change, and for researchers studying business reputation issues, as materials for further professional research.

***Keywords*:** social entrepreneurship; business reputation; self-regulation of society; stakeholders; social influence

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INTRODUCTION

Each year the social entrepreneurship draws public interest consistently. This is determined by the potential to solve significant economic, social and environmental challenges. Social entrepreneurs actively seek new methods to attract public attention to acute social challenges, so that business reputation can serve as such an attraction tool. The phenomenon of reputational capital inevitably becomes a helpful means during the resolution of socially significant problems, since reputational capital presents a set of non-physical assets generated because of perception of the company, society and stakeholders.

The significance of the research topic is caused by the growing importance of business reputation in the domain of social entrepreneurship. Business reputation contributes to the origination of resources, the establishment of robust relationships with stakeholders, as well as the enhancement of impact on social change. In contemporary circumstances, it is unrealistic to achieve success in this field without a positive reputation. The scientific problem is the insufficient development of the theoretical foundations of business reputation in the framework of social entrepreneurship, as well as in the lack of a comprehensive analysis of its role in the process of interaction with stakeholders. The existent approaches lack the capacity to provide a comprehensive explanation regarding the concept of business reputation in the framework of social entrepreneurship. Moreover, they do not define its influencing factors in relation to this sphere.

The scientific hypothesis of the authors of this article lies in the fact that business reputation of a social entrepreneurship subject makes a significant impact on the attitude of society to this type of business. Furthermore, it plays a key role in forging bonds of trust and confidence with stakeholders and can be an effective tool to attract public attention to social challenges.

The objective of the present research work is to develop a theoretical and methodological basis to analyse business reputation of social entrepreneurship and to identify its role in the interaction of stakeholders. The research work also formulates the author's definition of business reputation based on the theory of social change.

In order to achieve the necessary objectives, the authors set the following tasks:

1. To examine and make a summary of a concise overview for the basic theoretical approaches related to the concept of business reputation.
2. To describe the peculiarities of this phenomenon in question in the framework of existing theories.
3. To analyse the evolution of business reputation theories by means of employing the graphical method.
4. To identify the role of business reputation in the process of interaction between social entrepreneurs, stakeholders and society.
5. To suggest the tools developed for leveraging business reputation aimed to attract attention towards social challenges and thereby enhance the interaction between stakeholders.
6. To develop the author's definition of entity's business reputation in the framework of the theory of social change.

INTERPRETATION OF THE CONCEPT OF "BUSINESS REPUTATION" IN THE CONTEXT OF EXISTING THEORIES

Business reputation plays a key role in promoting social entrepreneurship and strengthening partnership. It enhances awareness of stakeholders about the activities of social entrepreneurs and contributes to the growth of their trust. In this regard, the authors of this article consider it worthwhile to study the conceptual foundations of such definition as "business reputation" and single out the key elements, which contribute to the promotion and popularisation of social projects.

It is necessary to point out, that the concept of business reputation in question contains multifaceted elements. However, it remains undefined at the legislative level. This has generated a whole variety of interpretations and approaches for understanding business reputation, which also makes its legal and practical application more difficult for clarification. The absence of a unifying definition necessitates further scientific research and the development of theoretical models that can accurately determine the significance of business reputation within the framework of social entrepreneurship. We shall consider below some different concepts aimed understanding the term "business reputation" from the moment of its appearance to the present day.

The majority of authors who were supporters of *the resource theory*, including G. B. Kleiner, P. M. Vdovin and V. A. Kostenko, keep to the opinion that business reputation is a business resource of the entity [1, 2]. In the context of this theory, scholars explore business reputation as one of directions in the strategic management focusing on the importance of a company's internal resources and competences to achieve a competitive advantage.

The agency theory also focuses on the study of corporate reputation of entities and explores the interrelationship between agents (managers) and their principals (owners) in the context of corporate governance. According to C. M. Eisenhardt, an advocate of this theory, business reputation becomes an instrument of paramount importance, which is capable to influence the dynamics of relationship between agents and principals in their entity [3].

Since the entity's reputation depends on its employees as well, it is worth considering *the organisational learning theory* of such scholars as D. Robey, M. S. Boudreau and G. M. Rose. They explored business reputation as the result of a process of learning, creating and applying knowledge in order to adapt to changing conditions in businesses [4]. This theory pays a special emphasis to the potential value of fostering training companies that can adapt quickly to changes, to innovation-driven development and effective functioning to achieve long-term success.

Business activity of any entity at every stage of operation depends on a variety of factors that can potentially bring certain risks. The *reputational risk theory* focuses on identifying and managing reputational risks aimed to avoid negative consequences for business reputation. Such risks can arise from critical situations, failure to meet ethical standards, due to conflicts of interest, as well as social or environmental factors.

As D. Szwajca suggests in the context of this theory, that business reputation of a company is regarded from the point of view of potential threats, which could have a negative effect on the company's image visualised by society and stakeholders [5]. The theory of reputational risk focuses on the significance of effective risk management, as it is recognised, that this can make a negative impact on trust and potentially result in adverse consequences for reputation. Thus, we assume, in accordance with this theory, business reputation is a sensitive asset. In order to maintain and protect business reputation, it is necessary to implement a systematic risk management approach.

According to the scientific research, formation and maintenance of business reputation requires interaction between the entity's stakeholders and the public. The influence exerted on them could be called as signals, which is the flow of information communicated to manipulate the perception and behaviour of other parties. From the perspective described by Wei Ji Ma, within the concept of *the signal theory*, business reputation acts as an impulse transmitted to the market (i.e. stakeholders) that informs them about the quality and reliability of a given entity [6]. Therefore, this theory makes a special emphasis on the potential value of effective communication in

the framework of an entity's reputation, both in terms of its establishment and its ongoing management.

The theory of social capital describes in detail the impact of entities on society. The theory also explores the role of social interrelations in society and their influence on the achievement of goals, both for individuals and entities. The founders of this theory determine social ties and networks as valuable assets that are quite advantageous in terms of providing information, support and access to data. *The theory of social capital* implies that the quality of social interactions can have a significant impact on various aspects of society. According to the points of view expressed by M. Alghababsheh and D. Gallear, business reputation is understood as a component of social capital. It contributes to the establishment and preservation of resource exchange between an entity and its stakeholders, as well as it leads to the enhancement of social relations and building trust [7].

The public relations theory involves a broad range of concepts and principles, with a special focus on studying the processes of effective communication between an entity and its various stakeholders (such as customers, employees, investors, members of society, etc.). Besides, the main objective is to build and safeguard the entity's reputation and the image from their perspective. In view of this theory, M.L. Kent and Ch. Li suggest that business reputation is the result of systematic interaction with stakeholders, as a key element originated and maintained through effective communication [8]. In its turn, business reputation can also make an influence on relations with customers, investors and other important stakeholders.

In the context of the given study, *the theory of social identities* seems to be quite a fruitful topic of exploration. The team of such scholars as J. Jetten, Z. Wang, N.K. Steffens, F. Mols, K. Peters and M. Verkuyten, has suggested an idea, that a group of people associated with the entity consider their business reputation as part of the formation process of their social identity [9]. This theory also suggests that individuals may be inclined to identify themselves with positive and prestigious groups, or organisations. The theory also helps to understand how individuals perceive themselves and others in social communities, and how these group identities influence their interactions and behaviour.

In other words, business reputation of social enterprises represents the stakeholders' perceptions of the entity's social performance. If the reputation is positive, members of a given group may feel proud and satisfied if they belong to such a successful and respected community. Therefore, it also worthwhile to consider the social-psychological characteristics of an individual in the collective in terms of his/her perception of his/her entity's business reputation. Usually, academic research in this area is focused on understanding how the social identities of both the members and the stakeholders of an entity can influence the understanding and formation of reputation.

In view of the mentioned above theories, stakeholders play a key role in shaping public perception of a company. Therefore, it is necessary to consider business reputation in the context of *the stakeholder theory*. Among its adherents, in particular, are V. Gooyert, E. Rouwette, H. Kranenburg and E. Freeman [10]. According to this theory, business reputation is valued as an instrument of influence on an entity's relations and communications with stakeholders. At the same time, it is important, that the interests of various groups (customers, employees, investors, society, etc.) should be taken into consideration as well, meanwhile making strategic decisions. In its turn, it would be beneficial to keep in mind that the successful implementation of the stakeholders' requirements and expectations will contribute to strengthening the entity's reputation in the eyes of its key stakeholders.

Table

Interpretation of the concept of "business reputation" in the context of theories

Name of the theory	The concept of business reputation in the context of the theory	Founders of the theory
Resource theory	Business reputation regarded as a valuable asset, with the potential to contribute to its long-term competitive advantage.	Birger Wernerfelt, Jay Barney, Margaret Peteraf
Signalling theory	Business reputation viewed as an information signal sent by the company to the marketplace aiming to influence perceptions and behavior of stakeholders.	Michael Spencer, George Akerlof, Joseph Stiglitz
Collective reputation theory	Business reputation understood as a collective social object generated by complex communication interactions.	Jean Tirole
Agency relations theory	Business reputation viewed as a tool able potentially to influence the dynamics of relations between the entity's agents (managers) and principals (owners).	Michael Jensen, Stephen Ross, William Meckling
Social capital theory	Business reputation considered as a resource that contributes to the formation and maintenance of social relations, trust and exchange of resources between an entity and its stakeholders.	Pierre Bourdieu, James Coleman, Robert Putnam, Francis Fukuyama
Stakeholder theory	Business reputation perceived as a certain influence on the relationship and interaction between the entity and its stakeholders.	Russell L. Ackoff, R. Edward Freeman, Albert B. Carroll, Thomas Donaldson
Organisational learning theory	Business reputation regarded as a process of learning, creating and applying knowledge for the adaptation to changing conditions.	Chris Argyris, Donald Schön, Peter Senge, James Gardner, Yves Brun, Edward Bernays, James E. Grunig, Howard Schultz
Social identity theory	Business reputation viewed as a part of the process of building social identity for groups of people associated with the entity.	Henri Tajfel, John Turner
Public relations theory	Business reputation regarded as a key element developed and maintained through effective communication.	Iver Broun, Edward Bernays, James E. Grunig, Howard Schultz
Reputational Risk Theory	Business reputation viewed as a sensitive asset essential to maintain and protect through a systematic risk management strategy.	Charles Fombrun, Robert Lightfoot, Richard Edwards, Majken Schultz

Source: compiled by the authors.

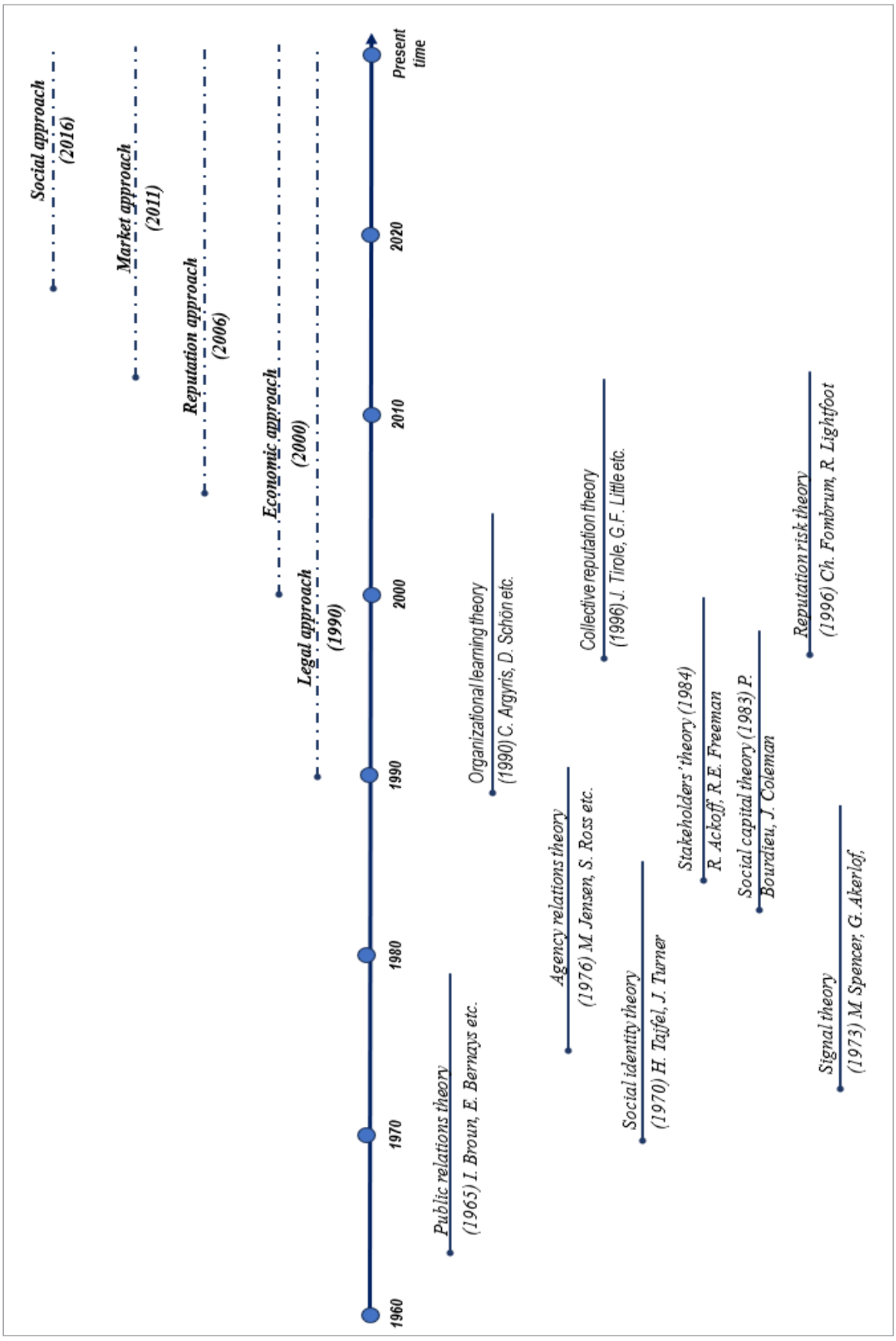

Fig. 1. **The evolution of business reputation theories and approaches to its study**

Source: compiled by the authors.

The authors of the given article have outlined below the main characteristics and interpretation of business reputation, based on the analysis of the mentioned above theories in the context of which its concept and content was studied (see *Table*).

Despite the scientific literature has dedicated significant attention to the issues related to the definition of "business reputation", the problem traditionally lies in the concept's multifaceted nature, which eventually leads to diverse approaches to its definition. Many scientists have explored the history of the origin of the term definition "business reputation" and the identification of its practical value and role. Among some of these researchers involved are the following scholars: K.A. Tarasevich [11], A.V. Rodionov, O.A. Ternovsky, O.A. [12], L.P. Mokrova [13], P.L. Kostyleva [14], V.Y. Kruglova [15], D.M. Gasanova [16], T.D. Pavlov [17], E.S. Vozvyshayeva, A.D. Kuptsov [18], V.P. Osmolovskaya [19] and L.N. Sarbaa [20]. They pointed out, that enterprises of any specialization may have good business reputation: industrial, trade, commercial, social, etc., which leads to the conclusion that this concept has a notable variability. As regards such modern Russian authors as L.I. Kovaleva, N.V. Ponomareva [21], N.A. Loginova [22] and E.A. Natsypaeva [23], M.O. Perelygina [24] and some others, they have identified the most important components of this concept, namely: economic, informative, evaluative, integrating, communicative, adaptation, regulating and motivational components.

BUSINESS REPUTATION: EVOLUTION OF APPROACHES AND THEORIES

The authors suggest a systematisation of the latter (in *Fig. 1*) based on the analysis of various theories, considering the context of which both the concept of "business reputation" and approaches to its definition also described by the authors in their study [25].

Fig. 1 illustrates that theories, concepts and approaches towards the research work regarding business reputation emerged both simultaneously and in different time intervals. In this case, these theories, concepts and approaches described different constituent elements of business reputation, which may be associated with different conditions of the emergence of business reputation within a business community, as well as multiple aspects of this concept.

In accordance with the social approach, the subject of social entrepreneurship is capable to make an influence upon changes in the sphere of its activity through interaction with various stakeholders. In this case, business reputation acquires a special significance as a tool for attracting stakeholders by providing public evaluation of the subject's business qualities, strengthening trust in it as well as stimulating social responsibility.

The role of business reputation of a social enterprise to attract resources and participants in social and economic activities

It is necessary to analyse the relationship of business reputation with the process of interaction between social entrepreneurship entities and stakeholders. The basis for this provides the research conducted by the authors of this article earlier [26, 27]. Besides, we need to remember the significance of the social approach to determine business reputation. This will allow us to understand how business reputation may influence the process of trust-building relationship, mobilisation of resources and promotion of social initiatives, as well as what roles it plays in strengthening cooperation and achieving social change (*Fig. 2*).

From this perspective, business reputation becomes an important tool for social entrepreneurship entities: it facilitates the involvement of stakeholders in their activities.

The feedback is determined by the perception of this subject of socio-economic activity. Its

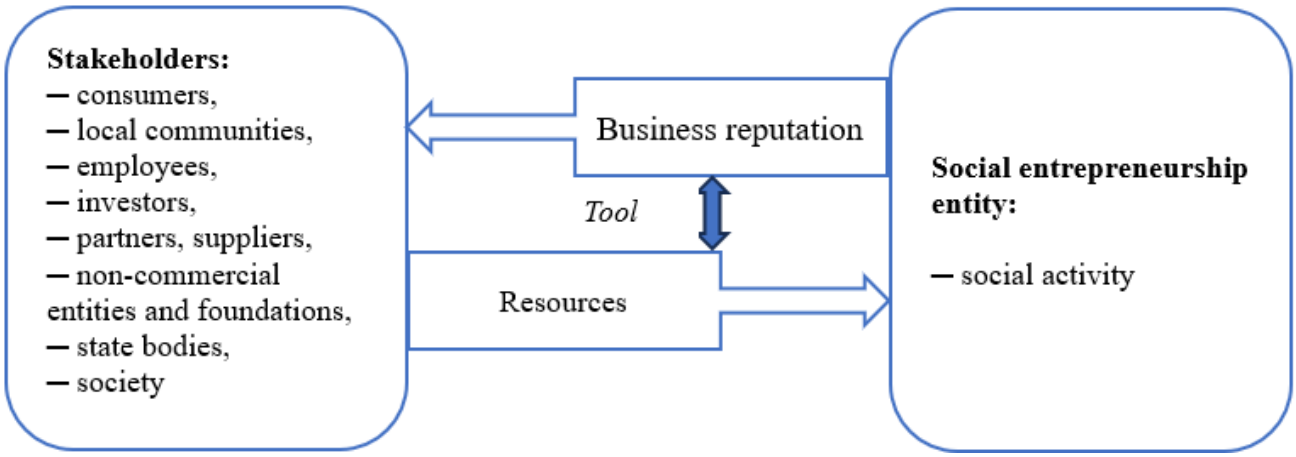

Fig. 2. **The role of business reputation of a social entrepreneurship entity as a resource attracting tool**

Source: compiled by the authors.

business reputation, based on the concept of triple criterion (social, economic and environmental effects), reflects a comprehensive assessment of the results of its activities by stakeholders (*Fig. 3*).

It is important to point out, that the activities of a social enterprise entity include three key elements: social, economic and environmental impacts (effects). They can be measured and assessed in the context of activities of the entity, project or initiative. They are often defined as the "triple bottom line" within the framework of sustainable development.

The social effect is the result of impact on society, including social changes and improvements in the citizens' quality of life. Among the examples of such measures might become better education, easier availability of healthcare services and development of infrastructure. *The economic effect* is the result of impact on the economic component of the population's life, namely, mushrooming new businesses and jobs, growing income, overall economic upsurge, increased labour productivity, and stimulation of entrepreneurial growth. *The ecological effect* is understood as the

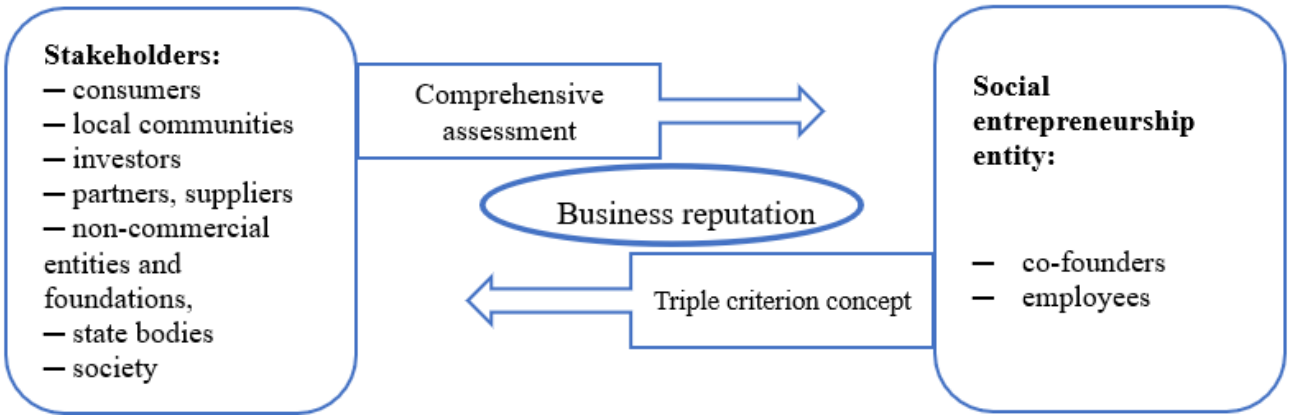

Fig. 3. **The role of business reputation of a social entrepreneurship entity as a participant in socio-economic activities**

Source: compiled by the authors.

environmental influence and sustainability of the environment, including the reduction of negative impact on nature (reduction of emissions of harmful substances; efficient and rational use of natural resources; protection of biodiversity and ecosystems; use of environmentally sustainable technologies).

The role of business reputation and its social influence, as a social entrepreneurship entity

As we have previously pointed out, business reputation based on the social approach serves as a means of communication between social entrepreneurship actors, society and other stakeholders. In this regard, to determine its impact on society, the authors of the article suggest exploring the applicability of the social approach to the definition of the concept of "business reputation" in the context of the theory of social change. It is important to point out, that this theory has been analysed in other research works by the authors of this article to explore the influence of social entrepreneurship actors to stimulate social change processes in society.

I. V. Zikunova [28], N. A. Kholodkova [29], N. O. Tarasova [30], V. V. Scherbina and E. P. Popova [31] etc. have suggested that, in the framework of this theory, business reputation is perceived as an element to perform important functions in ensuring stability, integration and effective functioning of the business environment within the social system.

A subject of social entrepreneurship, which obtains a good business reputation, contributes to dissemination of knowledge about existing social problems. It is also able to attract attention to vulnerable groups with the help of the following tools:

1) building trust and credibility. A positive reputation of such an entity contributes to generating the public trust towards its ability to effectively solve social problems, confirm the legitimacy of its activities and increase the potential support from citizens and other stakeholders;

2) positive public image. This aspect of reputation could be used to promote social values by stimulating public opinion and channeling it towards solving social problems. In its turn, positive public opinion could promote new values and become a call to action;

3) the development of social responsibility. Reputation of social entrepreneurship entity

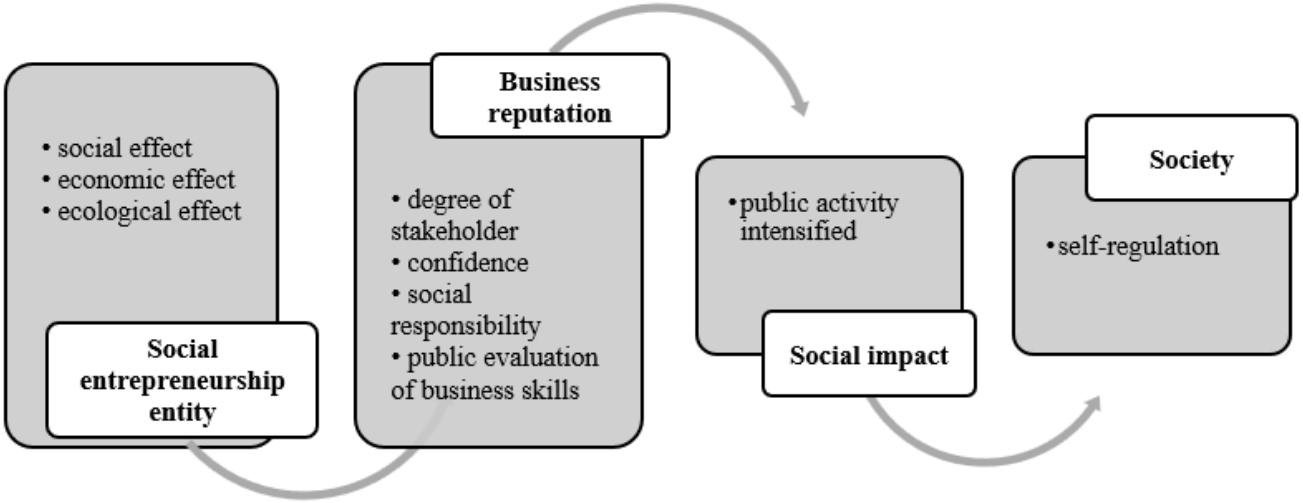

Fig. 4. **The role of business reputation of a social entrepreneurship entity as an element of social influence**

Source: compiled by the authors.

could contribute to promoting ideas of social responsibility in business.

According to such scholars as F. Hendrikx, K. Bubendorfer and R. Chard, reputation can be a valuable tool for trust building between social entrepreneurs and the communities. Therefore, it is feasible to take into account the potential influence of this factor on the self-regulation capacity of the latter [32] and its key role in this process, which contributes to a shift in the value system regarding social problems (*Fig. 4*).

A positive reputation can help to shape public consciousness and encourage efforts to address social challenges.

All the above mentioned aspects has allowed us to reveal the business reputation of an economic entity from the point of view of the theory of social change, describe its roles and figure out its significant social impact on the development of the entity's relations with the external and internal environment.

Therefore, the following three components will represent *the business reputation of the subject of social entrepreneurship* within the framework of the theory of social change:

- As an element of impact on the formation and development of long-term partnership interaction, which could in turn lead to the stimulation of stakeholder participation in socially significant activities.
- As a tool to encourage social influence and engagement in public participation.
- An element of societal self-regulation aimed to effectively change the public value system with regard to social problems and their practical implimentations.

CONCLUSIONS

The given article incorporates the findings of the authors' research into the theoretical basics of the concept of business reputation and its significance in the context of social entrepreneurship. The authors have explored various specific features of business reputation in the context of existing theories and determined its impact on the interaction of social entrepreneurship entities with stakeholders. The authors graphically displayed the evolution of approaches and theories of business reputation, which contributed to a more profound understanding as to how its conceptual framework has gradually changed. Particularly, the article focused on the role of business reputation within social entrepreneurship. In this context, the business reputation also serves as a means of building trust and becomes a key tool for drawing attention to social issues. The article presents recommendations as to implement business reputation as a resource to enhance social responsibility and sustainable development that have the potential to open new horizons for practical application.

The definition of business reputation of a social entrepreneurship entity described by the authors of the given article points out the importance of the latter in the context of the theory of social change as a driving force of promotion for social transformations.

The given article could potentially serve as a basis for further research work, particularly in the development of practical tools that could contribute to effective reputation management within the framework of social initiatives.

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ABOUT THE AUTHORS

Tatyana V. Varkulevich — Cand. Sci. (Econ.), Assoc. Prof.,
Director of the Institute of International Business, Economics and Management,
Vladivostok State University, Vladivostok, Russian Federation
https://orcid.org/0009-0003-5128-2060
Tatyana.Varkulevich@vvsu.ru

Victoria A. Beloglazova — Postgraduate student, assistant at the Department of Economics and Management, Vladivostok State University, Vladivostok, Russian Federation
https://orcid.org/0000-0001-8214-7839
Corresponding author:
Beloglazova.va@vvsu.ru

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Methods for Improving the Efficiency of Collateral Operations of the Federal Treasury

I.A. Fedorov

Financial University under the Government of the Russian Federation, Moscow, Russian Federation;
Interregional Liquidity Management Department of the Federal Treasury, Moscow, Russian Fedaration

ABSTRACT

This study explores methods for enhancing the efficiency of the Federal Treasury's collateral operations aimed at managing the liquidity of the Single Treasury Account (STA). The research examines instruments such as repurchase agreements (REPO), securities lending, and clearing participation certificates (CPCs). Special attention is given to recent innovations, including exchange-traded REPO with a central counterparty, as well as mechanisms for risk minimization and yield enhancement. The author analyzes the advantages and drawbacks of using CPCs, emphasizing their flexibility and potential to expand the collateral base. Based on the findings, the paper offers recommendations for further development of liquidity management tools, including the introduction of a "conditional zero" mechanism and the reintroduction of a specialized CPC asset pool. The results may be useful for government financial authorities responsible for budget liquidity management, financial market participants engaged in REPO and CPC operations, and the broader academic community studying modern approaches to public finance management.

Keywords: Federal Treasury; collateral operations; REPO; clearing participation certificates; liquidity management; financial instruments

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INTRODUCTION

Efficient management of cash balances held in the Unified Treasury Account (hereinafter, UTA)[1] ensures the financial stability of the budget by maintaining the necessary funds in the account to meet budgetary obligations and generate additional revenue. This is made possible because by the Federal Treasury's use of a diversified set of tools for managing UTA liquidity [1, 2].

This article explores current issues related to repurchase agreements (REPOs), which involve the temporary placement of surplus UTA and federal budget funds secured by securities. Such agreements may be executed either on organized exchanges or over-the-counter. In the former case, funds are placed using exchange-based mechanisms. To gain access to this instrument, a credit institution must first conclude a Master Agreement for the purchase (sale) of securities under REPO transactions (hereinafter, the Master Agreement). Secondly, it must operate in accordance with the Rules for Conducting Operations to Manage Balances in the Federal Budget and the UTA, which govern both off-exchange REPO transactions and securities lending agreements, including the procedures for opening the necessary accounts. These rules were established by Russian Government Decree No. 777 of September 4, 2013 (hereinafter, the REPO Rules[2]). A REPO agreement consists of two parts. In the first stage, the credit institution transfers securities to the Federal Treasury's deposit account, after which the Treasury provides the institution with the agreed amount of funds. In the second stage, the transaction is reversed: the Federal Treasury returns the securities, and the credit institution repays the funds with accrued interest.

SECURITIES LENDING AGREEMENT

The Order of the Federal Treasury No. 6n of July 9, 2024, "On the Approval of the Procedure for Conducting Operations for Managing Balances on the Federal Budget's Unified Account and the Unified Treasury Account in Terms of the Purchase (Sale) of Securities under REPO Agreements, the Conclusion of Securities Lending Agreements, and the Forms of Documents Used in Carrying Out Such Operations" (hereinafter referred to as the REPO Procedure[3]) establishes a new liquidity management instrument — the securities lending agreement. Under this arrangement, a credit institution may submit an application to conclude such an agreement. A key condition is that the securities to be lent must be those previously transferred by the credit institution to the Federal Treasury as part of the first leg of the aforementioned REPO agreement.

Securities lending transactions (as with REPO transactions) are executed with the participation of a trading platform — a stock exchange. The Federal Treasury simultaneously notifies both parties: the eligible credit institutions and the exchange. In cases of non-payment of funds, penalties, or failure to return the securities, the credit institution must, prior to entering into the lending agreement, authorize the Federal Treasury to initiate non-acceptance write-offs in its favor from:

[1] Fundamentals of Budget Execution. Budget Code of the Russian Federation, Chapter 24 URL: https://www.consultant.ru/document/cons_doc_LAW_19702/81959dbd10a86cdf1251816de647b548c4c77e99/?ysclid=m7vpw14dp88988519 (accessed on 10.12.2024).

[2] Government Decree of the Russian Federation No. 777 of September 4, 2013 (as amended on May 17, 2024) "On the Procedure for Conducting Operations to Manage Balances on the Federal Budget's Unified Account and the Unified Treasury Account, in Terms of the Purchase (Sale) of Securities in Over-the-Counter REPO Transactions, the Conclusion of Securities Lending Agreements, and the Opening of Accounts for Carrying Out Such Operations." URL: https://base.garant.ru/70447320/?ysclid=m7rkwu2o6w742192688 (accessed on 10.12.2024).

[3] Order of the Federal Treasury dated July 9, 2024 No. 6n "On the approval of the Procedure for conducting operations related to the management of balances on the single account of the federal budget and the single treasury account in terms of the purchase (sale) of securities under REPO agreements, the conclusion of securities loan agreements, and the forms of documents used in the implementation of said operations". URL: https://roskazna.gov.ru/upload/iblock/fa3/Prikaz-_6n-_opublikovan_.pdf (accessed on 10.12.2024).

1. The credit institution's account in the National Settlement Depository (NSD[4]), by the settlement organization.

2. The credit institution's correspondent account, by the Bank of Russia.

3. The credit institution's securities accounts, by the central securities depository.

Non-acceptance write-off is a preventive measure designed to mitigate risks associated with a credit institution's failure to meet its obligations under the lending agreement.

When submitting an application to conclude a securities lending agreement, the credit institution specifies the total value of the securities — in other words, the loan amount. Upon receipt of the application, the Federal Treasury calculates the limit for this amount to be transferred under the agreement.

Following a series of verifications (including the application itself and compliance with the conditions outlined in the REPO Procedure), the securities lending agreement is considered concluded once the securities are credited to the credit institution's depository account in the central securities depository.

It should be noted that a REPO agreement, being a condition for entering into a loan agreement, is directly linked to it in terms of early performance of obligations — if early performance takes place under the REPO agreement, then the loan agreement is also executed early in the corresponding manner.

The loan of securities as a liquidity management instrument enables effective management of financial assets and allows for the generation of additional income, which is used by the Federal Treasury to cover temporary cash gaps in the budgets of the constituent entities of the Russian Federation, as well as to ensure timely financing of infrastructure projects within the framework of state programs.

[4] The National Settlement Depository (NSD) is a settlement organization that has entered into an agreement with the Federal Treasury. Official website: URL: https://www.nsd.ru/

REPO AGREEMENT WITH CLEARING PARTICIPATION CERTIFICATES (CPCS)

In addition to standard REPO transactions, the Federal Treasury also uses another type of this financial instrument — namely, REPO agreements concluded on organized trading platforms, or exchange-traded REPOs, executed with the participation of a trading organizer (exchange). In this case, an additional party is involved: a non-bank credit institution — the central counterparty, the National Clearing Centre (hereinafter, NCC[5]), which serves as a guarantor of the security, transparency, and legality of REPO transactions between the Federal Treasury and financial market participants (credit institutions) [3–5]. If such participants fail to fulfill their obligations under the agreement, the NCC will reimburse the Federal Treasury the full amount of funds. This significantly reduces the risk of budgetary funds not being returned.

The key feature of this instrument is that the Federal Treasury concludes REPO agreements exclusively with the central counterparty and only within the framework of exchange trading.

A notable innovation in this area is Clause 2 of the Government of the Russian Federation Decree No. 1004 of July 8, 2020 (as amended on July 26, 2024), titled "On the procedure for conducting operations related to the management of balances on the single federal budget account and the single treasury account in terms of the purchase (sale) of securities on organized trading platforms under REPO agreements"[6] (hereinafter, the Exchange-Traded REPO Procedure), which entered into force on January 1, 2025. According to this provision, REPO operations on organized trading platforms may also involve Clearing Participation Certificates

[5] National Clearing Centre (official website). URL: https://www.nationalclearingcentre.ru/ (accessed on 10.03.2025).

[6] Decree of the Government of the Russian Federation No. 1004 of July 8, 2020 (as amended on July 26, 2024) "On the procedure for conducting operations related to the management of balances on the single federal budget account and the single treasury account in terms of the purchase (sale) of securities on organized trading platforms under REPO agreements." URL: https://base.garant.ru/74368712/?ysclid=m7vu929ka1544488399 (accessed on 20.12.2024).

(hereinafter, CPCs) [6]. This means that, instead of conventional securities, CPCs are used as collateral. These are issued and held by the NCC and, from a legal perspective, are classified as derivative financial instruments — in other words, derivatives.

The issuance of Clearing Participation Certificates (CPCs) is regulated by Chapter 4.1 of the Federal Law No. 7-FZ of February 7, 2011 "On Clearing, Clearing Activities, and the Central Counterparty".[7] CPCs are issued on the basis of an asset pool contributed by participants under an agreement. In addition to securities, the pool may include precious metals, funds (including foreign currency), and goods admitted to organized trading[8] [7].

Participants retain ownership rights to the contributed assets [8]. This means that owners still have the legal right to dispose of them, which in turn leads to the nominal duplication of collateral value, as CPCs may be used in other transactions and operations. However, there is a condition arising from the principle of free disposal of assets in the pool, which imposes a logical restriction: participants must meet margin requirements for the asset pool. Specifically, they are required to make additional contributions if the actual value of the pool on a certain date differs from the value stipulated in the agreement. This process is simplified by the Moscow Exchange, which offers online asset substitution via the exchange terminal.[9]

Several other features of CPCs are also worth noting. They — depending on subjective assessment — can have both positive and negative implications. For instance, assets in the pool cannot be subject to seizure; they may only be sold through organized trading in the event of bankruptcy.

Thus, a CPC is a non-issuance security, a derivative, created to secure transactions under REPO agreements. The nominal value of one CPC is one Russian ruble. CPCs are issued and held by the clearing organization that forms the asset pool [9].

The Moscow Exchange (the trading organizer), which conducts CPC operations, supports the implementation of this financial instrument by the Federal Treasury, as the use of CPCs is beneficial for both parties. As part of this support, the exchange developed and proposed a CPC discounting system. For example, securities with a market value of 100 Russian rubles may be valued at 90 CPCs. Thus, a 10% discount is applied within the risk management framework [10].

The Moscow Exchange has established three asset pools[10]:

1. CPC GC Bonds — includes cash (Russian rubles [RUB], Chinese yuan [CNY], US dollars [USD], and euros [EUR]); all federal loan bonds, as well as any securities accepted as collateral by the National Clearing Centre.

2. CPC GC Expanded — includes cash (RUB, CNY, USD, EUR); all securities permitted in REPO transactions with the central counterparty; precious metals (silver and gold).

3. CPC GC Shares — includes cash (RUB, CNY, USD, EUR); all shares accepted as collateral by the National Clearing Centre.

The Federal Treasury uses all of the above CPC types, since the Exchange-Traded REPO Procedure does not specify which CPC categories may be used in its REPO transactions.

These asset pools contain foreign currencies — specifically the US dollar and the euro. At present, the Federal Treasury does not carry out liquidity management operations involving them. However, the Moscow Exchange offers a certain level of flexibility for REPO transactions involving CPCs, providing the ability to automatically select assets to be included in the pool based on criteria predefined by the participant.

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[7] Federal Law "On Clearing, Clearing Activities, and the Central Counterparty" No. 7-FZ of February 7, 2011 (as amended on July 22, 2024), Chapter 4. URL: https://www.consultant.ru/document/cons_doc_LAW_110267/ (accessed on 20.12.2024 r.).

[8] Ibid., Chapter 4.1, Article 24.1, Clause 2.1.

[9] Moscow Exchange (official website). URL: https://www.moex.com (accessed on 10.12.2024).

[10] REPO with Clearing Participation Certificates with the Central Counterparty. Moscow Exchange (guidance material) URL: https://www.nsd.ru/upload/iblock/843/84330933bac60404dcd3015050d4662d.pdf (accessed on 20.12.2024).

This mechanism is designed to meet the operational requirements of the Federal Treasury. These requirements are not violated by the fact that ownership of the assets in the pool remains with the contributor. Moreover, the volume of eligible collateral that the Treasury can accept in REPO transactions is expanded — this is a major advantage of CPCs.

In the case of REPO transactions conducted on organized trading platforms, risks for the Federal Treasury are minimized, since the central counterparty acts as guarantor and assumes those risks. If a credit institution fails to meet its obligations under such a transaction, the funds stipulated in the agreement will be credited to the budget in any case.

The innovations described in the field of liquidity management clearly contribute to the development of REPO transactions and improve the efficiency of using the free balances of the Single Treasury Account (STA) and the Single Federal Budget Account (SFB). Securities lending provides additional interest income and increases the interest of credit institutions in these transactions. CPCs help to popularize these instruments, make them more flexible, and attract additional collateral assets.

DIRECTIONS FOR DEVELOPMENT

The Federal Treasury has opportunities to expand its collateral operations. Based on the existing REPO and securities lending agreements, it is possible to introduce reverse REPO agreements, which would involve the Treasury receiving funds in the national currency from financial market participants (credit institutions) outside organized trading, with available securities used as collateral. This financial instrument would help minimize short-term cash gaps in the budget and allow for a swift response to changes in the market by increasing the volume of funds placed through higher targeted balances.

In developing operations with CPCs, it is preferable for the Federal Treasury to use only "CPC GC Bonds", due to the need to maintain stability and guarantees, as these transactions are backed by federal loan bonds. However, this pool may also include other types of bonds, the use of which as collateral could introduce price risks, potentially affecting the actual value of the asset pool.

From January 29, 2018 to July 17, 2022, the National Clearing Centre maintained an asset pool titled "CPC GC OFZ",[11] which included bonds issued on behalf of the Russian Federation and denominated in rubles, as well as cash in rubles. To minimize risks in REPO operations involving CPCs, it would be advisable for the Federal Treasury to work with the NCC to reinstate the "CPC GC OFZ" pool and use it in future REPO transactions. This would require amendments to the Exchange-Traded REPO Procedure, clarifying the specific types of CPCs that can be used in transactions with the Treasury.

One of the key advantages of CPCs is their flexibility. Since 1 CPC is equivalent to 1 Russian ruble, the instrument can be used to bring Treasury accounts to what is called a "notional zero"—that is, to maximize liquidity in those accounts. For example, if there is a remaining free balance at the end of the day, a REPO deal can be executed for that precise amount (accurate to 1 ruble), using CPCs as collateral. This is possible because CPCs are readily available, as ownership of the underlying assets in the pool does not transfer to the recipient of the derivative. To support the development of such collateral operations, it would be necessary to conduct non-organized CPC trades —at least once at the end of the operational day. This would require changes to the REPO Procedure and Rules to regulate such trading. The implementation of this innovation would make it possible to quickly bring the STA (Single Treasury Account) to notional zero and increase the returns on fund placements.

CONCLUSIONS

Liquidity management at the state level is one of the key factors in the development of the national economy, as it brings additional income

[11] Asset Pool Resolutions. NCC (official site). URL: https://www.nationalclearingcentre.ru/catalog/020417 (accessed on 10.03.2025).

to the budget. For example, in 2024, thanks to these mechanisms, the Federal Treasury earned over 1 trillion rubles.[12] The further development of financial instruments — such as securities lending, reverse REPO, CPCs, and the "notional zero" mechanism — can enhance the efficiency of liquidity management for the STA, reduce risk, and increase the Treasury's contribution to the Russian federal budget.

[12] Information on the volume of funds received from the placement of temporarily free funds of the Single Treasury Account. Federal Treasury (official site). URL: https://roskazna.gov.ru/finansovye-operacii/razmeshchenie-sredstv-edinogo-kaznacheyskogo-scheta/informatsiya-ob-obeme-sredstv-poluchennykh-ot-razmeshcheniya-vremenno-svobodnykh-sredstv-edinogo-kaz/informatsiya-ob-obeme-sredstv-poluchennykh-ot-razmeshcheniya-vremenno-svobodnykh-sredstv-edinogo-kaz/ (accessed on 20.12.2024).

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ABOUT THE AUTHORS

Ilya A. Fedorov — Master of the Faculty of Higher School of Management, specializing in State and Municipal Management, Financial University under the Government of the Russian Federation, Moscow, Russian Federation; Expert Specialist, Department of Methodological Support for Conducting Operations, Interregional Liquidity Management Department of the Federal Treasury, Moscow, Russian Federation
fed_177@inbox.ru

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Theoretical Aspects of Government Financial Regulation: Clarification of Concepts, Classification of Forms, Methods and Instruments

M.L. Dorofeev
Financial University under the Government of the Russian Federation, Moscow, Russian Federation

ABSTRACT

The relevance of this study stems from significant changes in the role of the state in addressing crises, which have occurred with increasing frequency since 2008 — the year of the global financial and economic crisis — particularly in the Russian Federation. The variety of definitions for the term "government financial regulation" found in both domestic and foreign sources has led to a number of theoretical contradictions, hindering the development of this field of study. The aim of this paper is to refine the definition of the concept and to develop a classification of its forms, methods, and instruments. The research applies methods of analysis and synthesis of academic literature, regulatory acts, and medium-term financial planning documents of the Russian Ministry of Finance. The author clarifies the concepts of "finance" and "government financial regulation", distinguishes between financial regulation and fiscal, tax, customs-tariff, monetary, and broader economic policy and regulation, and proposes a classification of instruments and their corresponding forms of financial regulation — direct and indirect. A methodology for differentiating these forms and aligning them with specific areas and tools of government financial regulation is also proposed. The article includes a graphical model illustrating the distinctions between financial and economic regulation by the state. The findings can be used by practitioners to improve the efficiency of financial flow management and by researchers to enhance the effectiveness of scientific work in this domain.

Keywords: government financial regulation; economic policy; methods and instruments of regulation; direct and indirect forms; budgetary regulation; macro prudential regulation; monetary regulation; finance

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INTRODUCTION

The principal focus of scientific discussions on state regulation of socio-economic processes is determining the optimal state involvement in the economy within the framework of which it is possible to achieve the best level of economic growth. In practice, each country solves this problem in its own way, primarily guided by national development objectives (see *Fig. 1*).

In economic models of different countries, any state is represented by expenditure accounting for 20–70 per cent of GDP. On average, the state's share of the economy is between 40–45 per cent. Based on the data in *Fig. 1*, the budget system expenditures of Russia were slightly below average between 2007 and 2022, which formally indicates its moderate share in the domestic economy. However, it is worth noting, that the size of the public sector, including state corporations and joint-stock companies in which the state holds stakes, increases the actual share of the latter in the Russian economy up to the level exceeding 40% of GDP [1]. Periodically, the fact triggers scientific and practical discussions, related to the potential growth in the efficiency of the Russian economy caused by denationalisation, privatisation campaigns, the development of market institutions and anti-corruption measures [2, 3].

The aim of the given research is to clarify the concept of "the state financial regulation of the economy" (SFR) and its classification, including the associated forms, methods, and tools.

METHODOLOGY

The author's approach to clarifying definitions of the terms "finance" and "financial regulation" is based on a whole set of classical scientific methods of research, including the analysis and synthesis of sources, normative legal acts and other official documents, including: (1) university-level scientific and educational literature, monographs and dissertations for academic degrees; (2) reference materials, including etymological and defining dictionaries. (3) contemporary systems of financial management in Russia, such as the study of the functional responsibilities of the Ministry of Finance of Russia's divisions and the content of the financial regulation system published in official websites. (4) transcripts and video footage of public speeches made by state officials, which are directly in charge of financial management operation in Russia.

Based on the results obtained, the author proposes clarified definitions of the concepts under study, as well as a graphical model of "the state financial regulation of the economy" (SFR) and a classification of its tools, methods and forms.

RESULTS

The role of the state in the economy and rationale for the state financial regulation

Is it possible to do without the state participation in economic regulation completely? Based on the experience of economic doctrines and the transition from unregulated to regulated market relations, we can definitely say that a regulator is not only viable, but also vital for developed economies. *Fig. 2* shows the place and role of the main subject of the state financial regulation of the economy (SFR), whether that be the state (the subject of macroeconomics) or public-law entities (the subjects of the theory of SFR), in the national system of economic relations.

In contrast to economic and macroeconomic theory, the classical theory of public finance singles out three main functions of the state: allocative (or distributive) providing the availability of public goods; stabilising, based on ensuring high employment, price stability, and economic growth; and redistributive, consisting of adjusting the existing distribution of income and wealth to ensure a socially fair level [4]. In compliance with the abovementioned aspects, the state financial policy is closely related to the resolution of issues of the state financial regulation of the economy.

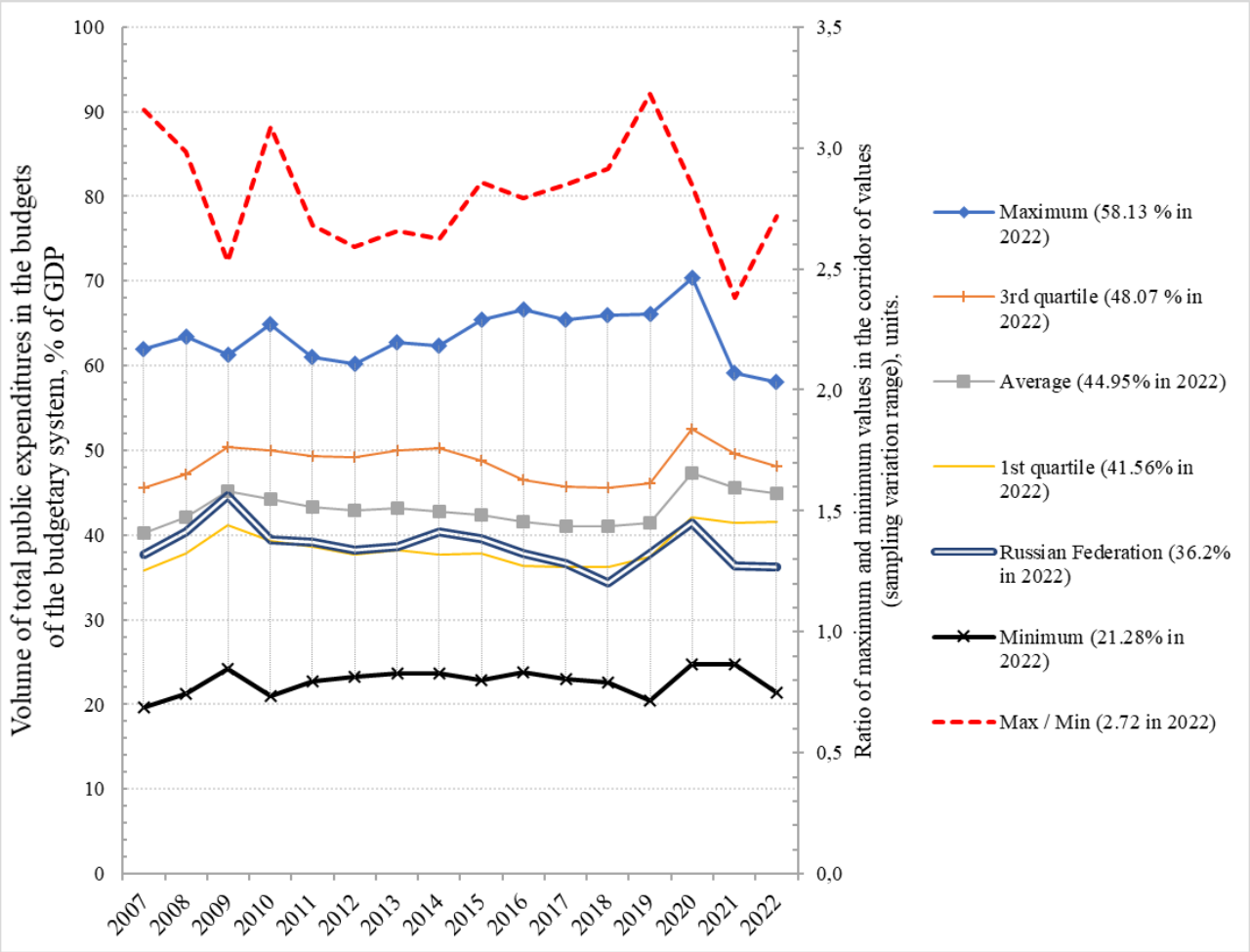

Fig. 1 **Total Government Expenditures as a Percentage of GDP (2007–2022) For OECD countries (full list), Russia (excluding sovereign fund savings and expenditures), Brazil, Bulgaria, Croatia, Indonesia, and Romania**

Source: compiled by the author based on data.: OECD (official website). URL: https://www.oecd.org/en/data/datasets/oecd-government-at-a-glance-database.html; IMF (information portal). URL: https://data.imf.org/en/Data-Explorer; Russian Ministry of Finance (official website). URL: https://minfin.gov.ru/ru/perfomance/budget/policy/osnov

Notes: Descriptive statistics are calculated based on the complete sample of countries ("extended» OECD, consisting of 44 countries).

The concept of "regulation" refers to the process of bringing a certain mechanism, phenomenon or process into order (the target state) in accordance with the expectations or requirements of the subject of regulation with regard to its object.[1] In the theory of management, the state regulation is understood as the elimination and mitigating market failures by influencing the institutional environment by means of a system of specific levers, instruments and regulatory methods of management [5].

Economic policy and economic regulation are closely interrelated macroeconomic categories. They differ mainly in their planning horizon, their role (and function) in organising the work of the government. Economic policy is a strategic planning instrument, which establishes general principles, directions and activities of the state related to the achievement of the country's objectives of national economic development. In its turn, economic regulation includes specific operational

[1] Encyclopedia of Sociology. Moscow. The Institute of Sociology, of the Russian Academy of Sciences; 2009. page1000.

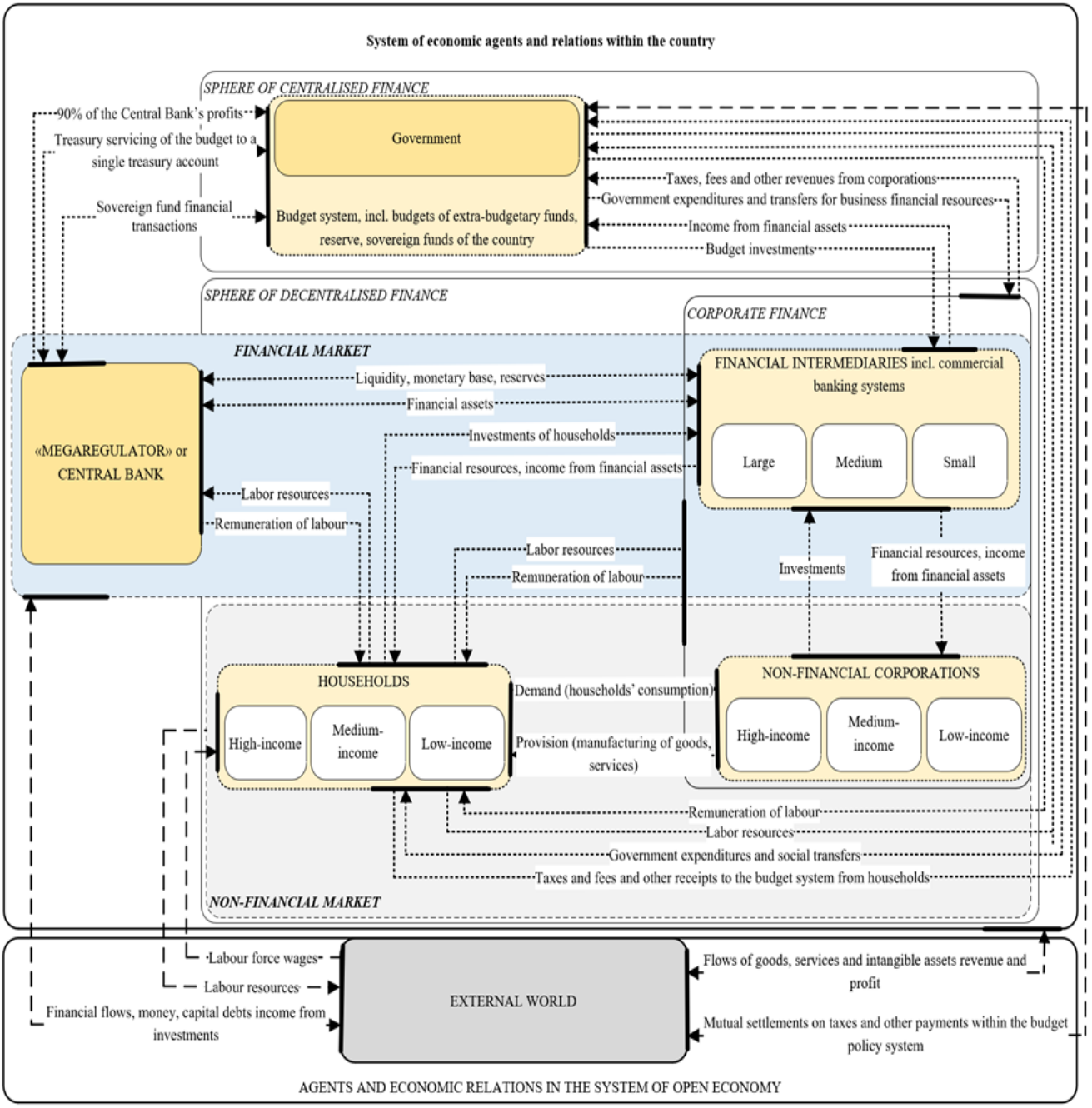

Fig. 2. **Economic Model and the Role of Public Finance in the System of Economic Relations**

Source: Compiled by the author based on the study materials.

and tactical measures, mechanisms and tools, as well as the methods of their applications aimed to solve current economic problems and adjust processes to ensure the most optimal trajectory of development in accordance with the principles of the adopted economic policy.

The definition of finance as the key to understanding the essence of public financial regulation of the economy

Public financial regulation should be assessed as a narrower concept than public regulation and public economic regulation because it is limited

by the context for the term "financial". Therefore, the essence and the versions of definitions "financial regulation" and "public financial regulation" will depend entirely on how the term "finance" is interpreted as a category [6].

In scientific literature and even more in educational materials, this particular definition is understood as economic or monetary relations associated with the formation, distribution, and use of money or financial resources to achieve certain objectives [7, 8]. However, in practice and in common speech, finance is often interpreted as '"the aggregate of money and financial resources"[2] and, as a phenomenon, it may be implied, that finance does not necessarily require the monetary flow.[3]

The Report of the Bank of Russia entitled as "Decentralised Finance (DeFi)" refers to payments, settlements, monetary operations, and transactions with financial assets on the financial market and in the economy. The document pointed out, that the emergence of cryptocurrencies has added to classical finance a new sphere of DeFi, which has become a new form of financial transaction distinguished by the absence of financial intermediaries.[4]

Given the variety of points of view on finance, one should consider a broader category than the definition presented in academic literature-for universities. Finance encludes money, cash equivalents, transactions and flows, as well as financial transactions that do not involve cash. According to the International Financial Reporting Standards (IFRS), the latter includes financing activity transactions in the framework of the cash flow statement, where capital is restructured by converting liabilities into it, resulting in changes properly to the structure of both liabilities and its related assets.

Finance, as a phenomenon, can be described as a function, with money and its equivalents represented as inputs, and financial resources as outputs. In this case, any transaction is characterised by a counter-movement of value in the form of goods, services, or financial assets. In a narrow interpretation, finance is understood only as the exchange of money and its equivalents for financial assets (the distributive concept).[5] In a broader interpretation, finance is manifested at all stages of social reproduction (the reproductive concept) [9].

Transition from finance to financial policy and the regulation of the economy

Some experts often match financial policy with budgetary, fiscal or economic policy and, subsequently, use such approach to formulate the concept of state financial regulation (see *Fig. 3*).

However, scientific and educational literature provided a whole variety of definitions of financial policy and the state financial regulation of the economy, which has led to confusion in this field of study. Based on the proposed above-mentioned approach to defining finance, we can clarify the definitions of public finance policy and state financial regulation of the economy, thereby eliminating contradictions in the interpretation of these concepts within the Russian academic school and international scientific community. To start with, the following state-

[2] Etymological Dictionary by Max Vasmer. URL: https://gufo.me/dict/vasmer/финансы (accessed on 04.12.2024); Conference of the International Movement on Financial Security. Rosfinmonitoring. 2024. URL: https://www.fedsfm.ru/releases/8725 (accessed on 04.12.2024);"Sovereign financial system in the period of transformation: in the service of national goals, on guard of welfare" Comment by A. Siluanov — timecode from 20:30 to 20:40 at the 2024 Financial Forum in Moscow. URL: https://vkvideo.ru/video-169401082_456239644 (accessed on 04.12.2024).

[3] Statement of Cash Flows. International Financial Reporting Standard (IAS) 7. URL: https://minfin.gov.ru/common/upload/library/no_date/2012/IAS_07.pdf (accessed on 04.12.2024).

[4] "Decentralised Finances (DeFi)". The Bank of Russia. URL: https://cbr.ru/Content/Document/File/141992/report_07112022.pdf (accessed on 04.12.2024).

[5] Drobozina L. A., Finance and Credit of the USSR. Textbook for Universities. Moscow: Finance and Statistics; 1982, page 430; Rodionova V. M., Discussion questions of the essence and functions of Soviet finances. Study Guidebook. Moscow: Moscow's Physics and Technical University; 1984, page 220.

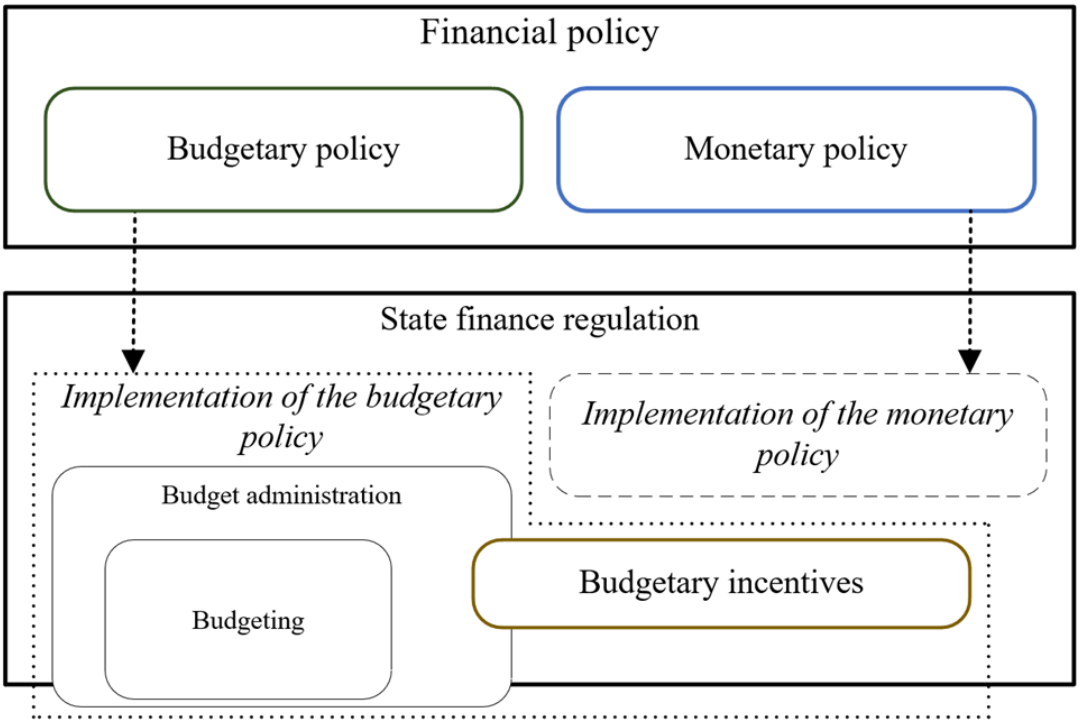

Fig. 3 **Logical Diagram of the Interrelationships between Fiscal, Monetary, and Budgetary Policy, and Government Financial Regulation**

Source: Compiled by the author based on the study materials [10].

ment should be used to substantiate this work: the Ministry of Finance of Russia operates with the categories of "budget, tax, customs and tariff policy", which are not equated with the terminology "financial policy", but instead they are disassociated from it.[6]

A review of documents published by the Russian Ministry of Finance related to the topic of the given study has identified, that the word combination "fiscal policy" only appeared for the first time in 2018,[7] however, the context of this concept was not sufficiently clarified. The abovementioned document states that "the consequences of the most powerful external shock in the last half century would be overcome by the second half of 2016 by the state economic policy (and budget policy as its integral component)", and that "in view of this the national economic and financial policy have undergone qualitative changes in recent years". Subsequently, the budgetary policy makes a part of economic policy, whereas the financial policy appears to exist independently. The latter is related to "the development of state policy and legal regulation in such areas as banking, insurance, credit, microfinance, financial markets, organisation and conduct of lotteries and gambling, the production and sale of counterfeit-proof

[6] Ministry of Finance of the Russian Federation. Main directions of budget, tax, customs and tariff policy of the Russian Federation. URL: https://minfin.gov.ru/ru/perfomance/budget/policy/osnov (accessed on 04.12.2024).

[7] Draft basic guidelines for budget, tax, customs and tariff policy for 2019 and for the planning period of 2020 and 2021. Ministry of Finance of Russia (official website). URL: https://minfin.gov.ru/ru/statistics/docs/budpol_taxpol?id_57=123006-proekt_osnovnykh_napravlenii_byudzhetnoi_nalogovoi_i_tamozhenno-tarifnoi_politiki_na_2019_god_i_na_planovyi_period_2020_i_2021_godov (accessed on 04.12.2024).

printing products, the state regulation of credit history bureaus as well as arrangement and investment in pension fund savings".[8] This concept is determined within the section dedicated to the organisational structure of the Russian Ministry of Finance and confirmed by the description of functional responsibilities for the Financial Policy Department. Thus, the current practice of the Ministry of Finance indicates, that state financial policy, as a field of work of the Russian Government, is separate from economic policy, regarding the issues of budget, tax, customs, tariff and monetary regulation and it relates exclusively to financial market regulation issues.[9] In this context, such terms as "financial policy" frequently used in scientific and educational literature in the sense of "budget policy" or "fiscal policy" [11, 12] or "economic policy" [11, 12] appear extremely contradictory. [13]

In foreign scientific works, the term "financial regulation" is also predominantly associated with the regulation of the financial market and ensuring its financial stability. It is usually controlled by a mega-regulator and is referred to as "macro prudential regulation of the economy" or "macro prudential measures".[10] Macro prudential stability of the financial system and financial markets is achieved through the centralised supervision of the financial sector of the economy by Central Bank (or other authorised regulator), as well as financial risk management [14].

It seems like "financial market regulation" and "financial regulation" are two different concepts, and the latter should seemingly include the former. Even when we consider finances within the framework of the distributive concept, financial regulation should not be limited to a single financial market. In the essence, finance (as part of economic relations) is related only to the distribution of monetary incomes, manifesting itself in a wider sphere in both the financial market and the budget system. Consequently, the approach to the definition of the state financial regulation of the economy (SFR) found in many foreign sources is incorrect and the definition itself is incomplete.

There is no doubt about the statement that the government is the main subject of the state financial regulation of the economy, which carries out this work using the distributive mechanism of the budget system [15]. In our country, the subjects of the state financial regulation of the economy are the Ministry of Finance of Russia, the Federal Tax Service of Russia, Rosfinmonitoring and the Federal Treasury etc., in short, all public authorities involved in implementing, monitoring and/or controlling financial transactions.

At the same time, we have figured out that the Bank of Russia is also involved in important tasks for state financial regulation of the economy. Firstly, it fulfils the function of a mega-regulator of the financial market and secondly, it has the exclusive right for emission of the monetary base, as well as it fully controls the circulation of money and monetary operations, either directly or indirectly through the national system of commercial banks. The Bank of Russia owns a special legal status apart from the government, ensuring an independent monetary policy.[11] Therefore, we should give some thought, whether its activity in regulating finances should be subject to the sphere of state regulation. As the authority of the Central Bank of the Russian Federation from the legal point of view are considered to be of the state power functions, their implementation involves the use of state coercive measures. The

[8] Financial Policy. Ministry of Finance of the Russian Federation (official website). URL: https://minfin.gov.ru/ru/perfomance/finans/ (accessed on 04.12.2024).

[9] Ministry of Finance of the Russian Federation. Financial Policy Department. URL: https://minfin.gov.ru/ru/ministry/structure/departments/?id_4=3-departament_finansovoi_politiki (accessed on 04.12.2024).

[10] The Bank of Russia. Macro prudential policy of the Bank of Russia: concept of implementation and planned solutions. URL: https://cbr.ru/Content/Document/File/140208/material_20220920.pdf (accessed on 04.12.2024).

[11] Federal Law "On the Central Bank of the Russian Federation (Bank of Russia)" No. 86-FZ dated 10.07.2002. URL: http://pravo.gov.ru/proxy/ips/?docbody=&nd=102077052 (accessed on 25.10.2024).

system of classification of public authority entities determined the Bank of Russia itself as a subject of the public sector of the economy. Therefore, it would be rational to consider it a subject of the state financial regulation of the economy, or state regulation of finances.

In scientific and academic literature, the latter is defined as the influence on socio-economic processes to prevent or eliminate disbalances and ensure the development of advanced technologies and social stability by means of concentration of financial resources in certain market segments and restricting their accessibility to other segments.[12]

The state financial regulation of the economy aims to eliminate excessive or undesirable imbalances in the economy from the general well-being points of view, such as territorial (regional inequality of living standards or incomes, etc.), sectoral (monopolisation of industries etc.), social (poverty and socio-economic inequality etc.), through the adoption of appropriate regulatory measures. These measures become the aggregate of certain tools, instruments and methods. Thus, the government can reduce income inequality through budget and tax regulation tools (see *Fig. 4*).

The author calculated the change in the Gini index for the period 2005–2022, (*Fig. 4*), as the difference between the partial pre-tax and post-tax Gini indices minus one (the result is taken in accordance to the module). The obtained results illustrate the percentage reduction in inequality (the higher the percentage, the greater the effect of income redistribution on the economy). For the better understanding, *Fig. 4* also shows the value

[12] Abramova M.A., Goncharenko L.I., Markina E.V. Financial and Monetary Methods of the Economy Regulation. Theory and Practice. Textbook for Master's Degree. 2nd edition. Moscow; Yurait; 2018. page 486

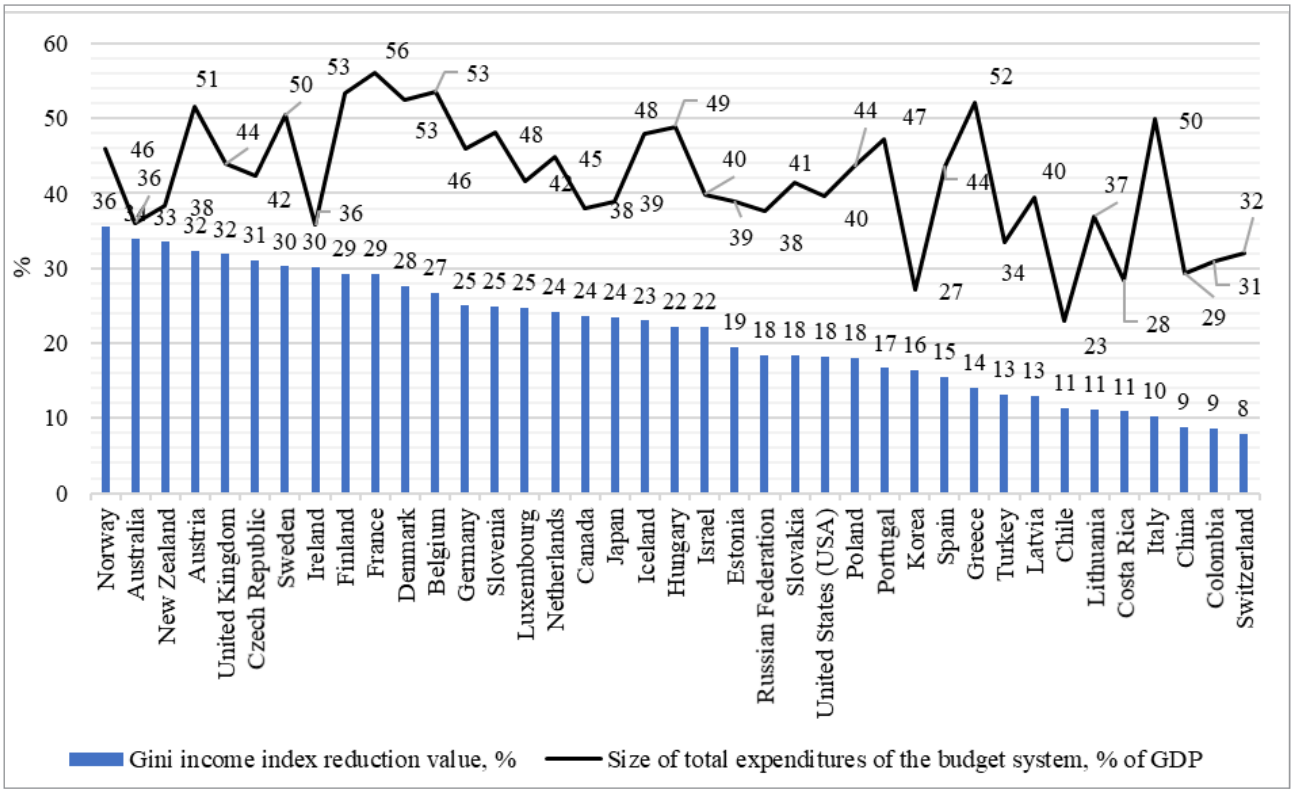

Fig. 4. **Results of Income Inequality Regulation in OECD Countries, as well as in Russia and China (Average Annual Values for the Period 2005–2022)**

Source: compiled by the author based on IMF (budget expenditures) and WID (pre-tax and post-tax income inequality by Gini index) materials.

of budget expenditure as a percentage of GDP. As a whole, *Fig. 4* indicates that reducing inequality is influenced by far so many factors beyond just budget expenditure, including taxes and the result of monetary regulation (the channels of influence for inequality are the labour market and inflation).

The boundaries of the state financial regulation of the economy and the sphere of state economic regulation could probably overlap. The former's objects include various aspects of generation of value proportions in the economy and the existing conditions of its branches, the state of the financial market, the level of development and budgetary security of the territories, and money flows in the social sphere for citizens in need etc. Unlike economic regulation, the target areas of the state financial regulation of the economy are not all financial and economic operations, but rather the aggregate of those, which is related to money and financial transactions with or without cash flow (see *Fig. 5*).

Fig. 5 indicates that the areas of budgetary, tax, customs and tariff, and monetary and macro prudential regulation are located within the spheres of economic and financial regulation. The issues related to transactions within these spheres will be referred to the state financial regulation of the economy. However, it is clear that there are other aspects of state regulation not directly related to money, its equivalents, or financial transactions. Thus, the spheres of financial and economic regulation overlap indeed, as they reflect different sections of social relations (and neither one of them includes the other one entirely).

Instrumentarium and types of state financial regulation of the economy comprising tools, methods and forms

As was previously demonstrated, according to the spheres of activity, state regulation is divided into economic (fiscal and monetary, as well

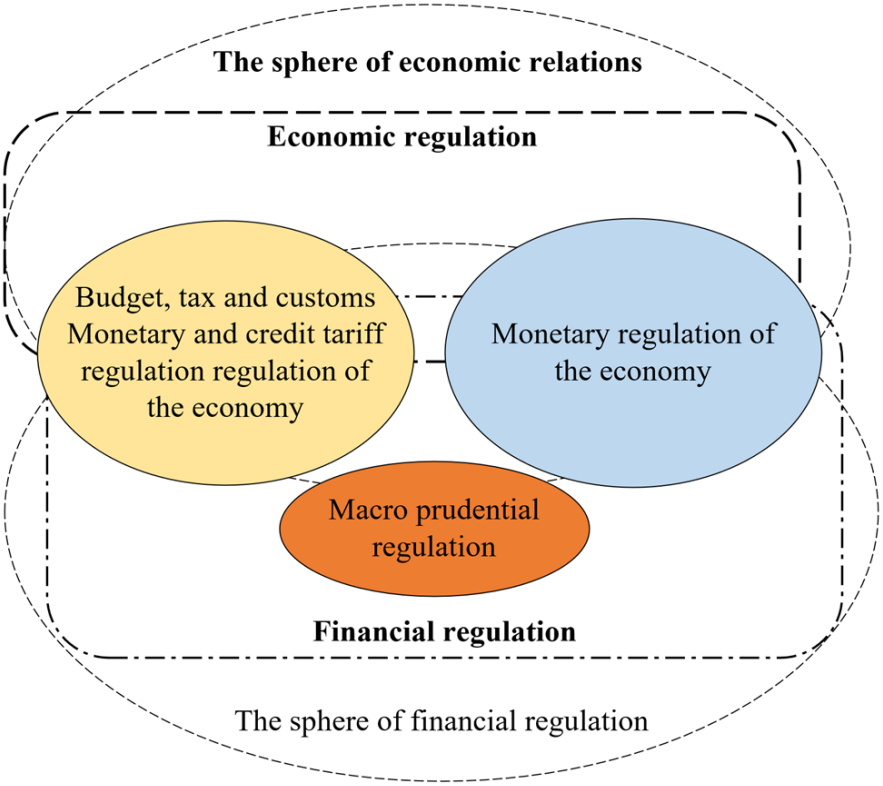

Fig. 5. **Boundaries of Government Financial Regulation**

Source: compiled by the author based on the study materials.

as budgetary, tax, customs and tariff, and monetary) and financial (the activities of the Ministry of Finance and the Bank of Russia in ensuring the stability of the financial market). It is fair to complete the description of state regulation more comprehensively: it deals with the social sphere, demography, ecology, the system of legal relations etc., within the framework of the function aimed to eliminate market failures.

According to the types of the state financial regulation of the economy, it is notable to distinguish the corresponding forms, methods, and tools of its impact on the spheres and objects of regulation.

The concepts of "method" and "instrument" are quite closely related. The only difference is that a regulatory tool influences an object, like, for example, a tax rate. At the same time, a method is a systematised set of steps or activity necessary to apply such an instrument in order to achieve a certain goal. Thus, the method of using the tax rate represents its change depending on the goals pursued, for instance, the growth to increase tax revenues or the reduction to stimulate the economy, etc.

The interpretation of the concepts is not controversial for the terminology of "tool" and "method'" in the context of the state financial regulation of the economy (meaning how the tool is applied): however, their division into direct and indirect forms is an extremely arguable and perplexing topic due to the wide range of expert opinions revealed in this field.

The differences between the direct and indirect forms of the state financial regulation of the economy is related to the direction of the impact on the object of regulation: the former influences directly the object, meanwhile the latter influences it indirectly by changing its operating environment. Y.A. Bugai suggests identifying the form of financial regulation judging by an intermediary's presence in a monetary transaction and by the principle of its impact [16]. If the regulator makes an influence on the environment (or circumstances), where the object of regulation operates, so that it can make an independent decision (preferably from the point of view of the subject of financial regulation), this should be accounted as an indirect form of financial regulation.

Another point of view declares, that all economic and financial methods can be regarded as indirect, while only regulatory and administrative methods should be considered as direct [17]. This idea is based on the division of state regulation into two main categories: (1) the market (indirect) sphere, and (2) non-market (direct). However, this concept has a drawback: for scientific articles this kind of systematisation (into direct and indirect categories) is quite common within the framework of economic (including financial) regulatory methods.

Some sources point out, that direct methods of the state financial regulation of the economy include budgetary measures (application of budget expenditure) [18], while indirect methods include tax and monetary measures.[13] This means that the same instrument of the state financial regulation of the economy can be both direct and indirect, depending on how it is applied. For example, subsidising the manufacturer's costs related to investments for making a production line is regarded as a direct form of financial regulation, whereas subsidising the interest rate of an authorised bank issuing preferential mortgage loans to the public is regarded as an indirect form.

Andreeva O.V. suggests regarding direct and indirect forms in accordance with the cash flow criterion involving the object of financial regulation [19]. This seems to be a very interesting idea taking into account the financial aspect of the issues of state financial regulation of the economy, since in this case the emphasis is on cash flows.[14]

[13] Abramova M.A., Goncharenko L.I., Markina E.V. Financial and Monetary Methods of Economic Regulation. Theory and Practice. Textbook for Master's Degree. 2nd Edition. Moscow. Yurait; 2018, page 486.

[14] As is known, the concepts of finance and money with rare exceptions are equivalent.

Table

Classification of Government Financial Regulation Instruments (Public Financial Regulation Toolkit)

Spheres and links of the state financial regulation system		Instrument	Form
Sphere	**Link**		
Budget, tax and customs-tariff regulation	Tax regulation	Tax rate (flat, progressive, regressive)	Mixed (direct taxes are a direct form of influence, together with the direct withdrawal of money; but indirect taxes are indirect, included in the price of goods/services, and the tax itself is paid by legal entities)*
		Tax incentives (deductions, non-taxable minimum, deferrals, holidays, tax exemption, etc.)	Mixed (investment tax deductions made directly to a specific person as a cash payment. The non-taxable minimum is related to all citizens and does not require the movement of money)
	Non-tax regulation related to the generation of state and municipal revenues	Insurance premium rates in the State Non-Budget Fund	Direct
		Rates of state monopolies	Direct
		Customs duties	Direct
		Mechanism of profit distribution of state-owned organizations	Direct
		Mechanism for leasing state property	Direct
		Fines, financial sanctions	Direct
	Regulation related to the state and municipal expenditures	Subsidies to business entities	Mixed (subsidies to a legal entity or household from the budget, which makes a direct form. Subsidies to a bank to cover lost income from preferential mortgages, which makes an indirect form)
		State and municipal purchases	Direct
		Budget investments	Direct
		Social allowances	Direct
		Budget allocations for the provision of state and municipal services in the field of healthcare, social services and education	Indirect (the final beneficiary receives economic benefits in the form of services, not money). Instead of the object of regulation, the money is received by authorized or accredited institutions from the social sphere)
	Non-tax regulation related to the generation of debt obligations of public-law entities and the placement of temporarily free budget funds	State borrowing	Indirect
		State guarantees	Indirect (payments under government guarantees are made to a third party, the creditor, so that the guarantee itself supports the borrower)
		Placement of temporarily free budget funds, management of sovereign funds and reserves	Indirect
	Non-tax methods of financial regulation related to setting the parameters of the financial mechanism of budget federalism and interbudgetary relations	Mechanism for sharing revenues between budgets of different levels	Direct
		Mechanism for expenditure sharing between budgets	Direct
		Interbudgetary relocation of financial resources, which in addition to interbudgetary transfers also includes budget loans	Indirect

Table (continued)

Spheres and links of the state financial regulation system		Instrument	Form
Sphere	**Link**		
Monetary regulation	Monetary regulation	Key rate	Indirect
		Determined reserve requirements for credit institutions	Indirect
		Open market operations	Mixed (if the object of regulation is the financial market, for instance, with targeting prices for financial assets, then this is a direct form; otherwise, it will be an indirect form of regulation)
Macroprudence	Macroprudence	Anti-cyclic buffer (AB): capital requirements for credit institutions to accumulate a capital buffer	Indirect
		Risk coefficient premiums: premiums for systemic importance; changes in short-term and long-term liquidity standards, etc.	Indirect
		Macro prudential limits (MPL): credit restrictions (debt burden limits) on unsecured consumer loans; currency (limit on open currency positions)	Indirect
Financial and investment institutions and the external environment of operation	Regulation of the institutional environment for business (organizations) the state financial regulation of the economy	Institutions for improving the investment climate (Direct Investment Fund, Investment Ombudsman, Agency for Strategic Initiatives, Agency for Export Credit and Investment Insurance, Advisory Council on Foreign Investments)	Indirect
		Special (free) economic zones (SEZ)	Indirect
		Public-private partnership (PPP)	Indirect
		Information and analytical centers	Indirect
Others			–

Source: Compiled by the author based on the study materials.

Note: * - this is the most simple and comprehensive example of differentiation between direct and indirect instruments.

If the object of regulation is liable to withdrawal or provision of monetary liquidity (for example, the object of regulation has directly an inflow or outflow of cash), this is a direct form of financial regulation.

On the contrary, if there is no cash flow regarding to the object, but the environment in which it operates changes, or financial flows related to financial regulation move endorsed to the intermediary (which allows the object of financial regulation to save money or receive other monetary benefits), this form should be considered as indirect financial regulation.

To sum up the research work of the methodology to determine the direct and indirect forms of the state financial regulation of the economy, the authors emphasise once again, that a scientific approach to their affiliation is complicated [20]. To solve this issue, we suggest focusing on cash flow relative to the object of regulation. A direct form of financial regulation occurs, when the cash flow and/or its equivalents are transferred directly to

or from the object of regulation. However, if funds and/or their equivalents move or are withdrawn instead of the subject of regulation to its counterparty, or to a third party, which meanwhile influences the subject of regulation, then an indirect form of financial regulation occurs. Finally, in case of absolutely no money transferred, the regulation can be of both state and non-state nature, but this situation most likely should not be regarded as the one characteristic for the financial sector.

In the final part of the research work, the authors will classify the forms, methods and tools of the state financial regulation of the economy by their direction or sphere: tax, budgetary, customs, tariff, monetary, credit, macro prudential, etc. to establish a consistent logical relationship between all of them (see *Table*).

CONCLUSIONS

The results of the given research has confirmed, that there are many controversies related to the concept of "the state financial regulation". Interpretations of this definition diverge in the academic literature. In practice, the differentiation in its forms seems to be a complicated task, which, besides, bears only a theoretical significance, since there are no examples of the state financial regulation's instrument segmentation in practice. Classifying the types of the state financial regulation is also universally challenging, as it is difficult to distinguish between direct and indirect instruments and its methods from budgetary, tax and customs-tariff instruments and methods, since each of these groups contains both types of the state financial regulation.

Clarifying the concepts of "finance" and "state financial regulation" has enabled to eliminate theoretical controversies that have been used in abundancy in domestic and foreign academic literature. The given article clearly distinguishes between the studied phenomena: financial regulation, state financial regulation, financial policy, budgetary policy, tax policy, customs policy, tariff policy, etc. The research work made a special emphasis on the complexity and multifaceted nature of the public financial management system. It has also revealed the areas of intersection and the unique functions of each of the phenomena studied and facilitated to draw a graphical model of the state financial regulation as well.

The classification of instruments and forms developed by the author could be used to make the management of financial flows more efficient and make this scientific research more productive in the subsequent research work.

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ABOUT THE AUTHOR

Mikhail L. Dorofeev — Cand. Sci. (Econ.), Assoc. Prof., Assoc. Prof. of the Department of Public Finance, Financial University under the Government of the Russian Federation, Moscow, Russian Federation
http://orcid.org/0000-0002-2829-9900
dorofeevml@yandex.ru

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The Role of Digitalization in Data-Driven Decision Making in Supply Chain Management

I.G. Kamenev, D.A. Porohovnik
RUDN University, Moscow, Russian Federation

ABSTRACT

The article presents the results of a study aimed at identifying the current and potential roles of digital platforms in supply chain management. The research reviews existing theoretical approaches and developments in this area, as well as analyzes case studies of successful digitalization. The authors demonstrate how the transition of digital platforms to working with Big Data sources is transforming their role in the management process. Previously, at the stage of digital reporting, there was a gap between operational logistics functional management and expert analytical work with aggregated indicators. However, new systems that provide for the processing, storage, and analysis of data, as well as the visualization of this information and the results of its analysis, make it possible to link strategic goal-setting, KPIs, and supply chain resilience management directly with data flows about functional business processes, creating a "digital twin" of the enterprise. Using structural-functional analysis and the case study method, the study examines management practices synthesizes a comprehensive approach to exploring the interrelation between technological and managerial innovations during the implementation of digital platforms. As a result, the paper proposes a model that outlines the role of digital platforms at different levels of management activity. It distinguishes between technological innovations (the development of digital platforms tailored to organizational needs) and managerial innovations (adaptive development of data-driven organizational management systems). The findings may be of interest both to academic researchers studying management challenges amid digital transformation and to practitioners conducting applied scientific and analytical studies of digital transformation outcomes in the express delivery industry and related sectors.

Keywords: supply chain management; digitalization; innovative technologies; logistics; operational logistics; data-driven decision making; management by objectives; digital twin

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INTRODUCTION

Innovative technologies play a key role in transforming operational logistics processes, enhancing their efficiency and competitiveness. In a rapidly changing business environment, a company's ability to adapt and implement cutting-edge solutions becomes a critical factor for success. However, the introduction of innovations into logistics processes often faces a number of challenges — at the center of which lie managerial decisions.

These decisions significantly influence the successful implementation of innovations, as they shape strategies for integrating new technologies. Managerial choices encompass both strategic analysis and planning, as well as concrete actions aimed at adapting a company's internal processes and infrastructure to technological advancements.

This article explores the positive impact of digitalization on supply chain management, highlights the digital platforms used for this purpose, and analyzes both existing challenges and the most effective approaches and strategies for overcoming them.

The adoption of new digital technologies is fundamentally reshaping traditional logistics operations and driving the sector's development [1]. Today, information systems are becoming a central component, allowing companies to integrate sensors and Internet of Things (IoT) devices for real-time supply chain tracking and management. This not only reduces costs but also improves the accuracy and predictability of logistics processes [2].

Artificial Intelligence (AI) is gradually being introduced to analyze vast amounts of data from multiple sources, helping optimize decision-making. Specifically, AI is used to design more efficient routing systems, leading to reduced transit times and lower last-mile delivery costs [3].

The use of blockchain technologies enables the creation of a highly transparent environment for data protection. This is particularly important in international logistics: on one hand, it provides the ability to track the movement of goods from manufacturer to end customer; on the other hand, it reduces the risk of fraud and strengthens trust between counterparties.

In addition, the role of autonomous vehicles and drones is growing, promising to reduce costs and shorten delivery times. These technologies open new horizons in supply chain management, making it more flexible and resilient. Collectively, such innovations contribute to greater efficiency and competitiveness for logistics companies.

It is important to emphasize that these are some of the most advanced innovative technologies, which may not be effective for every company. Their successful implementation depends largely on an organization's level of maturity and would require substantial financial and human resource investments [4].

THEORETICAL APPROACHES TO THE IMPLEMENTATION OF DIGITAL INNOVATIONS

In the past, it was widely believed that market success was inevitable for companies that adopted innovations and technologies across all their business processes. However, numerous examples of failed initiatives have demonstrated that implementing new technologies remains a complex challenge for many market players. True success lies in the continuous and systematic execution of innovations and improvements within a unified strategic direction. If a company encounters persistent management issues, it indicates the ineffectiveness of current approaches and the need to develop new principles that challenge outdated methods.

Theoretical Foundations of Successful Digitalization

Modern approaches to digitalization in management focus on actions aimed at improving and updating existing processes or eliminating inef-

fective elements. In the context of management systems, this involves a shift from traditional to modern and innovative methods. The implementation process typically unfolds in several stages [5]. At the first, preparatory stage, existing practices are analyzed to identify shortcomings that hinder performance improvement. At the second stage, management innovations are introduced — these are new ideas and concepts designed to address the identified problems effectively. This stage may include:

- developing a step-by-step plan with clear outcomes that reflect the desired state of the management system;
- introducing original managerial ideas generated within the organization and fostering an environment that encourages employee initiative;
- encouraging the free emergence and expression of innovative ideas with strong support from the company;
- strengthening a corporate culture that promotes continuous interaction and the exchange of ideas among team members;
- applying external best practices, studying case studies, and engaging expert consultants.

Despite the promising potential of digital technologies in logistics [6], there are certain "filters" —barriers in the form of internal and external obstacles — that hinder their implementation. A.A. Volkova, Yu.A. Nikitin, and V.A. Plotnikov identify several key challenges that must be overcome to ensure the successful digitalization of supply chain management [2].

Introducing innovations in operational logistics involves a number of difficulties that managers must take into account. One of the main issues is the *lack of financial resources* (as mentioned earlier).

The implementation of modern technological solutions often requires significant investment, and not every company is prepared to bear such costs — especially when the return on investment is not immediately evident.

Another equally important factor is *resistance to change among employees*. Some logistics companies lack a clear digital strategy and continue to use outdated technologies and systems to interact with partners and manage processes. This is often due to an unwillingness or unpreparedness to adapt to changes in business operations. A strong corporate culture and a supportive innovation program can help overcome this barrier, but both require time and resources.

A general *lack of digital skills* among personnel is also a serious challenge. Experience shows that employees, managers, and clients of logistics firms often do not possess the necessary technical knowledge and expertise. This becomes a major obstacle to optimizing operational processes within the industry. To address this, efforts should focus on two key areas: the development of outsourced consulting services in technology and digital transformation, and the enhancement of professional training systems in the field of digital logistics.

Technical issues also pose a barrier to the adoption of digital innovations. These include unreliable network connectivity across the supply chain, limited capabilities of existing AI solutions (e.g., the immaturity of collision avoidance technologies limits the widespread use of drones), and IoT security concerns stemming from hardware and software design flaws.

Finally, the *lack of a clear understanding of company needs and priorities* can complicate the adoption of new technologies. Without a well-defined vision of their benefits and the specific problems they aim to solve, transformation processes risk becoming chaotic and ineffective. Managers must clearly define the goals and objectives that innovations are intended to achieve.

And finally, *regulatory and legal constraints* can also act as barriers to innovation implementation. Organizations may face the need to comply with new standards and regulations, particularly those related to data security and personal information protection.

Thus, to successfully overcome the barriers

outlined above, it is essential to apply balanced management, strategic planning, and careful consideration of a company's cultural and structural characteristics. This approach enables the effective execution of technological transformation in operational logistics.

The Role of Digital Innovation Technologies in Supply Chain Management

An analysis of the capital investments required for the practical implementation of digital innovation technologies by Russian companies in supply chain management reveals several key aspects of the process (see *Fig. 1*).

First and foremost is data quality, which serves as the foundation for the effective use of analytical methods. Second is a well-developed information management infrastructure, which ensures access to data and supports the use of algorithmic models and visualizations. Lastly, we must consider business processes, which, while critically important, typically come into play at a later stage — once trust in the technology has already been established.

Digital initiatives related to data management are generally divided into four subcategories: storage, processing, analytics, and visualization [8]. Noteworthy in this context are the works of A.A. Gavrilenko [4], S.M. Khairova, and M.K. Paravyan [9], which summarize the experience of Russian companies in implementing digital innovations in supply chain management. These studies emphasize that best practices in digitalization rely on a comprehensive approach to business process improvement, combining Total Quality Management (TQM) with supply chain management. This integration forms a foundation for system stability and resilience (see *Fig. 2*).

Digital platforms play a pivotal role in this algorithm by enabling the coordination of various flows — informational, financial, material, and

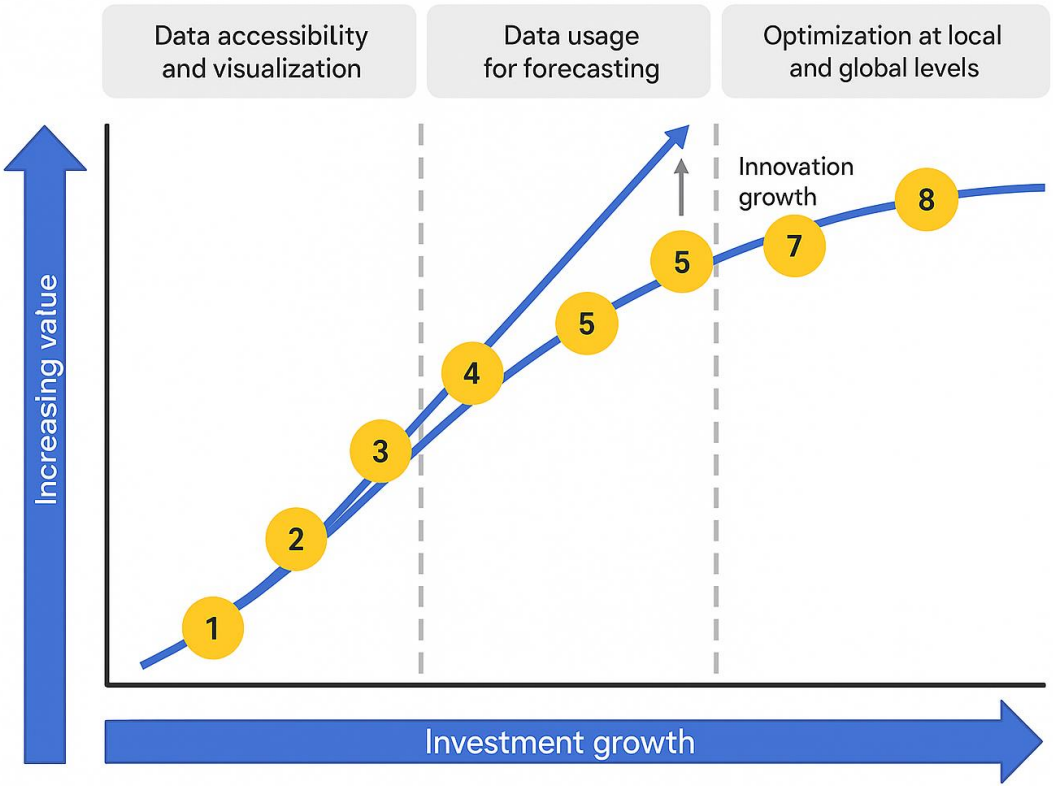

Fig. 1. **Capital Investment in Digital Initiatives Compared to Realized Value**

Source: compiled by the authors based on data [7].

human. Leveraging data visualization and analytics technologies, companies can thoroughly monitor and analyze each aspect of their operations in real time. This, in turn, allows for more informed managerial decision-making focused on improving the overall efficiency of the supply chain. Through integration with "smart enterprises," organizations can optimize operational processes and thereby enhance their competitiveness in an increasingly dynamic market environment.

SUPPLY CHAIN MANAGEMENT MODEL USING DIGITAL INFORMATION TECHNOLOGIES

Building on the core arguments of the aforementioned authors, we propose a more refined and comprehensive approach by distinguishing three key components: functional business processes, their digital twins, and the expert-analytical management layer.

Functional (line-functional) business processes encompass the movement of inventory (material flows), the associated payments (financial flows), and the work of personnel (both internal and outsourced) across the supply chains. These processes are managed by line-functional managers, who are responsible for ensuring operational continuity and efficiency.

The digital twin of a business refers to a digital database that mirrors the functional business processes. In the current era of Big Data technologies, these databases are populated by employees directly involved in operations, unlike earlier reporting systems, which were often filled out by personnel not directly connected to the actual business processes. Companies can implement different approaches to creating a digital twin — from balance-based systems that link various segments of the supply chain to detailed tracking of product batches or even individual items (including via blockchain technologies). From a supply chain management perspective, the most critical aspect is the accuracy and align-

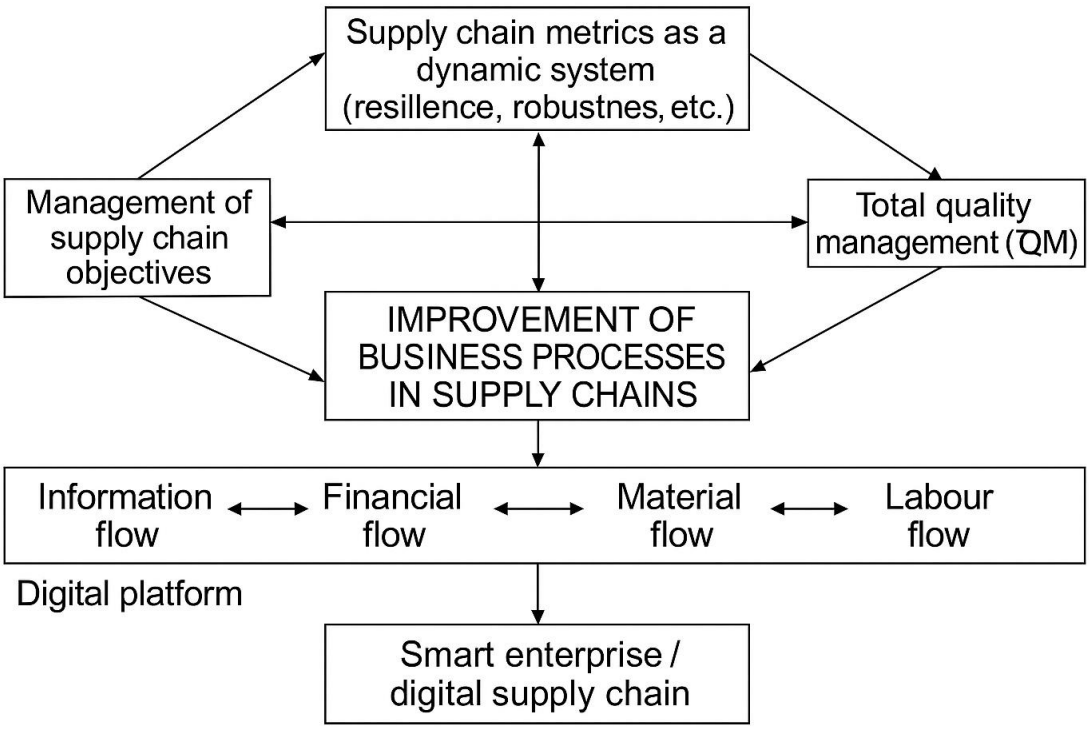

Fig. 2. **Flowchart "Business Process Improvement in Supply Chains"**

Source: compiled by the authors based on data [9].

ment of the digital model with the real-world processes. For example, if a product batch is marked as shipped, does it truly mean it has physically left the warehouse? Discrepancies of this kind can distort decision-making for all stakeholders who lack direct access to operational processes (except for line-functional managers).

In addition to line-functional managers, supply chain system managers —those responsible for the operation of the supply chain as a whole —also engage with the digital twin. Their activities are guided by three types of objectives: quality management, supply chain coordination, and —most importantly as a refinement to earlier models —strategic management. Integrating strategic oversight into the system enables a more proactive and forward-looking approach to supply chain innovation and optimization.

Performance management goals (performance metrics), which reflect a company's efforts to reduce the likelihood of supply chain disruptions and the resulting damage (such as delays, losses, breakdowns, etc.), are most closely linked to the functional management of business processes.

Supply chain stability goals determine the system's ability to continue operating amid the unforeseen circumstances that inevitably arise in practice. If one of these goals were pursued to an absolute extent, the other could be neglected — but such an approach is unrealistic. Therefore, supply chain management involves reasonable duplication and redundancy to address the most significant risks. Optimization toward these goals is made possible primarily through the use of digital information systems that enable forecasting both risks and the supply chain's resilience to them [10].

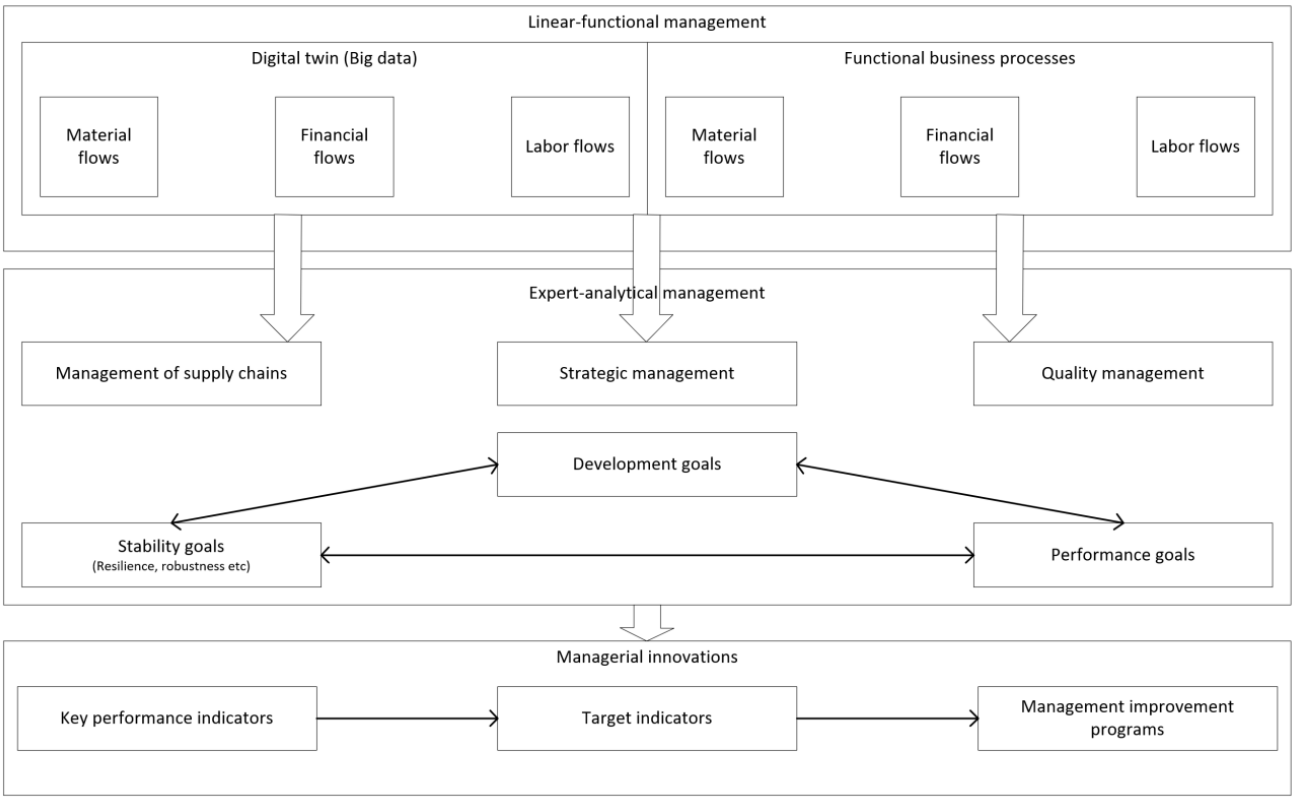

Fig. 3. **Supply Chain Management Model Using Digital Information Technologies**

Source: compiled by the authors.

Finally, in our view, the third fundamental component of supply chain management is *development goals*, which reflect the strategic outlook of the market, the company, and its partners. The supply chain system should not only ensure stable operation under current conditions but also act proactively, evolving in line with the company's plans (see *Fig. 3*).

Specialists and managers responsible for this area combine their tasks of ensuring stability, development, and execution with the data available in the digital twin of the enterprise's operations. As a result, benchmarks are established — indicators calculated based on the digital twin — that set targets (desired values) and form the basis for action plans to achieve them. These plans are then detailed into specific transformations of the functional business processes, whether through changes to procedures or structural links, the addition of new supply chain elements, or the elimination of existing ones, and so on.

Thus, the implementation of modern technologies (the digitalization of the supply system) becomes the foundation for subsequent managerial innovations. The introduction of a digital system is a one-time decision, usually made for many years ahead, since retraining personnel entails significant costs and substantially slows down business processes. In contrast, building innovative management technologies in supply chain management based on digital infrastructure is a long-term, gradual, and adaptive process — external changes will continuously push the business toward new managerial decisions.

It is evident that, digitalization of supply chain management is not limited to selecting the most suitable software product (or suite of products) available on the market — around it, a new management technology gradually takes shape, where innovations can play a more significant role than simply improving information exchange.

THE PRACTICE OF IMPLEMENTING DIGITAL INNOVATIVE TECHNOLOGIES IN SUPPLY CHAIN MANAGEMENT BY RUSSIAN COMPANIES

The use of digital tools for visualizing managerial decisions significantly enhances organizational efficiency [11]. For the successful implementation of innovative technologies —such as Big Data, IoT, and Blockchain —in operational logistics, decisions made through simpler yet powerful data analytics and visualization tools like Tableau, Microsoft Power BI, SAS, and others prove critical [12]. These tools enable companies to respond promptly to changes and optimize business processes. The application of such software not only facilitates strategic decision-making but also supports the adoption and integration of new technologies.

A key distinction between digital platform models lies in their capacity to store and process Big Data (i.e., the presence of data warehouses), as well as the level of computational power available to handle the required information flow.

Technical and Managerial Capabilities of Leading Business Digitalization Platforms in Supply Chain Management

Since 2022, global market leaders in business digitalization platforms —such as Tableau, Microsoft Power BI, and others —have ceased selling new licenses and even suspended support for previously sold ones. In this context, our primary focus will be on identifying the distinctive features of these products (based on their use by foreign companies) compared to their domestic counterpart — the Russian platform Yandex Cloud. Our research question is whether such digitalization remains relevant under sanctions-related restrictions and whether Yandex Cloud can provide the same functionalities that underpin success in international practice.

Tableau is a leading data visualization platform that enables comprehensive analysis of

large volumes of information and the creation of required reports and real-time dashboards. However, the product does not include its own data storage capabilities and relies on building analytical infographics based on other solutions. This approach is effective when a company already possesses a Big Data source and primarily requires a tool for visualizing that information.

Regarding versatility, Tableau —as with any similar solution — is not confined to specific functional business processes. This means the platform can visualize any data format presented in the required technical form, regardless of its domain —be it financial figures, hours, speed in km/h, etc. Flexibility concerning information sources means that at enterprises where functional business processes across various activities are digitized to differing extents and through different software systems, Tableau can be used to construct a unified analytical base for subsequent visualization.

Microsoft Power BI is a suite of data analysis and business intelligence tools that enable the presentation and visualization of complex information in an accessible format. The software package does not include a built-in goal management system; however, it supports integration with Microsoft Azure and allows the creation of custom add-ons in various programming languages, enabling users to tailor automated goal management solutions for different types of objectives.

The *Azure* cloud platform aggregates data from functional operational systems and transfers it to business analytics platforms such as Power BI. Unlike Tableau, which accesses external data sources directly, Azure integrates information from external sources into a centralized Big Data repository, thus providing both backup storage and the ability to analyze data through specialized tools. Real-time extraction and transformation of operational data are facilitated by services such as Azure Stream Analytics and Azure Data Lake Analytics.

In the current context, where Russia faces extensive sanctions, issues of import substitution and the development of domestic technological solutions have become especially critical. Due to restricted access to international technologies and products, it is essential for Russian enterprises to pivot towards homegrown developments. This shift not only minimizes risks associated with political and economic fluctuations on the global stage but also supports the growth of the local information technology industry.

In this regard, the functional capabilities of IT platforms such as Yandex Cloud/DataLens — which demonstrate considerable similarity to MS Power BI/Azure — deserve attention. These platforms provide infrastructure for integrating large data flows into a unified digital environment, along with powerful visualization and analytics tools.

Yandex DataLens is a self-service analytics tool (part of the Yandex Cloud ecosystem) that enables companies to efficiently work with heterogeneous data from multiple sources. The platform collects information from operational and business systems, CRM databases (e.g., PostgreSQL), events generated by websites and mobile applications, as well as external open sources and streaming data (managed through the Apache Kafka broker).

Data integration is implemented through the construction of a unified data repository based on robust infrastructure solutions within the Yandex Cloud ecosystem, such as managed database services (ClickHouse, PostgreSQL) and streaming analytics platforms. This setup enables the handling of large volumes of information in real time, significantly reducing both the costs and time associated with infrastructure deployment and equipment maintenance.

Data visualization within the system is facilitated through interactive dashboards and visual reports, which are accessible to a wide range of users thanks to a user-friendly interface. Beyond

standard visualization tools, the service offers advanced geospatial analytics capabilities based on the Yandex.Maps cartographic platform, assisting companies in making strategic decisions related to the opening of new locations or planning territorial expansion.

Yandex DataLens enables effective management of business process quality by analyzing KPIs, identifying non-obvious trends, and uncovering bottlenecks. The platform empowers organizations to implement both operational and strategic management based on up-to-date information presented in a convenient and interactive format.

Thus, technically, Russian companies have the capability to digitize their business processes (including supply chain management) using Yandex Cloud/DataLens. However, certain characteristics of implementing domestic products should be noted:

- solutions guaranteed by the Yandex platform may be limited compared to more mature international counterparts; nevertheless, the tools provided are sufficient for conducting basic corporate-level analytics and visualization in the context of supply chain management;
- companies utilizing DataLens/Cloud may encounter some restrictions when integrating with products not directly supported by Yandex. In contrast, Microsoft platforms offer broader compatibility with various services;
- the pricing policy and payment model offered by Yandex can be more economically advantageous for Russian organizations, especially under the constraints of international sanctions.

Thus, despite the technical comparability of Yandex solutions, questions remain regarding their compatibility with functional data sources and integration into management processes. Being closer in nature to Microsoft Power BI than to Tableau, Yandex products are poorly suited for unifying existing functional systems with their own Big Data streams into a single digital environment. Moreover, compatibility issues may also arise when consolidating functional systems built on Microsoft-based solutions.

To analyze the prospects for practical implementation of digital platforms, we will examine international experience through several case studies and compare it with examples from Russian practice utilizing Yandex Cloud. In each case, we will identify how such tools are applied within different business structures and what advantages they offer. These examples will allow for a deeper exploration of the relationship between the role of digital platforms in both line-functional (operational logistics) and integrated supply chain management.

Best Practices in Using Digital Platforms for Supply Chain Management

One notable example of successful implementation of this technology is the use of Tableau by the American multinational financial conglomerate JP Morgan Chase.[1] The marketing operations team, financial managers, and branch managers gained the ability to analyze client data to track customer preferences and integrate this information across various business areas, such as product strategy and promotion decisions, as well as improving customer service experiences. This enabled the acceleration of detailed reporting processes, established an effective bridge between IT and business units, and facilitated the development of applications for risk analysis and regulatory compliance.

Another positive example is the deployment of digital innovative technologies based on Microsoft Power BI (as a business analytics software) and Microsoft Azure (cloud services) at London Heathrow,[2] one of the world's larg-

[1] Top Tableau Case Studies — JP Morgan, Lenovo & Lufthansa. Data Flair. 2021. URL: https://data-flair.training/blogs/tableau-case-studies/ (accessed on 23.01.2025).

[2] Power BI Case Study — How the tool reduced hassles of Heathrow & Edsby. Data Flair. 2021. URL: https://data-flair.training/blogs/

est international airports. The airport's ground operations face stringent efficiency requirements to ensure uninterrupted service. With a daily passenger flow exceeding 200,000 and the potential for unforeseen disruptions caused by weather, delays, or cancellations, seamless coordination and synchronization across all departments are essential. This requires adaptability, flexibility, and well-organized internal and external supply chains.

To address these challenges, a unified digital system was created at Heathrow to handle large volumes of information generated by functional systems and convert them into user-friendly infographics for managerial decision-making. The platform integrates data streams from key operational areas such as check-in zones, baggage tracking, and flight scheduling. Notably, Power BI operates as a centralized system that informs different airport departments of anticipated changes in passenger flow, enabling better preparation for servicing.

Clearly, an important aspect of integrating such technologies is a thorough understanding of the IT tool's intended role in addressing the company's specific needs. Prior to implementation, it is essential to carefully assess whether the software's functionality aligns with the requirements and how it fits into the broader set of challenges to be solved.

The case of the online retailer KazanExpress.ru, which chose Yandex Cloud as its analytics platform, demonstrates how Russian companies successfully adapt to new realities through local solutions.[3] After a comprehensive evaluation of four BI systems, the company opted for Yandex DataLens due to its compliance with all declared requirements and its integration within the Yandex Cloud ecosystem, providing a full cycle of data management.

KazanExpress is an e-commerce marketplace offering goods with free one-day delivery in 60 Russian cities. Prior to implementing the BI solution, the company lacked a unified approach to data collection and analysis. The finance department used multiple sources to generate reports in Microsoft Excel — a time-consuming, non-automated process prone to errors. This motivated the company to seek a new business intelligence system that met specific criteria: support for diverse data sources (such as PostgreSQL and ClickHouse), unlimited users, flexible access controls, and rapid deployment.

The implementation of the Yandex Cloud digital platform enabled KazanExpress to achieve the following positive outcomes:

1. Improved operational efficiency. The creation of an analytics dashboard allowed managers, sales staff, and partners to access key information such as store ratings, revenue volumes, order quantities, and product reviews. This reduced the time required to locate such data by 50% and simplified the decision-making process.

2. Increased development speed and flexibility. The analytics dashboard was configured in just a few days (no more than five), whereas alternative systems might have required over two weeks. Rapid adjustments and testing saved up to 70% of the time typically spent on implementing changes.

3. Widespread data accessibility and use. Initially, only about 10 internal employees used the dashboards; later, access was extended to over 100 active sellers, which boosted both their engagement and work efficiency by 30%.

4. Expanded analytical capabilities. Following the successful deployment of the initial dashboard, the company continued to apply similar Yandex Cloud services to further enhance operational analytics, geoanalytics, and machine learning, improving forecasting accuracy by 20%.

power-bi-case-study/ (accessed on 23.01.2025).

3 Yandex.Datalens — the company's experience in executed projects. BI Consult. 2021. URL: https://datafinder.ru/products/yandexdatalens-opyt-realizovannyh-proektov-kompanii (accessed on 23.01.2025).

Table

Implementation of Management Innovations in Case Studies of Digital Platform Adoption for Supply Chain Management

Case	JP Morgan Chase	Heathrow	KazanExpress
Integration with existing systems	Tableau is integrated with company systems and has successfully replaced previously used tools (Excel, SQL Server, Cognos, Business Objects)	MS Power BI integrates with airport operational systems (check-in, baggage tracking, flight schedules, etc.) via Microsoft Azure platform	Yandex DataLens integrates with existing PostgreSQL, ClickHouse databases, and CRM systems without requiring significant infrastructure changes
Use of Big Data storage	No unified Big Data storage is used; self-service data analysis by company functional units	Azure Data Lake Analytics and Azure SQL Database are used to collect, process, and analyze large volumes of data in real time	Yandex Managed Service for ClickHouse and Yandex Cloud infrastructure are used to process large volumes of data (hundreds of gigabytes of website and app events)
Completeness of digital twin implementation	Digital twin is not fully implemented. JP Morgan Chase uses Tableau as a self-service analytics and data management tool, but not all functional system indicators are streamed digitally in real time	High level of digital twin implementation at Heathrow. Many functional system indicators (check-in, baggage tracking, flight schedules, weather, etc.) are digitized and processed in near real time using Power BI and Azure services	High level of digital twin implementation at KazanExpress. Yandex DataLens integrates with multiple data sources, enabling management of key metrics and real-time geoanalytics. Full live monitoring of current data and business process statuses is implemented (e.g., warehouse stock, returns, user actions)
Use for quality management (KPI)	Analytics of customer metrics (call centers, website) and business data are used to assess efficiency and customer experience	Airport performance indicators (queues, passenger movements, flight operations) are visualized and reported clearly to monitor management quality	Real-time monitoring of key metrics, product quality control, and prompt response to issues are applied
Use for strategic management	Platform supports strategic decision-making, improves customer relationships, identifies target campaign audiences, and launches new products	No direct indication of use in strategic management	Strategic data analysis and visualization support network expansion, client segment processing, and trend identification
Use for resilience management	No direct indication of use in systemic dynamics analysis or resilience management	Power BI helps teams proactively respond to potential disruptions and sudden changes in passenger flow	No direct indication of use in systemic dynamics analysis or resilience management

Source: compiled by the authors.

This case demonstrates how well-planned BI implementations can significantly improve supply chain management. Such positive examples are especially important for Russian enterprises aiming to increase their competitiveness in the market.

Prospects for the Implementation of Digital Platforms in Supply Chain Management by Russian Companies

The case discussed above confirms that the adoption of digital innovative technologies in supply chain management represents a significant advantage for domestic companies in terms of improving business processes and achieving sustainable development amid contemporary challenges. Key factors for the successful application of these technologies include a strong focus on data quality, a well-developed infrastructure for data processing, and integration with local solutions — often necessitated by the constraints of sanctions policies.

The examples of foreign companies further illustrate the critical importance of selecting platforms that align with the specific business requirements and enable rapid innovation deployment. This, in turn, substantially enhances operational efficiency and accelerates the implementation of solutions. Enterprises find it easier to perform integrations based on predictive analytics and increase information accessibility to a broader range of users.

Let us now compare the extent to which the areas of managerial innovation identified in our proposed model (see *Fig. 3*) are realized in each of the studied cases (see *Table*).

The data indicates that, in each case, many but not all capabilities of the digital platform are realized. This shortcoming —an incomplete fulfillment of digitalization potential —is largely explained by the specifics of each company's activities and the priorities set by its management.

For example, Heathrow Airport deals with extremely complex and vulnerable supply chains, which, due to the nature of its business (involving numerous stakeholders — airlines, ground transport, service providers, passengers, etc.— and high risks of unplanned disruptions), cannot be reliably shielded. Therefore, the airport uses its system, among other purposes, for systemic analysis. However, given its spatial localization (which is not typical for the other organizations reviewed), strategic analysis of digital flows is less relevant. Decisions such as building a new terminal or revising partnership terms tend to be made on an ad-hoc basis, relying on specially constructed models tailored to each case.

The choice of a platform should be driven not only by its popularity or the positive experiences of other companies but also by its ability to effectively address the tasks aligned with the company's business strategy in both the short and long term. None of the examined platforms include a built-in automated goal management system; therefore, digitalization should be preceded by analytical work on defining objectives and selecting corresponding digital indicators.

The reviewed examples demonstrate that the chosen digital solution must primarily be well compatible with existing functional services, both technically and in terms of staff training. Implementation typically occurs gradually, with different departments (and external users) joining the system as they become ready. This phased approach is especially critical for digital platforms in supply chain management, where seamless coordination of numerous functional units and external partners is essential.

It is evident that, with the exit of leading foreign companies from Russia, successful import substitution and integration of local solutions can become a crucial part of the long-term development strategy for many domestic enterprises. However, a particularly important factor in choosing a Russian platform is its ability to interoperate with already existing

digital solutions. In cases of partial or complete incompatibility, preliminary efforts may be required to resolve these issues. Such risks must be assessed in advance, as their unexpected occurrence could paralyzeorganizational operations for an unpredictable period.

CONCLUSIONS

This study analyzed both existing theoretical approaches and practical experience in implementing modern digital platforms in supply chain management. The article demonstrates that contemporary digital technologies, by consolidating information about various functional (operational) business processes into a unified system, enable a shift from operational logistics to a broader context of supply chain management. The authors propose a model that reflects the role of digital platforms in this process. Such platforms facilitate the creation and visualization of complex sets of metrics aligned with sustainability and development goals, characterizing supply chains as dynamic systems. However, existing digital solutions lack an autonomous management apparatus (designed to achieve company goals), although the most advanced platforms allow for such tools to be added as extensions.

It is clear that necessary conditions for successful digitalization include the enterprise's prior planning of a system of goals and indicators (which will configure the analytical tools of digital platforms), as well as a clear understanding of the distinction between implementing innovative technology, deploying a digital platform, and realizing managerial innovations based on it.

The greatest benefits of digitalization lie not merely in changing information transmission methods within the company, but in the potential adaptive restructuring of management technologies as analysts and managers at various levels gain proficiency in using the digital platform.

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ABOUT THE AUTHORS

Ivan G. Kamenev — Cand. Sci. (Econ.), Assoc. Prof. of the Higher School of Management, RUDN University, Moscow, Russian Federation
https://orcid.org/0000-0002-5110-5246
kamenev-ig@rudn.ru

Dmitry A. Porohovnik — Postgraduate student of the Higher School of Management, RUDN University, Moscow, Russian Federation; Product and Project Manager at Yandex.Lavka (development of robo-delivery), Moscow, Russian Federation
https://orcid.org/0009-0001-5909-3294
Corresponding author:
1142230687@pfur.ru

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Methodological Aspects of Data Management at the Enterprise

E.N. Sheremetyeva, A.K. Adgizalova, Yu.G. Popov
Samara State University of Economics, Samara, Russian Federation

ABSTRACT

This article explores the formation of a unified methodological framework for data management within modern enterprises. The **relevance** of the topic stems from ongoing changes in economic and social structures, driven by digital transformation and the increasing importance of information as a critical resource. Data is now recognized as one of the most valuable assets in contemporary business. Companies striving not only to achieve their business objectives but also to ensure long-term, sustainable market performance face the urgent need to develop tools and workflows for managing data of varying quality and formats. The **aim** of this study is to examine both fundamental and forward-looking methodological aspects of data handling and to identify the key characteristics of this process. Data management — across its many forms, as discussed in the article — is conceptualized as a comprehensive system based on a digital model that supports the effective operation of businesses in the face of new technological implementations. The authors identify the structural elements of such a system and highlight the interdependence between the development of methodological approaches to data management and the broader digital transformation of companies. The research methodology includes analysis, deduction, and analogy. The findings may be of interest to both domestic and international researchers for further study in the field of enterprise data management methodology, to business professionals seeking to optimize their data management strategies, and to students and postgraduate scholars studying enterprise data management.

Keywords: data management; information society; digital transformation; methodological aspects of data management; data management system; information resources of the enterprise

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INTRODUCTION

The era of digital transformation generates a growth of relevant issues related to building a data management system in enterprises. It occurs largely due to peculiarities of the social progress and the transition to the information model of society, where information becomes the main resource and the driving force of further development [1].

The growing necessity of data solutions for modern companies requires the creation of tools dealing with data management, as well as the formation of complex methodological aspects. Data management becomes an indispensable condition for achieving high efficiency of business operations and its strategic goals, as well as for maintaining market competitiveness.

In a rapidly changing world, it is not enough just to introduce digital tools into the enterprise management system. Their management faces serious problems, often related to the structural reorganisation of business processes, in view of modern socio-economic phenomena [2].

In recent years, new tools have appeared in the field of digital transformation (their number has increased more than 20 times), most of which related to data management. Firstly, the issues of methodological support of this process are related to a significant increase in the importance and value of information for successful operation of companies. For example, currently the proportion of entities, which actively operate with data analytics to optimise core business processes, has grown from 60 to 82 per cent and it continues to grow.[1]

Secondly, the relevance of considering these problems is confirmed by the general course of development of the domestic economy aimed at the transition to the information economy. In this regard, it should be noted that the timeliness of scrutinising this issue is related both to the implementation of processes of comprehensive digitalisation of modern business, as well as to the reorientation of the country's economy to ensure the formation of a system of management of basic processes by means of the use of a global digital ecosystem of various types of data.

It is impossible not to mention the importance of the approval and implementation of the national project in the field of transition to a digital domestic economy, which is a data economy.[2] With the rapid development of digitalisation and the introduction of various digital management tools, it is logical to move from the partial application of elements both economic and information data management to the widespread use of a fully formed system for this purpose.

The objective of the research was to study the peculiarities of the methodological support of the modern enterprise management process based on information and economic data, to form a new approach to determining its structure and stage, as well as to develop the author's definition and approach to the implementation of this process in enterprises. In the course of the research, the procedure of implementation of data management elements in the everyday practice of business, which functions within the framework of the implementation of the new national project "Data Economy".[3]

It is important to point out, that these issues are mostly analysed from the point of view of the main activity of the enterprise, however, its close interrelation is traced with the IT sector. For example, the transition to a new management format is impossible without prior preparation, including the digitalisation of business processes and the consolidation of the information received into a single format. This is necessary for further

[1] Data Management. Data Management. TAdviser. 06.10.2024. URL: https://www.tadviser.ru/index.php/Статья: Управление_данными_(Data_management).

[2] National project "Data Economy and Digital Transformation of the State". URL: http://government.ru/rugovclassifier/923/about/

[3] National project "Data Economy National projects of Russia. URL: https://национальныепроекты.рф/new-projects/ekonomika-dannykh/

processing, storage and use aimed to achieve the company's objectives.

RESEARCH METHODOLOGY

Scientific methods of deduction and analogy were used to research economic and other data related to management, which characterise modern businesses, as well as methodological support of this process. In the course of the research, theoretical information on the real practice of data management in the company was collected and scrutinised, the information obtained was analysed and processed, in particular:

The main aspects of the formation of the data management system in the enterprise were analysed, as well as the structure of the key elements forming the structure of the company's business process management based on the received data, as well as styles and approaches to their management. In addition, the main business processes related to the development of the information management system were studied.

Comparative analysis. In order to identify further prospects for the development of business process management, the main tools ensuring the effectiveness of data management in the company were analysed and compared; the differences between information management styles were identified.

The result of the research was the formation of the author's approach to the process of methodological support of business data management, as well as conclusions about the state of business processes and peculiarities of their management.

The information base was the scientific works of domestic and foreign authors, periodicals, regulatory and legal acts, as well as research and information on real business practice related to data management and the creation of a system for implementing this process.

It should be noted, that during the research work the authors of the article took into account and observed scientific principles of objectivity, verifiability, representation and generalisation.

RESULTS

The concept, characteristics and current state of business data management

For any successful company, data is becoming an increasingly valuable resource that requires not only careful processing and structuring, but also the formation of a full-fledged management methodology.

A real threat and serious problem today is cybercrime. The interest of criminals in confidential information is constantly growing, since today it serves as a full-fledged source of information about business processes and technologies of a company, its financial results, employees, and so on.

This situation largely determines the importance and necessity of creating an effective strategy for working and managing data. This becomes a real direction of development of modern business management, which represents a proactive activity of companies to develop a policy on introduction and use of a set of rules for handling information arrays. Clear compliance with data handling policies should be required from both employees and managers of each company.

Such an approach will not only ensure that companies maintain a stable and relatively high level of confidentiality protection, but it will also allow them to demonstrate high levels of efficiency and financial health.

For instance, according to statistics, the market for business process management of modern enterprises based on information and statistical data will grow to 11.84 billion USD by 2028 at a compound annual growth rate of 12 per cent,[4] and information management will increase the efficiency of companies by an average of 70 per cent.[5]

Before considering issues related to providing a methodological basis for data management in modern business, it is necessary to clarify that at

[4] Statistics of business process management. Next Consulting. 13.01.2021. URL: https://nextconsulting.ru/articles/statistika-upravleniya-biznes-processami

[5] Ibid.

the enterprise level it represents the totality of information collected and processed for making managerial and strategic decisions. It can be both operational (namely, the information obtained by the company directly in the process of its functioning) and analytical, representing the results of any research.

Setting up a data management system in a modern company is a rather long and complex process that involves significant financial and labour costs. However, it is important to note, that the possible damage to the company's reputation and condition can be much more serious than the money spent.

For creating and implementing an information management methodology, it is imperative to consider a number of specific features, such as the following:

- Defining the objectives of policy formation and rules of data management in the company.
- Informing persons regularly, if they are interested in the development and updating of the system of working with databases.
- Clear distribution of tasks and areas of responsibility among those involved in the development of methodological aspects of data handling in each individual enterprise.

It is important to note, that the majority of modern companies, despite the growing importance of data and their allocation as a separate group of resources, do not have an information management system (as opposed to financial or labour management). Nowadays, according to statistics, only about 1 per cent of organisations have a sufficient level of control over their production activities based on economic data.[6] Undoubtedly, this is an extremely low indicator, which manifests the inability of modern business to fulfill completely the potential and initiatives of digital transformation.

It should be emphasized, that when laying the foundations of the company's data management, it is necessary to solve a number of urgent tasks, including the following: handling the quality of information in accordance with the norms and standards accepted in the company, managing the life cycle of data and ensuring uninterrupted access to it by involved parties, as well as implementing other business processes related to dealing with information. At the same time, the main issue is to ensure the most effective use of data to achieve the strategic and operational goals of the organisation.

The current state of corporate information data management processes and possible prospects for further development of this area of management are represented by maturity levels, which can be identified through a comprehensive assessment. This involves analysing all the methodological aspects and elements of data management, both individually and in aggregate.

Let us consider in details the main maturity levels of data management systems in modern companies:

1. The lowest (zero) level is manifested by the complete absence of such a system (and its individual elements) and, as a consequence, the prospects and opportunities for its further development.

2. Initial level manifests the process, when information management is spontaneous and, as a rule, depends on the level of knowledge and skills of specific specialists and employees of the IT department. This level is characterised by inefficient and weak data handling, poor data quality and lack of control systems, as well as the use of limited and often outdated management tools.

3. Repeatable level (assuming the presence of still weak presence of discipline and systematic approach) manifests the presence of both the elements of a data management system and the operational tools, which are aligned with the flow of common business processes. In addition to this, this level represents an increasing emphasis on information quality, as well as a high level of information security and confidentiality.

[6] Ibidem

4. Established level of information management manifests creation, implementation and the use of standardised information for handling documents. It becomes more than just information received by the organisation, but acquires the status of a valuable resource that can and should be managed effectively (by means of the implementation of automation and digitalisation processes) in order to achieve business goals and ensure a high level of competitiveness in modern markets.

5. Managed level of maturity is based on a well-developed system to implement measuring, as well as various characteristics of data closely and continuously monitored. This level implies a full centralised planning of information gathering, risk management in this area and regular improvement of the quality of data used to achieve business objectives.

6. Optimised level of data management implies the assessment of the role of handling information with the aim to reach the company's key strategic objectives.

Enterprise Data Management System

It is possible to evaluate maturity levels of the data management system within a particular company both by using common and well-known business methods and tools (for example, Data Management Maturity Assessment). Besides, such assessment is possible by means of the company's own practical and theoretical developments, which also allow estimating the real state of affairs in the field of working with and managing information.

The creation of such a personalised assessment methodology enables the implementation of an expert approach to the identification of management fundamentals through the creation of an author's assessment chart. Such methodology helps to assign and manage expert points for each specific methodological aspect of work with information data of the enterprise (*Fig. 1*).

In order to make this process to become more effective (which not only requires enormous human and material resources, but also produces visible results), its individual methodological

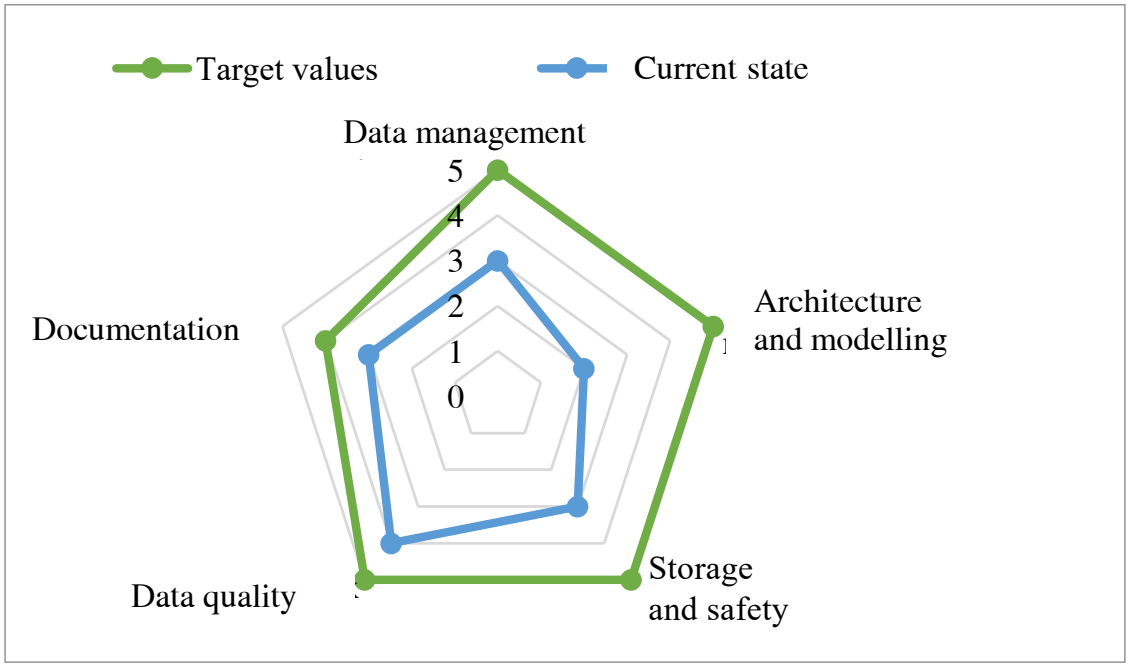

Fig. 1. **Example of Expert Assessment of Maturity Level of Information Data Management**

Source: compiled by the authors.

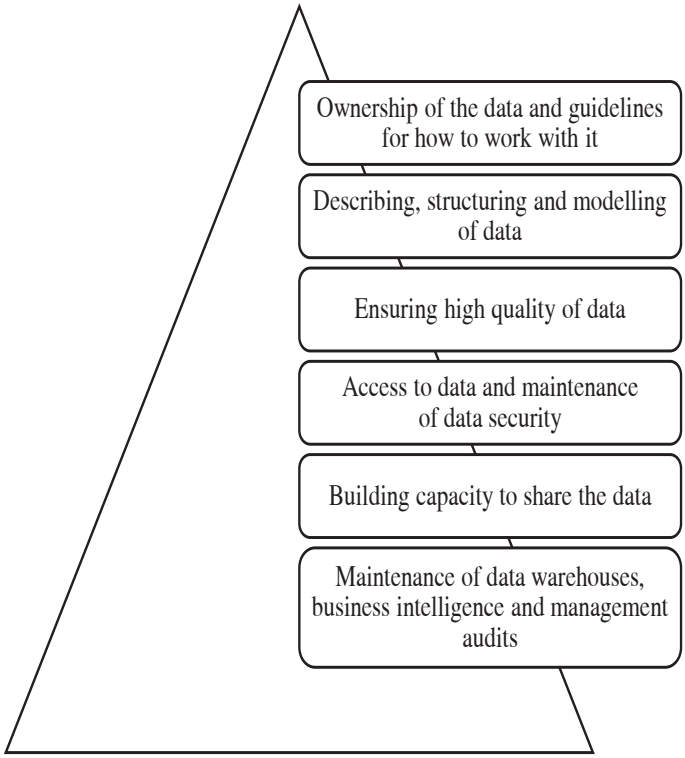

Fig. 2. **Structural Elements of Data Management System in an Enterprise**

Source: compiled by the authors.

aspects must be integrated into an overall system (*Fig. 2*).

Its elements can be viewed as a structure, which determines the management of business processes based on both analysis and current information. During the research work, the authors have revealed that the set of management elements for each particular enterprise is specific and unique. It is necessary to take into account for its formation the specifics of the enterprise, the branch of its functioning, the scale and peculiarities of business processes [3].

In view of the concept mentioned above, the authors of the article have identified several key styles of data management based on the study of theoretical materials and practical experience of modern business functioning (*Fig. 3*).

In order to choose one of them, the management of the company should take into account not only its peculiarities and features, but also the cost of developing and implementing the data management system, market development trends, external threats, as well as the

Register style	• Assumes strict algorithms for data cleansing, identification of business information • Suitable for entities that use multiple data sources to implement business processes
Consolidation style	• Combines sepqrate business process into a "golden data" record to ensure implementation of efficient business process • Enables data for business analysis
Implementation style	• Data from various sources processed in real time to help managerial decisions • Simplifies business analysis and reporting
Centralised style	• All business process data stored in a central hub, which reduces errors to minimum • All enterprise systems linked to a central hub where data is concentrated

Fig. 3. **Main Data-driven Business Process Management Styles**

Source: compiled by the authors.

Table 1

Principles of Methodological Data Management in an Enterprise

Management principles	Brief description
Principle of ownership	It is mandatory, that a certain employee is responsible for the state of the business information data.
Principle of description	The data in the company must be systematised in compliance with its characteristics and purposes of use.
Principle of quality assurance	The information data must be of high quality for business tasks solution.
Principle of accessibility	The information should be - always accessible to different users; - protected from losses.
Principle of sharing	The information should be stored in a form that is always accessible to different users.
Principle of control	Data management should be comprehensive, bearing in mind of its specificity and uniqueness.

Source: compiled by the authors.

company's corporate structure and strategic objectives.

Methodological aspects of the enterprise's data management system

The basic elements of the enterprise's methodological data management system (including some various approaches to its implementation) depend on a number of principles, as well as on characteristics, some of which are presented below in detail in *Table 1*.

Following the principles listed in *Table 1* ensures the functioning of a full-fledged management system. The components of the system include not only complex work directly with information data, but also the development of its architecture, the use of processes and tools (including digital) to achieve a high level of data quality and security, as well as the organisation of its storage and transmission.

Data management models of modern enterprises

In its most general form, data management models within a particular business entity become a set of interrelated technical, economic, social and legal elements.

For a more detailed definition of such models, below we shall consider effective approaches to their organisation:

- The hierarchical model reflects a way of organising data, which is structurally arranged from top to bottom, starting with the most significant level of information and ending with lower level elements unrelated to each other.
- The network model of data management also implies the separation of information elements by their level. In this case, the data has a closely linkage in itself and forms a network of business information.
- The relational model is aimed to systematise information in a table format that provides both the most convenient and rapid access to information and centralised data storage.

In addition to those presented above, we note the effectiveness for business of operational models of data management, which unite specific subjects, namely, participants of business pro-

cesses and procedures, the coordinated functioning of which allows to achieve the strategic goals of the enterprise through productive work with information and its qualitative processing.[7] Let us visualize the most common models of this type.

• Centralised operating model with a single data management centre and a person responsible for its operation.

• A hybrid-operating model that involves continuous coordination of data management processes and control over the functioning of decentralised information management entities (which regulate the business processes of the enterprise).

• A federated operating model that provides an additional level of hierarchy within information data management.

Improvement of the information management system (as the most important direction of modern business development), as well as selection and further introduction and application of a certain model for this purpose (i.e. meeting all goals and needs of each particular business entity) should begin with the assessment of the current state and real capabilities of enterprises in this area.

Stages of formation of methodological aspects of data management

The activity of companies is based on the implementation of various business processes related to organising collection, processing, storage and subsequent use of information data to achieve their strategic goals and, if necessary, the elimination of irrelevant information and its digital footprint [4] (*Fig. 4*).

Here we explore the most significant stages of implementation of data management related to information management methodology in the enterprise.

The process of data management in a company always starts with identifying the need for data. Firstly, for further work, it is important to determine the typology of data, which is required to achieve a particular company objective or to improve the efficiency of its business processes. Secondly, it is essential to describe clearly the sources of information and the criteria for assessing their quality [5].

The process of data management in a company always begins with a step such as identifying the need for data. For further work, it is important, firstly, to determine the typology of data required to achieve a certain goal of the enterprise,

or to improve the efficiency of its business processes. Secondly, it is essential to describe clearly the sources of information and the criteria for assessing their quality [5].

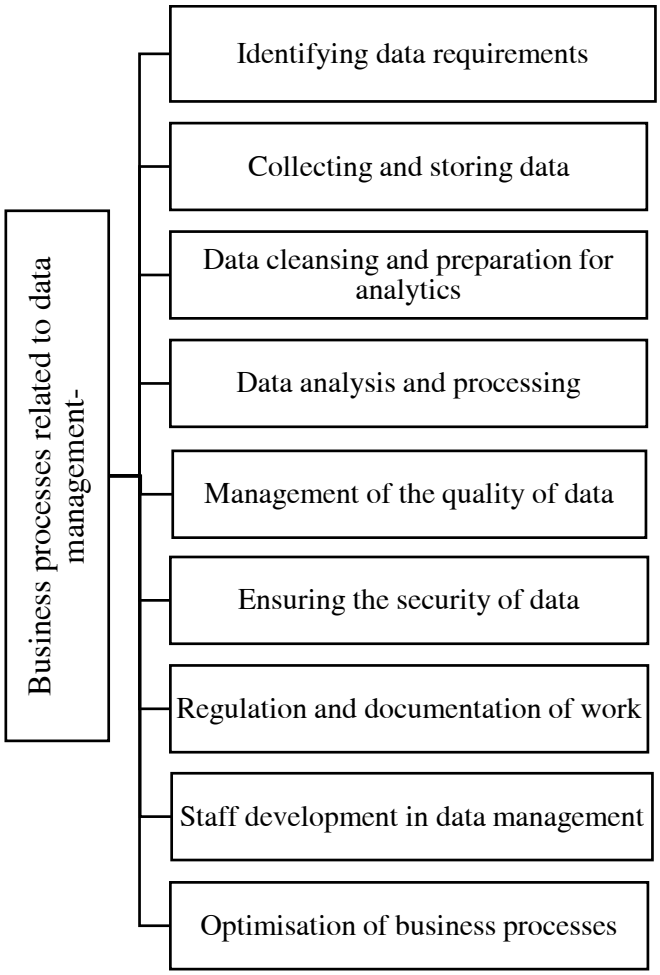

Fig. 4. **OKey Business Processes Related to Organizing Data Management in a Modern Enterprise**

Source: compiled by the authors.

[7] National Standard of the Russian Federation "Reference Model of Data Management". URL: https://gostassistent.ru/doc/bdb97915–1db4–4afb-bf14–3ca21f06637f

Having identified the need to obtain certain data for the development of the company's activities, the task of the management system is to organise the processes of collecting and subsequently storing the required information. It is particularly important to set up a list of data sources, both external and internal. In addition, it is necessary to select the most optimal method for each particular business entity to obtain the necessary information, as well as a reliable, secure and scalable method of storage [6].

One of the most significant stages of data management is its preparation, thorough analysis and processing, which primarily involves correction of errors and data integration, namely, bringing different types of data into a common format.

As for data analysis, the approach to this process requires the choice of the most effective method and tools for its implementation. It is worth mentioning that the most relevant and productive digital tools are developed on the basis of indigenous software which supports a high level of confidentiality and privacy [7].

Data processing being the most important part of working process with information for the management of modern enterprises as a whole, which also includes, among other things, the interpretation of the obtained results in an accessible and convenient form for making managerial decisions [8].

The following stage is data quality control and data security. The most essential methodological element of such activities becomes the generation of an all-round standardisation system of the quality of information received and subsequently used, which is manifested in the development and implementation of specific regulations and standards that correspond to the requirements and strategic objectives of the company. These documents also include the documentation of all data handling operations in accordance with a standard template.

Regular monitoring of the quality of information and its adjustment ensure the maintenance of the company's market reputation and increase its competitiveness [9].

A specific role in the methodical system of data management in the enterprise is performed by information security and the guarantee of data confidentiality. This includes the development and implementation of measures to protect the data from cyber hazards, as well as ensuring compliance with legislative acts in the field of information security [10].

Besides, it should be noted, that due to unstable and complex economic situation both in Russia and abroad, one of the top priorities becomes a further development of protective measures to ensure security of a company's data. In particular, the leakage of any confidential information may have dramatic consequences for the company and the socio-economic system as a whole.

Another no less important methodological aspect of information management is activity related to the development and training of the company's employees. In current situation, employees are required to improve their skills constantly and competences in this area [11], which leads to positive results on the functioning of the company in the market environment as a whole.

Finally, data management involves permanent analysis of the modern business processes of the enterprise to reveal shortcomings and adjust them. It also needs to implement activities aimed at developing and introduction of innovative technologies that enable to multiply not only the efficiency of the functioning of the business entity, but also its level of digitalisation, which is especially relevant in the modern conditions [12].

Nowadays, in order to operate successfully and maintain a high efficiency of competitiveness, companies must constantly maintain and develop their capabilities in the field of collecting, storing, processing and other operations related to information data, as well as actively optimise and improve analytical work.

Companies should get adapted to changes in the external environment, as well as be guided

by the updates to legislation and the increasing role of state regulation in issues pertaining to information management.

In the course of the research work, the authors of the given article have analysed business processes of modern domestic enterprises related to the management of economic and information data, as well as also determined the most effective and promising directions of their development (*Table 2*).

Structure of the transition to modern databased business management

As a result of the authors' study of the main aspects of the formation of the system and methodological support for the management of business processes of enterprises based on data management, the latter was defined as a complex process involving several of the most important areas of business functioning, namely:

- its financial situation, technical and technological level of development;
- the level of training and qualification of the personnel;
- the company's level of maturity in terms of working with data.

At the same time, an essential factor is to determine the current state of digital transformation of production processes.

Effective data management requires not only following the patterns of data management system formation, which was mentioned above. It also indispensable to develop a strategy that includes both the business model of enterprise management (in view of the trends of digital transformation of social and economic spheres) and a comprehensive approach to work with data for eliminating the problem of different information resources.

The authors of this research work have developed the sequence of implementation for the

Table 2

Promising Directions for the Development of Data-driven Business Management System

Direction of development of business management based on data	Brief characteristics	Data management tools and technologies
Database Management Systems (DBMS)	A comprehensive tool for operating Big data to ensure its safe storage as well as fast and safe access to it for making an effective analysis.	Oracle Database, PostgreSQL, MySQL, MongoDB, SQLite
Cloud platforms	They are a tool for storing, processing and analysing data, providing a high level of data availability and reliability.	Yandex Cloud, VK Cloud, Cloud.ru, Selectel, Amazon Web Services (AWS), Microsoft Azure, Google Cloud Platform (GCP)
Data analytics and visualisation tools	They enable complex analytics and data visualisation, as well as automation of information analysis processes	Python, R, SQL, Tableau, Power BI
Machine learning and artificial intelligence	They enable automated data analysis and forecasting, as well as more informed management decisions.	TensorFlow, scikit-learn, IBM Watson

Source: compiled by the authors.

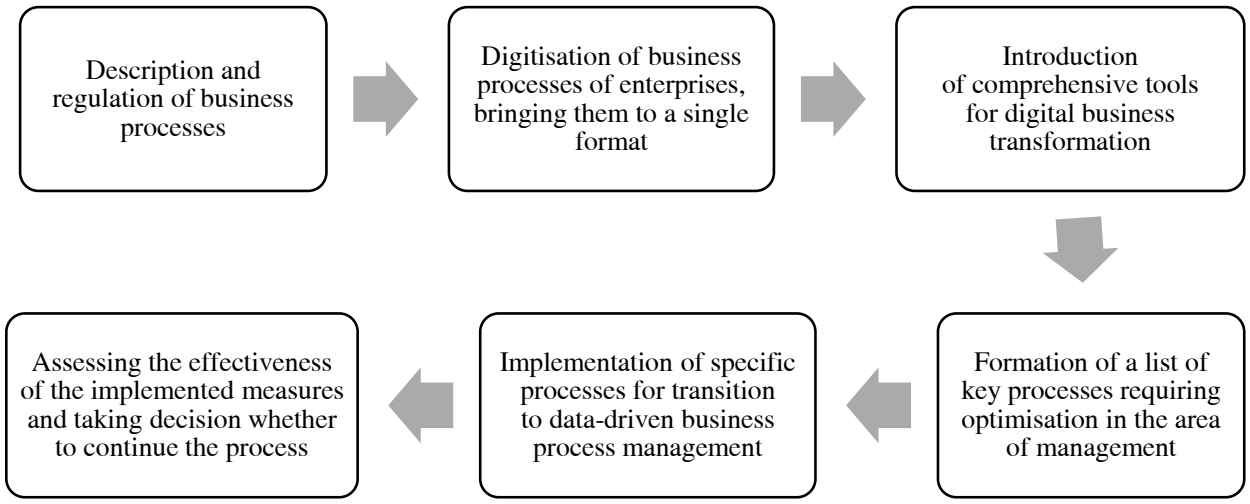

Fig. 5. **Structure of Transition to Data-driven Business Process Management**

Source: compiled by the authors.

principles of business process management based on work with information. This concept structure is presented below in *Figure 5*.

The principal advantage of the presented concept structure is its comprehensiveness, which implies coverage of the entire enterprise and coordination of key business processes. This in turn envolves the main objective of enterprises, which consists in effective and efficient provision of quality products and services to consumers at competitive prices. A characteristic feature of the transition to the management of the organisation's activities based on data management is the integration of technological, organisational and managerial, as well as theoretical and methodological components of business.

DICUSSION

Methodological aspects of information management at a modern enterprise seem to be an interesting research study. Currently, there exist several approaches to its consideration and evaluation. At the same time, the development and implementation of any methodological recommendations for operation with data in companies has become a fairly new problem conditioned by the rapid development of digitalisation in various sectors of economic activity. Besides, it occurs at a new phase of social development related to the constant generation and consumption of information data.

These issues have not yet been widely covered in the works of domestic and foreign researchers. Nevertheless, it is worth pointing out a number of scientific works, the authors of which have made a significant contribution to their consideration.

Thus, A.I. Repichev and H.M. Musaeva provided a detailed description of the data management process and its elements [13]. E.S. Filatova analysed in details in her comprehensive study such an important aspect as the culture of working with economic and information data [9]. The scientific research work of L.I. Zinin and L.I. Efremov [14] made a significant contribution to the formation of theoretical foundations of approaches to the management of companies' information system. The publication of Y.M. Lisetsky is also noteworthy due to consideration of an integrated approach to data management as a necessary resource of modern business [15].

Finally, it is noteworthy to mention separately the importance of the scientific research work of E. Sh. Shaimieva, G.I. Gumerova, I.S. Pleshanov and R.R. Garayeva, who studied the issues of com-

prehensive transformation of the domestic socio-economic system based on data management [16].

It should be noted, that the topic discussed in the article is of interest not only for scientists, but also for business industry representatives, consulting and analytical associations, as well as for specialists of various levels in the field of management, information technology and economics. They regularly publish reviews and studies on these issues.

Summarising all the undoubted advantages of managing the business processes of modern companies based on data management, it is impossible not to mention a few problems, including the inadequate content of information data. It affects the efficiency of analytical processes, as well as leads to problems in selecting optimal methods and tools for modelling production activity, which arise due to the variety of methods and operating-systems tools of information.

According to the results of the research devoted to the consideration of methodological aspects of information management in the enterprise, we can draw the following several conclusions.

First of all, in today's reality, information becomes not only a valuable resource of enterprises, but also a truly necessary factor of effective and profitable business activity, as well as the instrument to maintain a high level of competitiveness in a complicated foreign policy situation [17].

Secondly, working with information data, which has become obligatory for every company, cannot be carried out in a chaotic way. Like any business process, it must be regulated and well structured. This undoubtedly requires modern business entities not only to allocate material and physical resources, but also to organise methodological and structural elements of data management.

It can be determined, that nowadays, the basis of successful data management is directly the formation of its methodological aspects, which are a set of stages and elements aimed at regulating and managing the life cycle of information in the enterprise, as well as its effectiveness [18].

The considered approaches to the formation of the data management system, which served as a basis for the author's structure of business process management of enterprises based on data, can be effectively used for further theoretical research, as well as for improving the practical activities of modern enterprises.

CONCLUSIONS

In accordance with the results of the current research devoted to the consideration of methodological aspects of information management in the enterprise, the authors of the article are able to draw the following conclusions.

Firstly, in the current reality, information becomes not only a valuable resource of enterprises, but also a truly vital factor of effective and profitable business activity, as well as the mean for maintaining a high level of competitiveness in a complex foreign policy situation [17].

Secondly, the work with information data, which has become mandatory for every company. It cannot be fulfilled in a chaotic way. It must be regulated and well structured, like any business process. Undoubtedly, it requires modern business entities not only allocate material and physical resources for it, but also organise methodological and structural elements of data management.

It may be said, that nowadays, the formation of its methodological aspects has become directly the basis of successful data management. These aspects are a set of stages and elements aimed at regulating and managing the life cycle of information within the framework of enterprises, as well as its effectiveness [18].

The considered approaches to the formation of the data management system, which serve as a basis for the authors' structure of business process management of enterprises based on data, can be effectively used for further theoretical research, as well as for improving practical activities of modern enterprises.

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ABOUT THE AUTHORS

Elena N. Sheremetyeva — Dr. Sci. (Econ.), Prof. of the Department of Applied Management, Samara State University of Economics, Samara, Russian Federation
https://orcid.org/0000-0002-1855-7291
lena_sher@mail.ru

Anna K. Adgizalova — Postgraduate student of the Department of Applied Management, Samara State University of Economics, Samara, Russian Federation
https://orcid.org/0009-0006-6586-4039
Corresponding author:
frolovak99@list.ru

Yuri G. Popov — Postgraduate student of the Department of Applied Management, Samara State University of Economics, Samara, Russian Federation
https://orcid.org/0009-0001-9507-7822
9708088@gmail.com

Authors' declared contribution:
E.N. Sheremetyeva — scientific supervision, development of the general concept of the article.
A.K. Adgizalova — structuring of the article structure, identification of structural elements of data management in an enterprise, analysis of key business processes related to data management.
Yu.G. Popov — definition of data management principles at the enterprise in the context of digital transformation, formation of conclusions, analysis of information relevant to the research topic, and identification of problem areas in the data management processes of modern enterprises.

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Study of the Impact of 6G Technology on the Strategic Management of Mobile Network Operators

R.Yu. Umanskiy[a], V.O. Tikhvinskiy[b], T.A. Kuzovkova[c]
[a, c] Moscow Technical University of Communications and Informatics (MTUCI), Moscow, Russian Federation;
[b] Bauman Moscow State Technical University (BMSTU), Moscow, Russian Federation;
[b] Sevastopol State University (SevSU), Sevastopol, Russian Federation

ABSTRACT

The **objective** of this study is to analyze the emerging trends in the development of sixth-generation (6G) technology, to identify the key challenges and opportunities associated with the 6G era, including changes in mobile network operators' business models, revenue structures, and infrastructure requirements, and to assess the impact of full-scale 6G deployment on the transformation of strategic management models within mobile operators. The authors applied a comparative analysis **method**, examining priority development goals of 6G technology alongside statistical data on the evolution of mobile networks. The empirical basis of the research comprised analytical reports and forecasts from leading industry analysts, as well as expert interviews with representatives of Russian and international operators and research institutions specializing in 6G technology. The study's **findings** include the identification and systematization of priority objectives for 6G implementation in the context of the data economy; an analysis of the evolution of services provided by mobile operators during the transition to new technologies; and the formulation of fundamental approaches to changes in operator strategies. The **novelty** of the approach lies in the focus on 6G technology and the task of elucidating the interconnection between the necessity to transform operators' strategic management systems and the development and deployment of 6G. The authors also propose key recommendations for developing a transformational strategic management model for mobile operators. The **practical significance** of this study lies in offering scientifically grounded recommendations and tools to all stakeholders for successfully adapting to technological and economic challenges and opportunities associated with 6G network deployment, including those related to business development strategies.

Keywords: mobile network operators; 6G technology; development strategy; strategic management; digital services; data economy; transformation; innovation

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INTRODUCTION

The modern development strategy for mobile operators and the telecommunications industry as a whole should be based on the analysis of trends in the evolution of mobile networks and the prospects for the implementation of innovative technologies. In the context of the digital transformation of the economy of the Russian Federation and the implementation of national programs "Digital Economy of the Russian Federation"[1] and "Data Economy"[2] the study of the development of 6G networks, the commercial deployment of which is planned to begin in 2030, becomes particularly relevant. The latter are considered an evolutionary stage in the development of telecommunications technologies, aimed at overcoming the limitations of fifth-generation (5G) networks and ensuring a qualitatively new level of performance, reliability, and intelligence. Their use opens up opportunities for operators to provide an expanded range of services and solve tasks that are either unfeasible or economically inefficient in 5G networks.

At each stage of the development of the telecommunications industry, the change in technologies not only leads to changes in the composition and structure of digital services offered by operators to their users, but also has a significant impact on the strategic management of their activities. The potential restructuring of the technological paradigm may lead to the adjustment or global revision of operators' strategic development goals, the development and implementation of adapted or fundamentally new business models, as well as significant transformations in business processes and the organizational structure of the operators. Moreover, the transition to new mobile communication technology affects not only their activities and the industry as a whole but also stimulates the digital transformation of domestic enterprises and the country's economy.

FEATURES OF 6G TECHNOLOGY AND DEVELOPMENT COMMUNICATION SERVICES IN 6G NETWORKS

Investments in new telecommunications technologies in recent years have led to significant changes in society, transformed business processes, and increased the efficiency of various industries. Despite the fact that the development and implementation of technologies (from 2G to 5G) were accompanied by the emergence of new services, cost optimization, and increased productivity, operators faced challenges in revenue and profit growth [1]. In this regard, a key task in the era of 6G networks is to create new opportunities to overcome such negative trends associated with the decline in revenue and profitability growth rates, which have emerged during the implementation of 3G, 4G, and 5G technologies. The focus is on creating a new business model that ensures operators play a significant role in digital transformation, as well as increasing revenue and business margins. The solution to the task at hand requires the management of mobile service providers to have innovative thinking and strategic vision.

6G networks will become the defining technology for the development of mobile telecommunications. This statement is due to their significance as a key element of the digital economy infrastructure at both global and national levels. 6G networks will provide new functional and technological capabilities, allowing for the transformation of existing 5G network services into new innovative services. 6G operators, in turn, will play the role of not only communication service providers and in-

[1] National Program "Digital Economy of the Russian Federation". Ministry of Digital Development (official website). URL: https://digital.gov.ru/target/naczionalnaya-programma-czifrovaya-ekonomika-rossijskoj-federaczii

[2] National project "Data Economy and Digital Transformation of the State". URL: http://government.ru/rugovclassifier/923/about/

tegrators of comprehensive solutions but also catalysts for the development of various sectors of the economy, contributing to increased productivity and stimulating the digital development of society as a whole.

A comparative analysis of the main technological and functional parameters of 5G and 6G networks demonstrates the significant superiority of 6G network characteristics [2], which, being based on the "network of networks" concept, include terrestrial, aerial, and satellite segments and create the prerequisites for the implementation of breakthrough innovations, providing ultra-fast, reliable mobile communication with minimal latency. This will meet the growing data transmission needs of both businesses and end users, as well as open up opportunities for increased productivity and stimulate the growth of the digital economy. The implementation of 6G networks is expected to be a revolutionary step in the development of "internet of senses" networks, which engage vision, hearing, touch, smell, taste, and emotions to create fundamentally new applications and services. If 5G networks are primarily focused on cyber-physical systems and supporting enhanced mobile broadband (eMBB), massive machine-type communications (mMTC), and ultra-reliable low-latency communications (uRLLC), then 6G networks will provide a broader range of services designed to meet human needs as well as to address the challenges of Industry 5.0 in applying cyber-physical systems with human-like intelligence [2].

In particular, 6G networks will be able to provide users with the following main groups of services, significantly expanding capabilities compared to 5G technologies [2]:

1. Mobile broadband low-latency data transmission services (mBRLLC), characterized by high efficiency, reliability, and data transmission speed, which are crucial for the development of autonomous transport, telemedicine, augmented and virtual realities.

2. Massive ultra-reliable low-latency communication (mURLLC) services, which represent a combination of uRLLC and mMTC technologies from 5G networks and provide higher service quality when using the Internet of Things (IoT), automation of production processes, and implementation of smart city concepts.

3. Human-Centered Service (HCS) combines physical perception parameters with traditional service quality indicators to ensure a personalized experience.

4. Multi-purpose services (MPS), combining communication, computing, management, positioning, and power supply services, and requiring the simultaneous fulfilment of ultra-reliable and high-speed mobile communication, precise environmental sensing, and ultra-precise positioning conditions, which will contribute to the convergence of various technologies.

5. Artificial Intelligence (AI) as a Service. AI services can be provided to users on demand from external and internal applications.

The key capabilities of 6G networks, which will enable operators to solve new tasks compared to 5G, are presented in the *Table*. The fundamental difference of 6G is the multiple increase in data transmission speed — up to 1 Tbps.

The need to increase bandwidth is driven by the growing demand for applications and services that require the transmission of large volumes of data in real time, as well as the emergence of new use cases, including industrial IoT, "smart homes", "digital twins", and "smart cities". Users will be able to appreciate a significant improvement in the quality of video, audio, online games, and other multimedia services, take advantage of holographic communication, tactile internet, and intelligent automation.

The timeliness of data display and calculation, which determines the efficiency and functionality of modern systems, is directly dependent on the volume of transmitted in-

Table

Operator challenges that can be addressed with the implementation of 6G networks, but are difficult to implement in 5G networks

Development direction	Task	5G network capabilities	6G network capabilities
Holographic communication and teleportation	Transmit and display holographic images	Insufficient for transmitting and displaying complex holographic images in real time	Provides the necessary speed, latency, and bandwidth for full-fledged holographic communication and teleportation
Tactile Internet (IoS)	Transmit data on tactile sensations, smells, tastes, etc.	Limited capabilities due to delays and insufficient bandwidth	Allow the transmission of huge volumes of sensor data in real time
Extended reality (XR) with high resolution and low latency	Provide an immersive experience in XR applications	Provides basic XR support, but with limitations in image quality and latency	Open up opportunities for XR by creating applications with high resolution, low latency, and complex interaction with the virtual world
Autonomous Cyber-Physical Systems (CPS)	Manage critical systems (transportation, robots, medical equipment, etc.)	Provides CPS support, but do not always guarantee the necessary communication parameters	Provides ultra-reliable and fast communication for CPS, which will enable the creation of fully autonomous systems without human intervention
Smart spaces	Combine all sensors and devices into a single network for monitoring and managing the environment (smart homes, cities, factories)	Supports the connection of multiple devices, but does not provide the necessary connection density and energy efficiency	Provides support for a vast number of devices, high energy efficiency, and low latency for creating smart spaces
Quantum communication and cybersecurity	Ensure ultra-secure data transmission	Vulnerable to future threats	Through the integration of quantum technologies, the protection of confidential information and critical infrastructure is ensured
Development of “digital twins”	Create virtual copies of physical objects and processes for monitoring, analysis, and optimization	Provides the ability to collect data from sensors, but is insufficient for transmitting large volumes of data and quick feedback for managing digital twins in real time	Ensure the transmission of large volumes of data in real-time and ultra-low latency, enabling the creation of more accurate and interactive digital twins across various industries

Source: compiled by the authors.

formation. The implementation of 6G in industrial enterprises will enable real-time data transmission from a greater number of sensors, opening up prospects for both the optimization of production processes through cyber-physical systems with human-like thinking and the use of virtual and augmented reality in staff training and maintenance.

The demand for high bandwidth is also crucial for the effective functioning of the following systems: "smart home" (due to the increase in video resolution and the number of cameras, the emergence of new devices and services, as well as the increase in data update frequency from sensors); "digital twins" (for accurate modelling of physical objects, improved data visualization, and rapid transmission of information from sensors); "smart cities" (for collecting and processing large volumes of data, transmitting high-resolution video from surveillance cameras, managing traffic flows, and providing digital services); intelligent healthcare (for remote monitoring of patient conditions, remote consultations, and telemedicine); autonomous transport (for the prompt transmission of data from sensors and cameras to ensure safety).

Thus, the implementation of 6G networks will ensure the resolution of tasks that are difficult to achieve in 5G networks, thereby opening up new opportunities for operators in the following areas:

1. Development of fundamentally new types of services for users, including holographic communication, tactile internet, virtual reality, and autonomous systems.

2. Diversification of income sources through the monetization of new services, increasing average revenue per user (ARPU), expanding the customer base, and implementing integration services in the field of digital transformation for B2B[3] and B2G[4] sectors.

Increasing operational efficiency through the automation of business processes, optimization of network management, and reduction of operational costs.

Currently, a number of scientific works are exploring the trends and technological features of building 6G networks as an omnipresent intelligent system, as well as considering possible solutions for ensuring virtual reality, quality service, and efficient resource management [3–5]. As the basis for the conclusions, an analysis of the development concepts of 6G networks proposed by the world's leading developers and manufacturers of telecommunications equipment is used [6–10].

The results of the conducted research indicate the need for technological innovations, standardization of technologies, and preparation for the next technological stage of societal development. The success of the implementation of 6G networks will be determined by the market's readiness to adopt innovations and their economic feasibility.

ANALYSIS OF PRIORITY GOALS FOR THE DEVELOPMENT OF 6G TECHNOLOGY

The authors of this paper conducted an analysis of the key directions determining the development of 6G networks and reflecting the general patterns of social progress, taking into account the specifics of territorial technological zones (American and Asian). It was found that in the American technological zone, the priority goals for the development of 6G are[5]:

1. Promoting economic growth and social sustainability — addressing the issue of digital inequality by ensuring connectivity accessibility regardless of income level and geographical lo-

[3] B2B — business model in which the operator provides its services and solutions to other companies.

[4] B2G — business model in which the operator provides its services and solutions to government bodies, institutions, or enterprises.

[5] Mobile Communications towards 2030. A 5G Americas White paper. 2022. URL: InDesign_ compressed.pdf

cation. From the perspective of sustainable development, the emphasis is on the environmental friendliness of networks and devices, as well as the application of energy-efficient network architectures [11].

2. Harmonization of standardization and development of 6G within the framework of the 3GPP Partnership Project. This process aims to align the interests of manufacturers, regulators, and consumers, which promotes targeted research and development, as well as accelerates the implementation of innovations [11].

3. Creating new opportunities and applications for 6G by modernizing services, including telepresence with holograms and 3D media, the use of robots in various industries, and expanding the prospects of virtual and augmented realities [11].

The Asian technology zone is also characterised by three key priorities for 6G development[6] [12]:

1. Improving the efficiency of operators' businesses. 6G networks are seen as a factor capable of significantly changing the business model, opening up new opportunities for operators to diversify their revenue and increase profitability. The emphasis is on expanding opportunities beyond the traditional B2C model[7] towards B2B and B2G, providing businesses and government institutions with specialized services. Mobile operators will be able to offer infrastructure solutions for various sectors of the economy, such as transportation, energy, and agriculture, enhancing their efficiency through advanced technologies. The integration of 6G networks into diverse industries and areas of life will provide operators with new opportunities for growth and sustainable development.

2. Reduction of the total cost of ownership (TCO) of the network. The implementation of 6G networks involves significant capital investments in new equipment and infrastructure, necessitating a comprehensive assessment that takes into account technological, economic, and socio-economic aspects. Justifying such costs, as well as the feasibility of significantly increasing bandwidth, is an important task when planning the deployment of 6G networks.

The key factors in this case are:

- the use of the terahertz (THz) frequency range entails increased requirements for components (antennas, transceivers, amplifiers) and materials (including advanced metamaterials);
- the need for significant investments in research and development (R&D) to create new technologies, standards, and protocols;
- relatively small volumes of equipment produced at the initial stage, which leads to an increase in the cost price per unit of product;
- the need for new technologies and specialized personnel for the installation and maintenance of 6G equipment.

At the same time, it is assumed that the high initial cost of the required equipment will be offset by the following factors:

- increase in productivity and efficiency of business processes through production automation and reduction of costs in various sectors of the economy;
- development of new markets and services, driven by applications and services that were previously impossible;
- improvement of the quality of life through expanding access to social sectors such as education, healthcare, and others;
- stimulating innovative activities, mastering modern technologies, and creating jobs.

Thus, reducing TCO is a key factor determining the commercial attractiveness of 6G networks and

[6] Target Network NetX 2025: Technical Document. The model of the network of the future. URL: https://www.huawei.ru/upload/medialibrary/909/909d5ebb82ff8c1237b9abce6c9f2959.pdf; Communications of Huawei Research. 2022. Issue 2. URL: https://www-file.huawei.com/-/media/corp2020/pdf/publications/huawei-research/2022/huawei-research-issue2-en.pdf

[7] B 2C — business model in which the operator provides its services directly to end consumers, that is, individuals.

influencing the speed of their implementation. Achieving this goal requires a comprehensive approach, including:

- intelligent resource management and process automation based on machine learning (ML) algorithms, ensuring increased efficiency in network resource management;
- application of energy-efficient network equipment (including antennas and reconfigurable intelligent surfaces), virtualization of network functions, as well as the use of cloud technologies;
- effective use of the radio frequency spectrum through dynamic allocation and the development of new coding and modulation methods;
- shared infrastructure aimed at reducing the costs of building and maintaining 6G networks.

Thus, reducing TCO represents a multifaceted task that requires technological innovations, organizational changes, and a revision of business models. Its successful implementation will enable the creation of economically sustainable and competitive 6G networks, contributing to the development of digital services and enhancing economic efficiency.

Technological advancement of digital services in 6G networks. Integration of AI, ML, edge computing, and other advanced technologies to provide innovative services that meet the growing demands of the modern world.

Analysis of the priority development goals for 6G in various technological zones shows that, despite the common goal of technological development, the emphases differ: the American zone is focused on sustainable development, while the Asian zone is focused on increasing the economic efficiency of operators' operations.

THE IMPACT OF 6G TECHNOLOGY ON THE STRATEGIC MANAGEMENT OF OPERATOR ACTIVITIES MOBILE COMMUNICATION

The implementation of 6G technology necessitates the adaptation of operators' management systems to the new economic and technological conditions of the telecommunications market. It is evident that the strategic management of their activities will undergo significant changes during the deployment of 6G networks and the provision of a fundamentally new class of services. As a result, opportunities will arise to enhance interaction, automation, and efficiency across various sectors of the economy, which will serve as a stimulus for further digital transformation. In turn, 6G operators, by overcoming industry limitations and adapting their services and ecosystems to the future demands of networks and users, will become key drivers of these changes. The conducted analysis shows that the operators' management must ensure the transformation of strategic management in such key areas as:

1. *Business model of production and economic activities.* The change in the business model should be implemented in terms of increasing operational efficiency through the introduction of the entire set of innovations. This can be achieved through the use of 6G technology, as well as increasing revenue by specialising operators in projects aimed at both developing enterprises in various business sectors as integrators and scaling the unique customer experience obtained. For this, management must focus on creating a comprehensive digital platform solution for clients based on the operator, with the capability to implement digital transformation projects of any complexity.

2. *Joint implementation of partnership infrastructure projects,* involving the active integration of 6G in various sectors of the economy. This could stimulate investments in network development from enterprises and government structures, which would reduce the burden on operators. It is necessary to develop mechanisms and formats for mutually beneficial partnerships in this area.

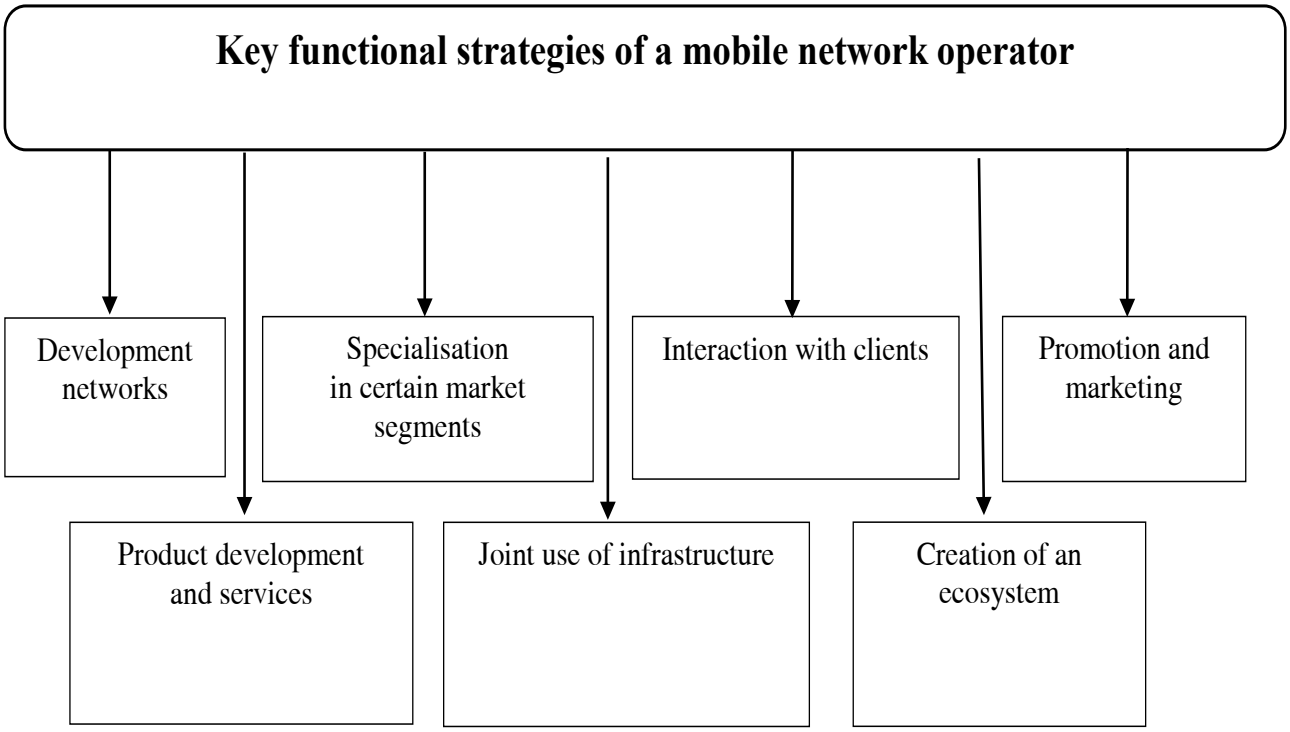

Fig. **Key functional strategies of a mobile operator**

Source: compiled by the authors

3. Development of new employee competencies. The implementation of 6G and the execution of joint projects with enterprises will require mobile network operators' personnel to acquire new competencies and skills in integration, consulting, and engineering. Being experts in their field, operators will be able to become digital leaders, gain a competitive advantage, and secure new sources of revenue.

To implement the listed directions, it is necessary to analyze the transformation of the existing strategies used by operators. If at the initial stages of the industry's development they were focused on creating and growing the business, expanding the subscriber base [13], then in the 6G era, operators need to independently determine the main type and concept of their further activities, taking into account the accelerating pace of innovations that are changing business processes and business models [14].

The *Figure* in block form presents several key functional development strategies of operators that they use in their current activities, but which will undergo the most significant transformation with the implementation of 6G networks.

Let's examine them in more detail.

Network development strategy. The evolution of mobile networks from 2G to 5G was primarily characterized by an increase in bandwidth and an expansion of coverage areas. However, with the onset of 6G network deployment, the focus shifts from simple scaling to creating an intelligent, self-optimizing infrastructure capable of supporting ultra-high data transfer speeds, ultra-low latencies, and providing an enhanced level of security.

Instead of extensive construction of base stations, operators will need to create adaptive networks that dynamically respond to changes in traffic, user needs, and external conditions. This necessitates the implementation of advanced technologies for automating and optimizing management processes, including AI,

ML, and Edge Computing[8]; the development and implementation of new methods to protect the network from cyber threats, including quantum technologies and advanced encryption algorithms.

Strategy of specialization in specific market segments. In the history of mobile communication development, operators often employed a specialization strategy, focusing on specific market segments (youth, corporate clients, specialized groups). This approach allowed for a deeper understanding of the target audience's needs, fostering loyalty, and achieving high margins. However, the implementation of 6G networks entails a transformation of the specialization strategy in terms of moving beyond traditional segments and focusing on creating comprehensive ecosystem solutions for digital transformation across various sectors of the economy.

Instead of providing basic communication services, 6G operators will act as integrators, combining various technologies and services to solve specialized enterprise tasks. For this, a deep understanding of industry specifics, as well as staff competencies in AI, ML, and other advanced technologies, will be required. The use of AI and ML will enable operators to develop and implement digital transformation projects aimed at improving operational efficiency, reducing costs, enhancing product quality, and creating competitive advantages for enterprises. In the context of the deployment of 6G networks, active development of the B 2G services segment, focused on solving state-level tasks (security, development of space communication, etc.), is also expected.

Virtual network operators (MVNO) play a special role in implementing this strategy. They provide mobile communication services without using their own infrastructure, which ensures flexibility and the ability to focus on specialized niches. Analysis shows that the implementation of 6G networks will have a significant impact on the development strategy of MVNO operators due to:

1. Increase in demand for their services due to the development of IoT and M2M.[9] MVNO operators will be able to offer specialized solutions for various industries (smart cities, healthcare, transportation, agriculture), while large operators will be unable to fully meet all market needs.
2. Fundamentally new opportunities for providing customers with personalized intelligent services with flexible tariff plans based on telecom platforms as a service model for business development due to the implementation of 6G networks with more efficient spectrum utilization capabilities, increased data transmission speeds, minimal latency, and integration with AI and ML. Thus, the services of MVNO operators based on augmented and virtual reality will become relevant for the education sector, healthcare, and other industries, while services using AI and ML will be used for analyzing user data and adapting to their personal requests and preferences.
3. Development of cooperation and partnership based on an ecosystem approach. Integration with a wide range of technology companies, device manufacturers, content and application providers will enable MVNO operators to create new value for customers and ensure revenue growth.

Thus, operators who successfully adapt to these changes and acquire unique specialization will be able to achieve sustainable growth and take leading positions in the telecommunications services market in the 6G era.

Customer interaction strategy. The evolution of such strategies in mobile communications reflects the technological changes that occurred at each stage of development. If in 2G-4G net-

[8] Edge Computing is a distributed computing model where data processing is performed near the source of the data, rather than in a centralized cloud or data center.

[9] M2M (Machine-to-Machine) — is a technology that ensures automated data exchange between devices (machines, sensors, instruments) without requiring direct human intervention.

works the focus was on providing basic services and attracting a mass audience, in 5G networks it has shifted towards personalizing offers and improving service quality. In the 6G era, customer interaction is undergoing a radical transformation, moving towards a level of hyper-personalization and the creation of immersive experiences — operators can no longer limit themselves to targeting ads based on demographic data. It is necessary to take into account a broader range of factors, including sensor data (biometrics, emotional state, physical activity), contextual information (location, time of day, social environment), as well as predicting future customer needs based on the analysis of their behavior and preferences. The implementation of this strategy requires the management of operator companies to take measures such as:

1. Development and implementation of advanced data analysis methods that allow processing large volumes of customer information (including sensor and contextual data) with the aim of predicting needs and creating personalized offers.

2. Creation of hyper-personalization platforms for customer offerings, ensuring dynamic adaptation of tariff plans, content recommendations, and services based on the current situation and consumer needs.

3. Investing in content generation and applications for creating virtual and augmented reality, providing holographic communication and tactile internet, aimed at forming an emotional connection with the customer and developing new interactive communication channels.

4. Ensuring the security of customers' personal information, which requires the development and implementation of advanced methods for protection against cyber threats.

In conclusion, it should be noted that the customer interaction strategy in the 6G era must evolve into a complex, multi-level system based on a deep understanding of consumer psychology, the application of innovative technologies, and the pursuit of creating a sustainable emotional connection with the brand.

Promotion and marketing strategy. With the spread of smartphones and digital platforms, there has been a change in the format of interaction between operators and customers, manifested in:

1. Providing personalized offers based on end-to-end analytics and studying customer preferences, using big data technologies, AI, ML, and A/B testing.[10]

2. The formation of a digital footprint of customer behavior at all stages of interaction, which opens up new opportunities for transforming traditional business models.

Within the framework of this strategy, 6G operators should pay special attention to the creation of personalized media content. The further development of technologies shifts the focus to digital interaction channels, resulting in the active implementation of new tools for analyzing customer preferences and business processes in customer communication practices [15, 16]. For example, process analytics [17, 18], which allows for the examination of digital traces of consumer interactions. An effective approach can be considered the conduct of experiments and A/B testing aimed at testing hypotheses about increasing customer loyalty [1].

The implementation of 6G implies a shift from mass marketing to hyper-personalized marketing based on data and contextual information. The marketing strategy should focus on creating an emotional connection with consumers and promoting brand values through personalized advertising campaigns that take into account the needs and preferences identified, considering operators' pursuit of profitability and cost optimization. Despite the increasing digitalization of interaction channels, the importance of retail

[10] A/B testing is a method of marketing research in which two (or more) versions of something are simultaneously shown to random groups of users (A and B) to determine which version performs better in achieving the set objective.

presence for enhancing consumer satisfaction and loyalty, according to the authors, will remain.

Infrastructure sharing strategy. Infrastructure sharing or joint use of infrastructure — passive (supports, antenna-mast structures, cable ducts, etc.) and active — is considered an important development strategy for operators. This allows for significant cost reductions in the construction, modernization, and maintenance of the network [19] and could become one of the options for implementing 6G technology in the context of limited frequency resources.

In this case, it is possible to create a single national-level 6G infrastructure operator (predominantly state-owned), to whom all the radio frequency resources allocated for the creation of 6G networks and ensuring national coverage are transferred. In this scenario, other operators act as virtual ones, implementing the following connection models [13]:

• shared use of the 6G RAN radio access network, where the point of interaction between the infrastructure operator and the MVNO is located in the radio access network at the base stations;

• application of the gateway scenario — in this case, the point of interaction is located in the core network of the 6G infrastructure operator.

The choice of the optimal strategy depends on the characteristics of each company providing 6G services (its maturity and investment capabilities) and can be medium-term or long-term in nature.

Product and service development strategy. In the context of deploying 2G and 3G networks, the key task for the operator was business scaling, which involved the continuous improvement of the functionality of existing services (voice, internet, SMS, etc.), active promotion, and optimization of pricing offers. The development of 4G networks and the expansion of the range of innovative types of services have led to an increased emphasis on the product approach. It is focused on evaluating the effectiveness of products when launching them to the market, and in the era of 5G and 6G, it becomes a necessary condition for the success of the operator's business due to the emergence of broad opportunities for the development and provision of new digital services.

The implementation of 6G networks necessitates fundamental transformations in the development strategies of mobile communication. Thus, its basic services are being replaced by intelligent services and platforms integrated with various sectors of the economy. In this paradigm, operators act not only as providers of the "pipe" that ensures data transmission but also as architects of digital ecosystems, offering clients comprehensive solutions that go beyond traditional telephony and internet access.

The key distinction of the product and service development strategy in the 6G era is the focus on the consumer and innovation. Instead of standard solutions, operators should offer customers personalized options tailored to their individual needs and business characteristics. To achieve this goal, it is necessary:

1. Development of innovative services and applications based on 6G, including holographic communication, tactile internet, augmented reality, autonomous transport, smart cities, and more. This direction requires a deep understanding of the technological capabilities of 6G and the needs of various market segments.

2. Organization of strategic partnerships for the creation of new services based on 6G. This approach allows for the use of external innovations and the formation of an ecosystem of applications that expand the capabilities of the 6G network.

3. Development of an effective system for collecting, processing, and analyzing customer data, facilitating the identification of their needs, preferences, and behavioral characteristics. The obtained information should be used to create personalized products and services, as well as to foster a culture of experimentation and willingness to take risks.

4. Ensuring high security standards in light of increasing cyber threats and the complexity of technological solutions.

Thus, the strategy for developing products and services by operators in the 6G era is transforming into the concept of creating intelligent ecosystems that integrate the technological capabilities of the 6G network with the needs of various sectors of the economy and the demands of end users. To achieve the desired result in this new paradigm, it is necessary to apply a business valuation methodology based on customer metrics, such as CLTV (customer lifetime value), which reflect the quality of the company's interaction with the consumer and the effectiveness of the organization of product thinking [20].

This approach has become widespread, especially in digital ecosystems; however, the implementation of 6G will have a significant impact on it. Due to changes in customer behavior, emerging interaction opportunities, and profit generation methods, a revision of CLTV assessment methodologies and models will be required. Let's outline the main directions of changes in approaches to CLTV assessment in connection with the implementation of 6G:

• consideration of new sources of income from services and business models related to 6G, and the development of revenue forecasting methods;

• use of advanced customer data (behavior, preferences, location, sensor data) and machine learning and big data analysis methods to predict consumer behavior;

• taking into account the influence of ecosystems and developing methods for determining the value of customers who are part of the ecosystem;

• engaging continuous evaluation and adjustment methods for CLTV based on real-time data flow, and ML methods for predicting customer churn;

• taking into account the impact of personalization on user behavior and their value to the company.

Following the listed trends will ensure operators more efficient management of resources and investments and will allow them to gain competitive advantages.

Ecosystem creation strategy. The active interest in implementing an ecosystem approach in the development of operators is driven by current trends in the telecommunications industry and the digital transformation of various sectors of the economy. In recent years, operators, using existing assets, have been striving to form ecosystems and view them as a driver of revenue growth in a saturated market.

From this perspective, digital platform solutions play a key role in transforming business processes and creating new opportunities for companies and customers. They form the basis of new ecosystems, ensuring audience engagement, participant coordination, providing tools, defining interaction rules [21], and enhancing the customer experience [1, 22].

When creating ecosystems, operators often act as a digital platform for offering partner services in the fields of IT, finance, telemedicine, entertainment, and others [23].

The practice of building their own ecosystems is primarily implemented by operators in two main directions [24,25]:

• by acquiring startups and established businesses that develop various services;

• with the help of attracting partners and integrating their services.

In the context of 6G, an important factor should be the transition from closed to open and decentralized platforms that ensure value creation and data exchange while considering security requirements. To achieve this, operators will need to establish partnerships with various companies, ensuring secure and transparent data exchange, as well as developing transparent revenue models (commission fees, subscriptions, advertising).

The data presented in the GSMA Association report[11] confirms the trend of growth in new digital services within the revenue structure of operators, indicating that the latter will focus

[11] The Mobile Economy 2023. URL: https://www.gsma.com/mobileeconomy/wp-content/uploads/2023/03/270223-The-Mobile-Economy-2023.pdf.

their efforts in this direction to increase the level of monetization. A distinctive feature of the 6G operator ecosystem could be the integration of services for implementing complex digital transformation projects based on AI, ML, and edge computing technologies for corporate and government entities.

CONCLUSIONS

6G technologies represent a qualitatively new stage in the development of telecommunications, aimed at creating intelligent, flexible, and reliable networks that provide ultra-high data transfer speeds, ultra-low latencies, and support for fundamentally new services. The implementation of these ambitious goals requires significant efforts in research and development, as well as effective collaboration between the scientific community, industry, and government. The implementation of 6G marks a radical shift in the mobile communication paradigm, opening new opportunities for operators and driving the transformation of the economy and society. Operators who timely adapt to these changes and develop effective strategies will be able to gain sustainable competitive advantages.

The conducted analysis of the key features of 6G[12] technology, as well as the existing trends in the mobile communication market, allowed for the identification of priority areas for the transformation of operators' activities. In particular, the need to transition from scaling-oriented strategies to more modern ones aimed at forming a flexible and adaptive business model, deep specialization, and the development of new staff competencies has been identified.

The results of the conducted research can be used as a basis for forming development concepts for operators in the context of 6G, as well as in the development of regulatory documents governing the development of next-generation communication networks, particularly in the updating of the Roadmap for the Development of the High-Tech Direction "Modern and Prospective Mobile Communication Networks", approved by the Government of the Russian Federation.[13]

[12] European Vision for the 6G Network Ecosystem. 5G AI White paper. 2021. URL: https://5g-ppp.eu/wp-content/uploads/2021/06/WhitePaper-6G-Europe.pdf

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ABOUT THE AUTHORS

Roman Yu. Umanskiy — Cand. Sci. (Econ.), Assoc. Prof.of the Moscow Technical University of Communications and Informatics (MTUCI), Moscow, Russian Federation
https://orcid.org/0000-0002-0069-1644
Corresponding author:
r.yu.umanskij@mtuci.ru

Valery O. Tikhvinskiy — Dr. Sci. (Econ.), Cand. Sci. (Tech.), Prof., Bauman Moscow State Technical University, Moscow, Russian Federation; Prof., Sevastopol State University (SevSU), Sevastopol, Russian Federation
https://orcid.org/0000-0002-3443-5171
vtniir@mail.ru

Tatyana A. Kuzovkova — Dr. Sci. (Econ.), Prof., Moscow Technical University of Communications and Informatics (MTUCI), Moscow, Russian Federation
https://orcid.org/0000-0002-0883-0469
t.a.kuzovkova@mtuci.ru

Authors' declared contribution:
R. Yu. Umanskiy — conceptualization of the article, formulation of the research hypothesis, interpretation of the findings, assessment of the impact of 6G technology on the strategic management of mobile network operator activities.
V. O. Tikhvinskiy — problem statement, critical analysis of the literature on the prioritized objectives of 6G technology development, conclusions, interpretation of the findings.
T. A. Kuzovkova — source selection, analysis of the theoretical foundations of the research topic, investigation of the evolution of communication services in 6G networks.

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Project-based Activities and Startup Movement in Creative Industries as a Field of Mentorship in Higher Education

G.I. Gumerova[a], E.Sh. Shaimieva[b]
[a] Financial University under the Government of the Russian Federation, Moscow, Russian Federation;
[b] Kazan Innovative University named after V.G. Timiryasov (IEML), Kazan, Russian Federation

ABSTRACT

This article presents the findings of a study on the development of project-based activities in the creative industries, examined as a field of mentorship in higher education. The authors emphasize that the creative industries, with their intellectual and often collaborative or project-based nature, act as a driver of the modern economy. The research employed scientific methods such as analysis, synthesis, and classification. The informational base consisted of data from the Scientific Electronic Library (NEB), materials from Google Scholar relevant to the topic, and methodological resources on mentorship within the Russian economic framework (both federal and regional levels). The aim of the study was to explore the essence of mentorship in higher education within the context of project-based activities in the creative industries and to develop tools for effective project mentoring in this domain. The outcomes of the research include a refined definition of "project-based mentorship in higher education," a rationale for the need to study a Russian mentorship model, identification of ten specific forms of mentorship, the creation of a conceptual framework for project mentoring in the creative industries in higher education, and the development of original initiatives to support its advancement. These results may be used to promote the Russian model of mentorship on the global stage. The findings may also be useful to university project participants, startup mentors, and creative industry professionals.

Keywords: mentoring; higher education; creative industries; startup; technological entrepreneurship

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INTRODUCTION

Creative industries, which rely on the intellectual component of individual, group, or project creativity, can be called a driver of the country's economic development. Firstly, they contribute to the GDP growth of leading countries through developments in digital technologies; secondly, they serve as a platform for skill development and the application of emerging competencies of university students; thirdly, they participate in national rankings and competitions at both global and local levels, which, in turn, defines the project-based nature of product (goods, services) creation — from the idea embedded in a startup (project) to its testing, scaling, and commercialization in the market [1]. This highlights the connection between the concepts of project activity and the startup movement in the creative industries, which in this study are considered as an area of mentorship in higher education. They are characterised, firstly, by individual, group, or project creativity, and secondly, by the development of competencies among student youth on one hand, and the implementation of startup projects of various orientations on the University Technology Entrepreneurship Platform (UTP)[1] on the other. Thirdly, the creative industries and startup movements are characterized by their project-based nature, which is reflected in the specific outcomes of startup projects and the mentorship provided during their implementation.

It is important to note the relevance of creative industries as one of the directions of university technological startups,[2] the new stage of implementation of which began with the adoption of Federal Law No. 330 from 08.08.2024 (hereinafter — Federal Law No. 330). This regulatory legal act defines the development vector of this sector of the economy and serves as confirmation of the state's attention to it. Despite the short period of time from the adoption in 2021 of the "Concept for the Development of Creative Industries and Mechanisms for Their State Support in Major and Largest Urban Agglomerations until 2030"[3] to the approval of Federal Law No. 330, specific directions for supporting the development of creative industries through the efforts of students in collaboration with university faculty have been established in higher education institutions. First, this is about the startup movement in the Russian economic space, which began in 2020 and is understood in this study as university activity culminating in the defense of a startup (as a thesis) and its demand (including in the form of an MVP[4]) for acceleration platforms. The latter allow bringing to market an idea that is of interest to a specific business or grantor.[5]

RESEARCH METHODOLOGY

The information base of the work consisted of the works of the Scientific Electronic Library (SEL — eLIBRARY.RU), research by foreign schol-

[1] The University Technology Entrepreneurship Platform is part of the federal project "Technologies" and is a set of activities aimed at involving representatives of the university community in entrepreneurial activities. URL: https://minobrnauki.gov.ru/platform_utp/

[2] In 2024, the "creative industries" category featured 12.3% of student startups (2nd place among eleven categories); in 2023, it was 14.5% (also 2nd place); in 2022, it was 11.7% (3rd place among seven categories) according to the Ministry of Education and Science of Russia. (Official website). URL: https://rating.univertechpred.ru/?page=8 (accessed on 09.02.2025).

[3] "Concepts for the Development of Creative Industries and Mechanisms for Their State Support in Major and Largest Urban Agglomerations until 2030" from 20.09.2021 No. 2613. URL: http://static.government.ru/media/files/HEXNAom6EJunVIxBCjIAtAya8FAVDUfP.pdf (accessed on 29.09.2024).

[4] MVP (Minimum Viable Product) — minimally viable.

[5] Support for projects (commercial pilots) that meet the criteria of MTS: the presence of a viable product or ready-to-implement technology; the value of the product confirmed by real customers; the product/technology's alignment with the business verticals of MTS, etc. MTS Startup Hub, URL: https://startup.mts.ru/ (accessed on 29.09.2024); support for "...travel startups, tourism companies, or independent project teams with a product development stage no lower than MVP". Moscow Travel Factory. URL: https://travelfactory.moscow/ (accessed on 29.09.2024).

ars (obtained through Google Scholar), as well as methodological materials on mentoring from the Russian economic space with a focus on the regional aspect (Republic of Tatarstan, Ulyanovsk and Tyumen regions).[6] The selection of regions is based on the following criteria:

- the number of measures to support student research projects (SRP) and scientific mentoring in 2024 according to the Science — ID project, implemented by the Centre for the Development of Scientific and Educational Initiatives with the support of the Ministry of Science and Higher Education of the Russian Federation[7];
- the results of the research by P.A. Ambarova and N.V. Shabrova in the field of support measures for R&D and scientific mentoring at the regional level (highlighting Ulyanovsk as the region with the highest number of such measures — 14, Tatarstan — 8, and Tyumen as the region with a minimal number of support measures — 2) (*Table 1*) [2];
- the number of projects (startups) on the UTP Platform in the Top-1000 and Top-50 rankings, reflecting the number of startups from the creative industries present in them[8] (*Table 1*).

The object of the research, which employed methods of scientific analysis, as well as synthesis and classification, was mentorship as an independent direction of higher education activities in the Russian economic space, based on traditional spiritual and moral values; the subject was project mentorship implemented for the development of creative industries. The purpose of the paper is to reveal the essence of higher education mentorship in the field of project activities of creative industries and to develop tools for their development. The authors addressed the following tasks: a) the formation of a characterization of mentorship in Russian higher education through the prism of project activities, startup movements, and the effectiveness of mentorship in these areas; b) conducting an analysis of the methodological support for mentorship in the Russian educational space; c) clarifying the concept of "project mentorship in higher education"; d) differentiating the concepts of "project mentorship in higher education" and "mentorship" in general within the educational process based on the analysis of researchers' papers and methodological materials; e) developing a scheme for project mentorship in creative industries in higher education, reflecting subject-object interactions and based on the characteristics of the Russian model, clarifying the results of project mentorship in creative industries in higher education by specific areas.

The search in the SEL was conducted using two groups of keywords: "mentorship, higher education," "mentorship models, higher education" in accordance with the following conditions: a) by publication area (through analysis of their titles, abstracts, keywords); b) by type (journal articles, books, deposited manuscripts, dissertations, reports, patents, datasets, grants); c) parameters (considering morphology); d) search period (by publication date).[9] Papers referenced by authors of studies with publications in the RSCI, relevant to the present research, were also analyzed. Articles were selected based on principles such as:

[6] The selection of regions was carried out randomly based on the criterion of the availability of necessary materials.

[7] Science ID (portal). URL: https://scienceid.net/ (accessed on 09.02.2025).

[8] According to the organizers of the resource, "...the Top-50 is a selection of the best projects from the Top-1000 startups ranking, which is compiled annually using a unique methodology developed specifically for the federal project "UTP Platform" by specialists from the National Research University Higher School of Economics". "...The Top-50 includes 25 startups with a high degree of readiness and already secured investors, and 25 nascent but promising early-stage projects..." The TOP-50 best university startups of 2024 have been identified.

[9] The exclusion of publications such as "conference materials" is related to the necessity of analyzing papers on the researched topic, where the main results of the study over a significant observation period of the object are reflected and the research methodology is presented.

Table 1

Number of Startups on the University Technological Entrepreneurship Platform in Top 1000 and Top 50 Rankings and Number of Regional Support Measures for Student Research and Scientific Mentoring in 2024, units

Region	Number of projects				Number of measures to support research and scientific mentoring
	Top –1000		Top-50		
	Total	Creative industries	Total	Creative industries	
Republic of Tatarstan	251	33	8	0	8
Tyumen	17	0	1	0	2
Ulyanovsk	2	0	1	0	14

Source: compiled by the authors based on [2, p. 69] and data from the ANO "Center for the Development of Scientific and Educational Initiatives". URL: https://scienceid.net/support-measure-map/index (accessed on 09.01.2025).

1) in-depth exploration of issues significant to the present study;

2) novelty of theoretical/practical results, methods, hypotheses;

3) relevance to the current work in terms of the period of the study.

The search for publications in Google Scholar was conducted under the following conditions: publication date — no later than 2024; relevance to the research topic — by date; type of articles — any.[10]

MENTORSHIP IN HIGHER EDUCATION AS AN OBJECT OF RESEARCH AND MANAGEMENT: ESSENCE, MODELS

L.E. Zavarzina examines the mentorship of student youth from the perspective of the tradition of spiritual and moral education in the Russian educational space, starting with "...the first domestic university — the Slavic-Greek-Latin Academy, created with the direct participation of Simeon Polotsky..." [3, p. 97]. She notes the connection between education and mentorship, their unity based on "pedagogical tradition", which in her paper is understood as "a historically established complex, stable, and conditionally long-lasting set of norms and rules in education (teaching and upbringing) existing within a single pedagogical area, transmitted from generation to generation mainly in an unwritten form, and orientated towards some idealized model of student preparation..." [3, p. 96; 4, p. 32].

The paper by S.V. Velieva addresses issues in the field of "...the experience of developing and testing a project for extended support of novice teachers as an effective mentoring practice..." [5, p. 14]. The researcher's project includes the practice of supporting students both within the framework of undergraduate studies (first stage), master's programs (second stage), and doctoral studies (third stage); as well as during the process of employment, entering the profession, and engaging in direct professional activities (continuously, extended) [5, p. 16]. At the same time, the directions for supporting the mentee

[10] The terminology of the Google Scholar search engine was used, including the following criteria: "all time" (period specified); "by relevance" (date specified); "any articles" (review articles specified).

include teaching, psychological-pedagogical, scientific-educational, innovative, research, and project activities [5, p. 16].

The study by F. Sh. Mukhametzyanova and N. N. Islanova reflects the relevance of modern mentoring technologies in the context of Russian business education, "...in supporting startups, in training categories of specialists who need the development and improvement of such modern personal qualities as 'creativity', 'inventiveness', 'innovative thinking', 'the ability to work in multitasking conditions'..." [6, p. 3]. These authors note the effectiveness of modern mentoring technologies, which "...are aimed at increasing the competitiveness of specialists, on the one hand, and on the other hand, allow them to be prepared as client-oriented, cross-functional individuals with developed professional skills and competencies that the modern Russian labor market needs, and such graduates from schools and universities are expected in all areas of societal life today..." [6, p. 3]. One of the components in assessing the level of formation is the presence of basic skills — soft skills — in both the mentor and the mentee, including "critical and logical thinking" [6, p. 3]. The focus of the researchers' study is the project "Regional System for Organizing Mentorship of Educational and Administrative Personnel Based on Network Interaction", which involves "...training mentor teachers in a network system: network and school mentor-coaches, mentor-tutors, and, accordingly, mentor-supervisors..." [6, p. 3].

A. V. Dmitrova examines "...the specifics of understanding the phenomenon of mentorship in relation to higher education...". At the same time, the researcher pays special attention to the various mentoring models currently implemented in Russian higher education institutions, such as:

- reverse, when "...younger employees act as mentors for older colleagues and help them improve their skills in using information and communication technologies to solve professional tasks...";
- directed at "...supporting entities engaged in entrepreneurial activities ...";
- multivariate (including mentorship, extending to foreign students, young scientists) [7, p. 29].[11]

A. V. Dmitrova identifies the following mentoring practices across various directions, taking into account their application forms in domestic universities (teacher — student; employer — invited intern-student; student — student; teacher — teacher; teacher — college student; student — school student): career guidance, educational-professional, personal development, professional. The scholar interprets mentorship "as an educational technology characteristic of federal universities", emphasizing the systematic and multidimensional nature of this phenomenon [7, p. 31]. Regarding the topic of the present study, it should be noted that this author formulates recommendations for improving the effectiveness of mentoring in the university environment as conclusions, without considering its implementation in professional activities.[12]

In the publication by American experts R. G. Lucas-Thompson, R. L. Miller, M. J. Moran, and others (Google Scholar search area "mentoring high school"), issues concerning the potential expansion of "mindfulness-based interventions" (MBIs) through a youth mentoring program are analyzed. These authors note that activities conducted through MBIs contribute to strengthen-

[11] The author examines the forms of implementing mentoring practices using the examples of three federal universities — Ural Federal University named after the first President of Russia B. N. Yeltsin (UrFU), Siberian Federal University (SFU), North-Eastern Federal University named after M. K. Ammosov (NEFU), as well as two national research universities — Nizhny Novgorod State University named after N. I. Lobachevsky (NNGU), Kazan National Research Technological University (KSTU).

[12] In particular, A. V. Dmitrova notes that "the effectiveness of mentoring at the university can be enhanced by diversifying the forms of its implementation with the involvement of practitioner mentors from specialized organizations, increasing students' awareness of the mentoring practices being implemented, and supporting the mentoring institution at the state level..." [7, p. 31].

ing the mental health of adolescents; however, young people with mental health disorders do not have access to this program. Experts found during the work that adolescents who received mentoring individually (that is, one-on-one) demonstrated more favorable changes in emotion regulation and symptom internalization [8].[13] The relevance of this material to the topic of the present study is justified by the necessity to consider mentorship implemented within the framework of project activities and startup movements in the field of creative industries. Moreover, the subjects of mentorship (taking into account foreign experience) can be representatives of youth, university students, who have limited health capabilities (features). This circumstance complements the agenda of mentorship as an educational technology within the framework of social support measures for the learning youth, relying on such qualities of a mentor as "communication skills, pedagogical tact, empathy, initiative, stress resistance, adaptability..." [8, p. 31].

The topic of mentorship for students with special adaptive capabilities is addressed in the work of N.A. Anisimova — they are perceived as "...a special category of young people whose health or developmental conditions hinder their self-service, independent mobility, orientation, self-control, communication, mastering educational programs, in other words, adaptation in society without specially created conditions..." [10, p. 5]. The researcher has justified the need to involve a mentor teacher — an "inclusive tutor" — in such cases.

Based on the conducted analysis of scientific works on the keyword group "mentorship, higher education", it seems possible to use the aforementioned works in the present study, specifically in areas such as mentorship (level of education); mentorship methods / methodological approaches to mentorship; the essence of mentorship; the compliance of these works with the criteria of project activities (*Appendix, Table 1*).[14]

In the search area "mentorship models, higher education" in the SEL over the past year, five works have been identified. Thus, S.N. Korneva and N.N. Rybakova, as a mentorship model, investigate aspects of the project "The Role of a Mentor in the Professional Growth of a Teacher",[15] within which network interaction is developed according to the "student-teacher" model [11].

The focus of the paper by L.P. Kostikova, A.S. Olkov, and O.S. Fedotova is on issues related to identifying ways to improve the effectiveness of scientific supervision in graduate school (postgraduate studies) [12]. Scientists, emphasizing the importance of the role of a scientific supervisor in the Year of the Teacher and Mentor, analyze the effectiveness of the interaction between "scientific supervisor — graduate student (adjunct)" based on indicators of publication activity (based on skills in working with databases such as RSCI, eLIBRARY.RU, etc.); as well as mastery of the conceptual apparatus (as a condition of the research). According to these authors, the scientific supervisor of the research work is a mentor to the graduate student (junior researcher), embodying the essence of mentorship within the framework of personal and scientific interaction.

[13] This topic is also addressed in the work of A.O. Levchenko, where the initial hypothesis of the medical term "internalization of symptoms" is the following assumption: "... girls tend to internalize their problems, depression, or anxiety, while boys externalize, committing violence against people or property..." [9, p.100].

[14] The criteria for project activities have been formulated by the authors based on: a) a review of researchers' works; b) the differentiation of higher education mentorship and, in general, in the education system (based on the methodological aspects of mentorship, which are presented in the next part of this study); c) the authors' own mentoring experience, including in the field of project research for student teams in the creative industries (2022–2024).

[15] Implemented at MBOU "Secondary School No. 1 with In-Depth Study of Individual Subjects" in Buinsk (Republic of Tatarstan) — Secondary School No. 1 with In-Depth Study of Individual Subjects.

In the search area "mentoring models higher school" on Google Scholar, about 17 800 papers were identified.[16] In the article by W. Nuis, M. Segers, S. Beausaert, a higher education mentoring program aimed at developing graduates' employability skills is discussed [13]. Dutch scientists identified the effectiveness of such projects (due to the lack of confirmation) using theoretically developed indicators, creating and testing a new questionnaire to "measure" various types of mentoring support. The author's model includes factors (related to types of support and their characteristics) such as trust and accessibility, emotional and network support, autonomy support, similarity, and empathy.

In the study by M. A. Hagler, K. M. Christensen, J. E. Rhodes, aspects of mentoring college students during their transition to higher education institutions are reflected [14]. The authors of this paper interpret mentorship as a system of relationships (mentorship network) based on a survey of 176 first-year university students who received support from mentors both in college and at the university. The publication emphasizes the importance of mentoring networks and the necessity for a young person to have multiple mentors.

Based on the analysis of scientific works on the group of keywords "mentoring models, higher education", the aforementioned papers can be considered in terms of such directions of the present study as the level of education, mentoring model, activities within the framework of mentoring models, and the compliance of these works with the criteria of project activities (in the author's version) (*Appendix, Table 2*).

It also becomes evident that there is a need to study the methodological support for mentoring in project activities within the Russian educational space (*Appendix, Table 1,2*).

[16] Google Scholar. URL: https://scholar.google.com/scholar?as_ylo=2024&q=mentoring+models+higher+school&hl=ru&as_sdt=0,5 (accessed on 29.09.2024).

METHODOLOGICAL ASPECTS OF MENTORSHIP IN HIGHER EDUCATION IN THE RUSSIAN EDUCATIONAL SPACE: PROJECT ACTIVITIES, STARTUP MOVEMENT

In this part of the paper, the authors pose the research question: what is the methodological support for mentoring in project activities within the Russian educational space, including the field of creative industries, taking into account regional aspects? The initial document regulating this process is the Letter from the Ministry of Education of Russia No. A3–1128/08 from 21.12.2021 (hereinafter — Letter).[17]

In the process of analyzing the regulatory framework for this type of mentoring, the following features have been identified:

1. The concepts of forms and models of mentorship in various regional documents have their own interpretations: in the materials of L. N. Nugumanova and T. V. Yakovenko, the «teacher-teacher» mentorship form is explored [15, p. 15].[18] In relation to the Ulyanovsk region, this term reflects the "models of mentorship implementation in additional education": "student — student"; "teacher — student"; "teacher — teacher"; "specialist — student"[19]; in the methodological materials on this topic in

[17] Letter from the Ministry of Education of Russia No. AZ-1128/08, from the Trade Union of Workers of Public Education and Science of the Russian Federation No. 657 from 21.12.2021 "On the Direction of Methodological Recommendations" (together with "Methodological Recommendations for the Development and Implementation of a System (Target Model) of Mentorship for Educators in Educational Organizations", "Methodological Recommendations for Educational Organizations on the Implementation of a System (Target Model) of Mentorship for Educators"). URL: https://www.consultant.ru/document/cons_doc_LAW_418547/ (accessed on 21.09.2024).

[18] L. N. Nugumanova, T. V. Yakovenko. Handbook. Mentorship: an effective form of education. Informational and methodological materials. Kazan: IRO RT; 2020. 51 p.

[19] Methodological recommendations for organising mentorship among students of organisations implementing additional general education programs. Ministry of Education and Upbringing of the Ulyanovsk Region. 2020. 36 p. URL: https://clck.ru/3DZW9Z (accessed on 29.09.2024).

Tyumen, two global mentorship models are highlighted: North American, or "sponsorship mentorship", and European, or "developmental mentorship", as well as four methodological models applied in Russian practice: "student — student"; "teacher — student"; "teacher — teacher"; "specialist — student".[20]

2. Definitions of the concepts "mentorship models (organizations)" and "types of mentorship" differ: in the aforementioned materials by L.N. Nugumanova and T.V. Yakovenko, the interpretation of the former includes "traditional mentorship model ("one-on-one"); short-term or goal-oriented mentorship, etc. — column E (*Table 2*), that is, in the materials for Ulyanovsk, these terms reflect "types of mentorship relationships".[21] In the methodological materials for Tyumen, six types of mentorship are identified, including "mentorship for children in socially dangerous situations" (mentor is a child from the SDS group), which is reflected in column E (*Table 2*).

3. Materials on mentoring in project activities that reflect the specifics of creative industries for higher education have not been found by the authors (*Table 2*).

RESEARCH RESULTS: PRINCIPAL SCHEME OF MENTORSHIP IN THE HIGHER SCHOOL OF PROJECT ACTIVITIES, AUTHORS' INITIATIVES

Relying on the concept of "mentorship" as "...a universal technology for transferring experience, knowledge, forming skills, competencies, meta-competencies, and values through informal enriching communication based on trust and partnership...", project mentorship in higher education in this study is understood as an effective working mechanism, a central direction that is personalized and project-team-oriented, serving social demands for implementation at a high methodological level in higher education, with the positioning of project activity subjects based on traditional Russian moral values and the interests of the parties involved [15].[22] This refined definition of project mentoring in higher education serves as the foundation for the present study.

Based on the conducted analysis of scientific works on the topic of methodological support for mentoring in the Russian educational space, it is possible to formulate the fundamental differences between "project mentoring in higher education" and "mentoring" in general within the educational process:

1. It is necessary to differentiate between approaches to understanding mentorship as a process and as a result: a) this position develops and complements the conceptual components of mentorship outlined in the article by E.G. Gindes, I.A. Troyan, L.A. Kravchenko, where a similar position is not presented [17]; b) a mentor in the field of higher education project activities is interested in the effectiveness of their work (unlike a project consultant-expert, who provides professional knowledge in the form of a [short] expert report); c) project mentorship in higher education contributes to the upbringing of youth based on traditional spiritual and moral values (not limited to brief expert consulting upon request).[23]

2. The nature of project mentoring in higher education as a distinct type of activity, according to the authors of the aforementioned work [17],

[20] Development of the mentoring system in the activities of organizations for additional education of children. Methodological guide for institutions of additional education. Tyumen: TOGIRRO; 2021. 68 p.; According to the Letter (see above), it is about types of mentoring 3.2. (Types of mentorship for educational staff in an educational organization).

[21] According to the Letter, it is about types of mentorship. 3.2. Types of mentoring for educational staff in an educational organization.

[22] Nugumanova L.N., Yakovenko T.V. The desktop book "Mentoring: an effective form of learning": The information method. Materials. 2nd edition, supplement, revision. Kazan: IRO RT, 2020. 51 p.

[23] In this part of the study, the authors rely on works in the aforementioned subject areas in SEL, Google Scholar.

Methodological Support for Mentoring in the Russian Educational Space

Methodological document/region/ year	Mentoring area/ educational level	Glossary: number of terms		
			Features	Forms/models of mentoring
L.N. Nugumanova T.V. Yakovenko. Mentorship: From Theory to Practice (Republic of Tatarstan, 2020)	For organisations engaged in educational activities in general education, additional general education, and secondary vocational education programs	More than 18 terms	Presented: - the project "Regional System for Organising Mentorship of Educational and Administrative Staff Based on Network Interaction", implemented by the Institute for the Development of Education of the Republic of Tatarstan under the patronage of the Russian Academy of Educationc; - digital environmen "School Mentorship"	У-У[b]
Methodological recommendations for organizing mentorship among students of organizations implementing additional educational programs (Ulyanovsk, 2020) [c]	Additional education among students in organizations implementing supplementary educational programs	More 12	Mentorship program, including: - algorithm of actions for organizing mentorship in an educational institution; - algorithm for developing a Mentorship Program; - a standard "roadmap" for implementing the target mentoring model in an educational organization	S — S; S — T; T — T; St — S
Development of the mentoring system in the activities of organizations for additional education of children (Tyumen, 2021[d])	Preschool primary general education, basic general education, mentoring organizations among students of institutions implementing additional general education programs	More 15	Mentorship program, including: - algorithm for developing a mentorship program; - public summarization and promotion of practices	North American and European model; S — S; S — T; T — T; St — S

Source: compiled by the authors based on data [15; 16]*

Note: a — regulatory documents presented in the analyzed source; b — S–S — "student — student"; T–S: "teacher — student"; T–T: "teacher — teacher"; St–L: "student — leaner"; S–S: "specialist — student";

* Nugumanova L.N., Yakovenko T.V. The desktop book "Mentoring: an effective form of learning": The information method. Materials. 2nd edition, supplement, revision. Kazan: IRO RT, 2020. 51 p.

Table 2

Essence			
	Models (organizations)/types of mentoring	**Evaluation of mentoring effectiveness**	**Regulatory foundations of mentoring[a]**
	Traditional mentoring model (or one-on-one mentoring); short-term or goal-oriented mentoring; speed mentoring; flash mentoring; virtual mentoring; reverse mentoring; self-directed mentoring; team mentoring	D. Kirkpatrick Model: – evaluation of the subject's reaction; – assessment of acquired knowledge or assessment of changes in the level of knowledge	2012–2019
	Traditional mentoring; peer mentoring; group mentoring; flash mentoring; remote (via the information and communication network "Internet") mentoring; reverse mentoring	Results of the implementation of the S — S model (fragment): – improvement of academic performance and enhancement of the psycho-emotional environment within the association (group) and educational organisation; – increasing the level of tolerance towards students with special educational needs, including those with disabilities. Results of the implementation of the S-T model (fragment): a high level of engagement of the mentee in all social, cultural, and educational processes of the educational organization	1993–2019
	Mentorship for children in socially dangerous situations (mentor — a child from the at-risk group); mentorship for gifted children (mentor — gifted child); mentorship in volunteer projects (mentor — volunteer); mentorship in project teams (mentor — project team or group); mentorship in career guidance work (mentor — real sector of the economy); mentorship for children with disabilities	Results of the implementation of the E-E model (fragment): – a high level of engagement of young (new) teachers in pedagogical work and the cultural life of the educational organization; — strengthening confidence in one's own abilities and developing personal, creative, and pedagogical potentials	1993–2020

c — Regional system of organizing mentoring of teaching and management staff based on network interaction. State Autonomous Educational Institution of Additional Professional Education "Institute for Education Development of the Republic of Tatarstan" (official website). URL: http://www.irort.ru/ru/node/189 (accessed on 28.09.24); d — Development of a mentoring system in the activities of organizations providing additional education for children. URL: https://clck.ru/3DZY 8e (accessed on 29.09.2024).

depends on the type of project in which the mentees are involved. For example: a) participation in a competition involves receiving prize places with/without material/immaterial rewards, which requires separate discussion to prevent conflicts within the project team; b) implementation of a project with a limited number of participants (i.e., not everyone working in the team can be named), with mandatory publication of research results and corresponding indexing in databases, can become a source of conflict (demotivation of participants, etc.); c) participation in grant programs involves (co)financing of the project research.

3. Project mentorship in higher education is an interaction with adult citizens (students participating in the project). Hence, there may be risks associated with obtaining financial resources and fulfilling the corresponding obligations to the grantor (educational institution) in the medium- and long-term perspectives, combined with the nature of the "mentor-mentee" relationship (as opposed to the "organization leader-[young] employee" interaction).

4. Project mentorship in higher education relies on the competencies and skills of the mentor in areas such as managing intellectual property, knowledge, changes, and conflicts. This circumstance implies the professional development (training) of mentors in these areas (*Appendix 1*, *Table 1* and *Fig.*).

When developing the "Conceptual Framework for Project Mentorship in the Field of Creative Industries in Higher Education", the authors of this paper relied on the following provisions:

I. Subject-object interactions in project mentoring in higher education: the mentor (object of mentoring) is a young teacher; the student (individual) (or group [team] of students, participant in the mentoring program) who, through interaction with the mentor and with their help and support, solves specific life, personal, and professional tasks, gains new experience, and develops skills and competencies. Project mentors (or mentors as subjects of mentorship) are scientific and pedagogical workers; employers, specialists in the field of design — partners of higher education institutions; students with experience working with project teams and interested in creating innovative products — scientific volunteers; participants in the mentorship program who have successful experience in achieving life, personal, and professional results, competent and ready to share the experience and skills necessary to stimulate and support the processes of self-realization and self-improvement of the mentee.

II. The Russian mentoring model is based on: a) traditional spiritual and moral foundations of mentoring in the Russian economic and educational fields [3]; b) the characteristics of scientific mentoring as a scientific and educational institution, relying on the traditions of Soviet and Russian higher education, analyzed in the paper [18]; c) the achievements of Soviet Russia — USSR (1917–1991) in the studied field, including successes in mentoring working youth and pedagogical workers of the Soviet school, reflected in the paper of N.A. Ladilova and I.A. Mishina [19].

III. The five forms of mentorship presented in the Letter have been supplemented by the authors of this study, specifically proposing the following forms relevant to project activities in the creative industries of higher education: M–M: "mentor — mentor"; S–S: "student — student"; T–S: "teacher — student"; St–L: "student — learner"; S–L — "specialist — student".[24] Taking into ac-

[24] Letter from the Ministry of Education of Russia No. AZ-1128/08, from the Trade Union of Workers of Public Education and Science of the Russian Federation No. 657 from 21.12.2021 "On the Direction of Methodological Recommendations" (together with "Methodological Recommendations for the Development and Implementation of a System (Target Model) of Mentorship for Educators in Educational Organizations", "Methodological Recommendations for Educational Organizations on the Implementation of a System (Target Model) of Mentorship for Educators"). URL: https://www.consultant.ru/document/cons_doc_LAW_418547/ (accessed on 21.09.2024). URL: https://www.consultant.ru/document/cons_doc_LAW_418547/ (accessed on 09.02.2025).

count the peculiarities of the development of creative industries (including remote forms of organizing their employees' work), as well as the inclusive practices inherent to these sectors of the economy in terms of employment, the implementation of mentorship forms is considered by the authors in conjunction with the "location" point.

IV. Results of project mentorship in the field of creative industries in higher education by areas:

IV.1 Mentorship in research/competition projects for students — effectiveness based on competition results (with or without publication, with poster presentations, etc.). Based on their earlier works on project activity and the startup movement in creative industries, the authors of this study have refined the direction of "Creative Industries Startup" into "Creative-CultTech-Startup" for its development on grant-giving platforms: "Rosmolodezh.Grants", "Startup as a Diploma", and the National Technological Initiative (NTI) [20].

IV.2 Scientific mentoring — publications in indexed databases taking into account the requirements for the publication activity of the mentees[25];

IV.3 Mentorship in an inclusive project should primarily be viewed as a process whose effectiveness depends on an individual mentorship plan (inclusion of the mentee), the formation and development of an inclusive environment for creating objects of the creative industries in the "mentor-mentee" interaction, including the use of remote forms of mentorship[26];

IV.4 "Mentor — mentor" — scaling the results of the best mentor through conducting master classes and a series of scientific and methodological workshops on mentoring techniques, publishing monographs, and publications based on best practices (*Fig.*).

Based on the results of both our own work and the analysis of scientific papers conducted during this study, we have refined two initiatives concerning the development of project mentorship in creative industries at the higher education level[27]:

1. Implementation of the "Creative-CultTech-Startup" direction on the platforms "Rosmolodezh.Grants", "Startup as a Diploma", NTI;

2. Development of methodological support for project mentoring in creative industries at higher education institutions, including a glossary.[28]

DISCUSSION

The results of this study develop the ideas presented in the papers of Russian and foreign authors. In particular, the issues of selection criteria for mentors — experts in startup projects (from universities), partner enterprises, as well as the effectiveness of mentoring measures in project activities are being updated (*Table 1*). According to A.V. Dmitrova, "...each university independently determines the requirements for mentors, taking into account the specifics of the implementation of mentoring practices. The following key qualities can be highlighted for a mentor in higher education: diligence, an active life position, kindness, responsibility, confidence, sociability, pedagogical tact, empathy, initiative, stress resistance, adaptability, leadership qualities..." [7, p.31]. Taking into account the opinions of practitioners actively involved in the formation of university platforms for technological entrepreneurship, clear criteria for selecting

[25] In particular, the work of E. Goh and S. Richardson notes the effectiveness of the mentoring program in engaging students in the educational process, resulting in higher success rates [21].

[26] This topic is being developed through the study of issues related to the use of digital technologies in the inclusive educational process in the Republic of Tatarstan [22].

[27] Author initiatives develop the topic of supporting innovative technological entrepreneurship and the startup movement in the regions, as explored in the paper [23].

[28] Glossary "Project Activities. Startup movement. Mentorship", compiled by the authors of this article and consisting of more than thirty terms, is an integral part of the author's monograph exploring the issues of digitalization in educational organizations. The monograph is in the process of being published by a federal publishing house.

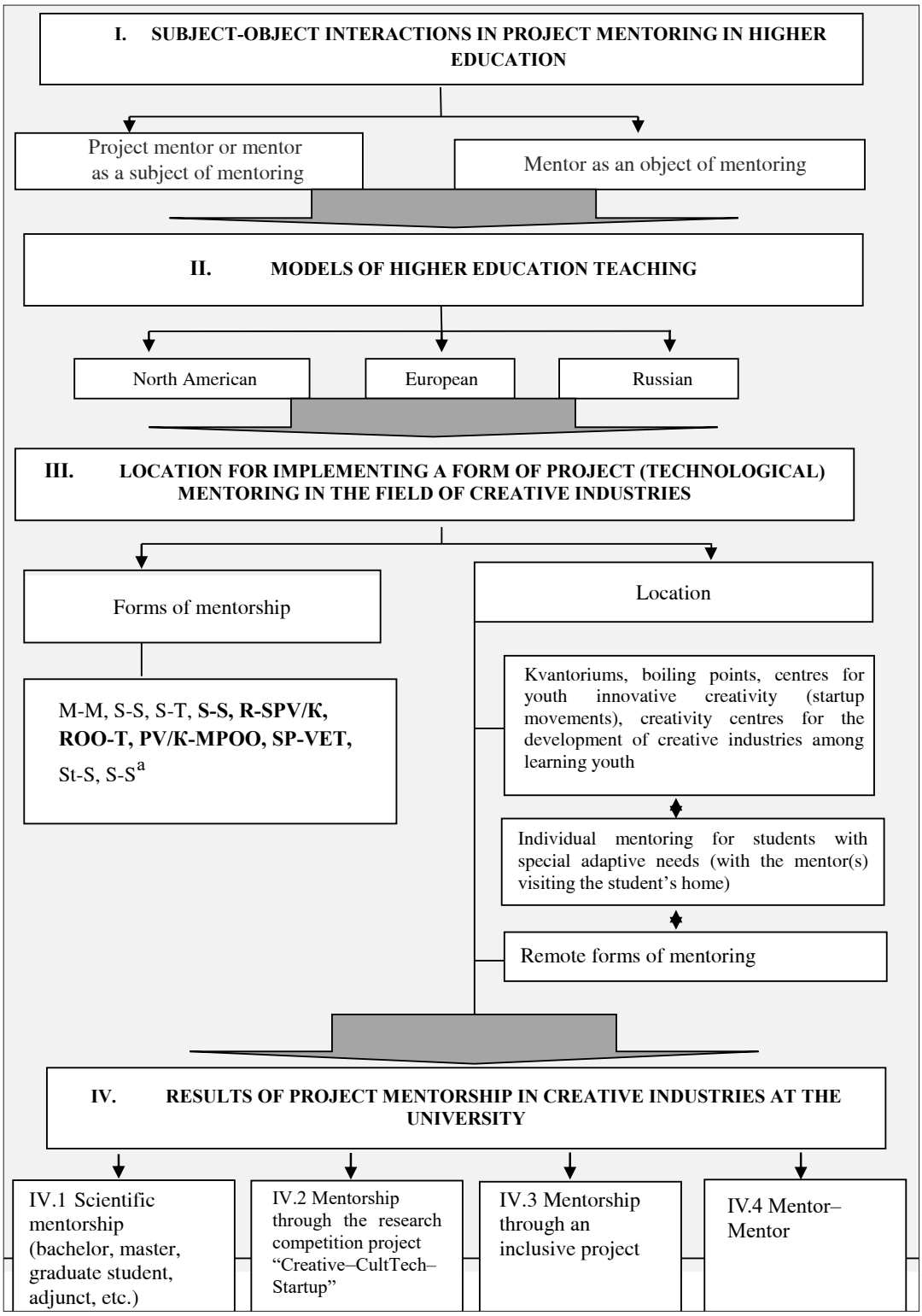

Fig. **Conceptual scheme of project-based mentoring of creative industries in higher education**

Source: compiled by the authors based on [9, 18, 27], URL: https://www.consultant.ru/document/cons_doc_LAW_418547 /

Note: a — N-N — "mentor-mentor"; O–O: "student — student"; O–N: "teacher — student"; P–N: "teacher — teacher"; R-SPV/K: "employer — student of a pedagogical university/college"; ROO–P: "head of an educational organization — teacher"; PV/K-MPOO: "university/college teacher — young teacher of the organization"; SP–VET: "social partner — teacher of the educational organization"; St–O: "student — student"; S–O: "specialist — student"; The forms of mentoring presented in the Letter are highlighted in bold.

mentors for startup projects require clarification and methodological formalization [24, 25]. Thus, the paper of I. Tritoasmoro et al. addresses issues related to the effectiveness of technological universities in Indonesia, startup incubation, and the role of leaders in overcoming the growth challenges of startups in the country [26]. The mentorship in research projects within the Croatian higher education documentation system is discussed in the work of B. Kusevic [27].

CONCLUSIONS

Based on the obtained results, it can be concluded that in the process of work:

1. The concepts of "mentorship in the educational system" and "project mentorship in higher education" are differentiated in relation to the creative industries.

2. The definition of project mentoring in higher education has been clarified.

3. The insufficient effectiveness of regional support measures for R&D and scientific mentorship in conjunction with mentorship in the field of creative industries in university project activities, as measured by the "number of university startups in the Top-50, Top-1000" on the University Technology Entrepreneurship Platform in the Republic of Tatarstan, Ulyanovsk, and Tyumen regions, has been identified (*Table 1*). This topic requires separate research.

4. The necessity of studying the Russian mentorship model is justified by identifying its characteristics based on spiritual and moral traditions, the experience accumulated during the Soviet period, as well as scientific mentorship to promote the model in the global (domestic and international) market — primarily in BRICS countries.

5. Ten forms of mentoring implemented at the time of the study in the Russian practice of the educational-mentoring process have been specified.

6. A conceptual scheme for project mentorship in creative industries at higher education institutions has been developed, reflecting subject-object interactions based on the characteristics of the Russian mentorship model. The latter allows for the clarification of the results of project mentorship in the field of creative industries in higher education in areas such as scientific mentorship, mentorship through student research/competition projects, mentorship through inclusive projects, mentor-mentor relationships, as well as the identification of mentorship tools discussed in this work, namely, mentorship forms, their locations, and effectiveness in each of the aforementioned areas.

7. Two original initiatives have been developed to promote project mentoring in higher education in the field of creative industries.

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APPLICATION

Table 1

Research of project activities, startup movement as areas of mentoring of higher education in the Russian educational space by the group of keywords "Mentoring models, higher education"

Research	Mentoring areas/ level of the education system	Mentoring methods/methodological approaches to mentoring
Zavarzin L.E.	Mentorship of student youth	Not considered
Velieva S.V.	Beginning (young) teacher	Learning by doing and through doing; project-based learning; personal development program; question-and-answer relay model; programmed instruction model; research and creative model for implementing an individual mentoring program; project model
Dmitrova A.V.	Mentorship in domestic universities with "federal" and "national research" categories	Reverse mentoring, mentoring business model, multi-variant mentoring models
Mukhametzyanova F.Sh., Islanova N.N.	Continuous professional education for educators	Internet and flash mentoring, rapid, virtual, and self-regulated, reverse mentoring, tutoring, coaching, storytelling, balding, and many others allow achieving the necessary results even in the absence of the required amount of resources and insufficient motivation of the mentees, whose qualifications need to be changed for various reasons
Lucas-Thompson, R.G., Miller, R.L., Moran, M.J. et al	Basic general education, general secondary education	Youth mentoring programs "Mindfulness-Based Interventions" (MBIs)
Anisimpva N.A.	Higher education	First stage: diagnostic and evaluative direction. Task: defining the trajectory and strategy of the mentor in designing and implementing an individual educational program for a student with disabilities. Second stage: project-based. Development of a set of tools and procedures for supporting a specific student or group of students, taking into account their needs and capabilities. Third stage: consultative, as well as informational and educational, corrective and developmental mentoring, and other directions

Source: compiled by the authors based on [2, 4, 5, 7, 9]

Note: a — mention in the source of these components

Table 1 (continued)

	The essence of mentoring	Mentoring in Higher Education: Project Activities, Startup Movement [a]		
		Project activities	Startup movement	Efficiency of mentoring in project activities, startup movement
	Interconnection with education, reliance on the traditions of spiritual and moral upbringing	No	No	No
	Providing prolonged preventive and operational assistance to a young teacher in understanding, creatively interpreting, and implementing successful pedagogical experience in the practice of an educational organization	Yes	No	No
	Understanding mentorship as an educational technology characteristic of federal universities; emphasises the systematic and multidimensional nature of this phenomenon	No	No	No
	An educational resource that allows for the development of mentors' soft skills through a model of continuous professional education for educators	Mentioned	No	No
	Mentorship (support) for adolescents — students in schools and colleges with mental health vulnerabilities	Not considered		
		Individually, according to the development trajectory (health condition) of a student with special adaptive capabilities	Not considered	

Table 2

Research of project activities, startup movement as areas of mentoring of higher education in the Russian educational space by the group of keywords "mentoring, higher education

Research	Level of education	Mentoring methods/	
Korneva S.N., Rybakova N.N.	Basic general education, secondary general education	"student — teacher" "teacher — teacher"	Pedagogic of subject physics, co educationa methodolo
Kostikova L.P., Olkov A.S., Fedotova O.S.	Higher education	"scientific supervisor — graduate student (adjunct)"	Developm dissertatio scientific s
Nuis W., Segers M., Beausaert S.	Higher education	"university — graduate — employment"	Developm a reliable education
Hagler M.A., Christensen K.M., Rhodes J.E.	Higher education	"college student — university student"	Mentorshi university

Source: compiled by the authors based on [10, 11, 12, 13] and the Federal Law of 29.12.2012 No. 273-FZ "On Education in the Russian Federation".

Note: mention in the source of these componen

Table 2 (continued)

Activities within the framework of mentoring models /	Mentoring in Higher Education: Project Activities, Startup Movement [a]		
	Project activities	**Startup movement**	**Efficiency of mentoring in project activities, startup movement**
al workshop for young educators; zonal seminar with the participation teachers in the physical and mathematical cycle (mathematics, mputer science); practice-oriented seminar for deputy directors for al work; methodological festival for computer science teachers; unified gical week for teachers in the Buinsky municipal district	Not considered		
ent of scientific schools; scientific and methodological manuals for n preparation; consulting members of dissertation councils and supervisors by VAK experts	Research within the framework of a PhD (postdoctoral) program as a project	Not considered	- publications in RSCI, VAK; - skills in working with databases such as RSCI, e-library, etc.; - mastering the conceptual apparatus as a condition for research
ent of a questionnaire based on a reliable theoretical framework as tool for various subgroups of the population in the field of higher	Employment of graduates	Not considered	trust and accessibility, emotional support, network support, support for autonomy, similarity and empathy
p network from the college (school) — mentorship network of the	The first year of university studies for a college student	Not considered	-formed trust in college (school) mentors; -formation of trust in university mentors

ABOUT THE AUTHORS

Guzel I. Gumerova — Dr. Sci. (Econ.), Prof., Prof. of the Department of Management, Financial University under the Government of the Russian Federation, Moscow, Russian Federation
https://orcid.org/0000-0002-5198-7576
Corresponding author:
GIGumerova@fa.ru

Elmira Sh. Shaimieva — Dr. Sci. (Econ.), Assoc. Prof., Prof. of the Department of Management, Kazan Innovative University named after V. G. Timiryasov (IEML), Kazan, Russian Federation
https://orcid.org/0000-0002-9588-0199
shaimieva@ieml.ru

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ORIGINAL PAPER

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Substantiation of an Indicator System for Assessing the Transport and Logistics Potential of Regional Water Transport

V.S. Chebotarev[a], O.L. Morozov[b], D.V. Nazarychev[c]
[a] Volga State University of Water Transport, Nizhny Novgorod, Russian Federation;
[b,c] Nizhniy Novgorod academy of the Ministry of the Interior of Russia, Nizhny Novgorod, Russian Federation

ABSTRACT

The article discusses the issues of substantiation of the system of indicators for assessing the transport and logistics potential of regional water transport. The relevance of this problem is due to the insufficient elaboration of the rationale and the absence of a comprehensive set of quantitative indicators characterizing this sector of economic activity. The objective of the study is to develop proposals for organizing a multicomponent monitoring system based on mathematical tools to accurately reflect the current state of the water transport complex, considering its development directions. Mathematical analysis was used as the primary methodological approach. The empirical foundation of the study comprises scientific works of prominent economists. The main outcome is the development of a three-component model of the transport and logistics potential of the regional water transport complex, enabling the calculation of a composite indicator — its integral assessment — which is valuable for further theoretical analysis. This model can also be used by executive authorities of Russian Federation regions for making prompt management decisions.

Keywords: mathematical characteristics; multicomponent monitoring; transport and logistics potential; water transport; region; coefficient; integrated assessment; port infrastructure; port-industrial, industrial, distribution components

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INTRODUCTION

The study of the mathematical characteristics of the transport infrastructure condition in the region, which includes water arteries and maritime areas, is dedicated to the fundamental research of such prominent scientists as A.M. Andronov [1], G.A. Golts [2], I.V. Maksimey [3], S.A. Tarkhov [4]. Subsequently, their works were structured from typological and methodological perspectives by A.N. Kiselenco, N.A. Tarabukina, E. Yu. Sundokov, and others [5].

The basis of the analytical operations conducted included methods such as quantitative description of the phenomena under study from a statistical perspective, assessment of relationships between multiple variables using mathematical models, study of patterns in random phenomena, and so on. The researchers drew conclusions that included an assessment of the rationality of both the utilization of investment funds (directed at improving the region's transport system) and the formation of freight and passenger transportation (taking into account the population density in a given subject of the Russian Federation) and others.

At the same time, the issue of multi-component monitoring of the real state of affairs in the water transport complex and the directions of its development based on mathematical tools is currently not receiving due attention.

The study of the causes and conditions affecting the use of the logistics capabilities of this transport cluster allows for the identification of its main areas of activity:

- port and industrial;
- industrial;
- distribution.

In order to find key approaches and tools for determining the profitability level of the region's water transport, it is advisable to apply a universal concept that encompasses all the aforementioned directions, such as "transport and logistics potential", which should not be considered an equivalent of the term "transit potential". They should undoubtedly be distinguished and separated from each other.

The second of the aforementioned concepts was most accurately described in the work of N.G. Kudryashov and A.A. Nechay [6], presenting "transit potential as an acceptable combination of own resources and capabilities for accompanying cargo flows and passenger flights passing through domestic routes". At the same time, the priority remains the generation of a list of service offerings in transport logistics.

In this regard, it becomes evident that the categories under consideration have different natures. The fundamental difference lies mainly in the positioning of transport and logistics potential as a set of resources and capabilities related to a regional-level entity.

The transit potential, in turn, is based on intersubjective and transnational vectors of functioning.

In this regard, the article examines the transport and logistics potential of the region's water transport complex as the object of study.

RESEARCH METHODOLOGY

The authors of the study propose to apply a three-level evaluation system used in econometric theories (including by A.A. Chaliyev [7]).

In the paradigm of this assessment model, the powerful (sustainable) transport and logistics potential of the region's water transport complex corresponds to mathematical characteristics situated within the framework of natural[1] digital indicators with a trend towards growth.

[1] Natural indicators represent data corresponding to optimized conditions in a significant period of time.

As for the weak (unstable) potential, in this case, numerical expressions go beyond these limits when approaching a decrease.

Thus, it is the multi-component analysis of the three aforementioned directions that can provide the opportunity for an objective characterization of the water transport complex of the region and the conduct of a rating assessment of the subjects of the Russian Federation, taking into account the state of their transport and logistics potential.

RESEARCH RESULTS

Problem analysis

Administrative territories with predominant transport and logistics potential should obviously be among the first to claim state and commercial investments, as well as the integration of transport systems through the application of artificial intelligence and the automation of production processes, since these regions are expected to become the locomotives of innovative development across all sectors of economic activity.

In turn, areas that do not possess such potential can try to improve their econometric indicators by participating in the implementation of various state programs for the formation of territories of advanced socio-economic development (TASED), where preferential approaches to economic activities, simplified registration rules, and other benefits are applied.

When selecting an algorithm for assessing the transport and logistics potential of the water infrastructure of a particular subject of the Russian Federation, the determining factor will be the identification of a number of characteristics that most fully reflect its condition.

For this purpose, the authors of the present article studied the degree of development of this topic by other researchers. As a result of the analysis of scientific works [8–11], it was established that the water transport system can be considered depending on the state of its potential:

- in interregional and interstate aspects, that is, at the macro level;
- in the regional aspect, that is, at the meso-level.

The ideas of theoretical development of the approach to assessing the transport potential of the regional system are noteworthy, as

Table

Classification of components for assessing the transport and logistics potential of regional water transport complex

Name	№	Component group
Transport and logistics potential of the region's water transport complex	1	Port-industrial
	2	Industrial
	3	Distribution

Sourse: compiled by the authors.

evidenced by the scientific works of several scholars, including O.N. Larin, E.R. Latypov, V.V. Vyazovsky, L.P. Kirichenko, and others [10, 12–16]. These authors analyses the issues of the impact of external and internal factors and the optimization of the order of creating the logistics infrastructure of the territory, using a problem-solving method based on identifying the most effective ways to divide the specified problem (morphological features) in order to determine their combined sets.

Analyzing the list of prerequisites affecting the backbone industries of the water transport complex of a particular federal subject, one can identify components that are advisable to use in its evaluation. It is proposed to use three categories of indicators (*Table*).

It is evident that the groups presented in the *Table* have stable connections and influence each other in one way or another — for example, the port-industrial component on the industrial one and vice versa. This circumstance allows us to propose the thesis of their mutual correlation, which must be taken into account in further calculations.

Having selected the three main components of transport and logistics potential, we determine the key indicator in each fraction, based on the characteristics of the state and development of the transport sector as a whole and its impact on the economic life of the region and the country.

The foundational platform for identifying numerical evaluation characteristics will be a symbiosis of analytical, heuristic, and experimental methods, based on a combination of existing data sets on quantitative and qualitative parameters, (including those compiled into corresponding reports).

Mandatory requirements for determining the key parameter will be:

• imperative of equidirectionality: the growth of the total digital expression of the selected indicator indicates an overall increase in potential;

• requirement for a limited maximum value at the upper limit: in subsequent calculations, it is rational to rely only on characteristics with some finite value ("ceiling" of the upper value).

The fulfilment of the specified conditions is necessary because the selected digital indicators will later be integrated into a single final index. Then, when the final parameter of this combined marker is derived over the specified period, it will be possible to conduct a correlation analysis of the state of the specified transport and logistics potential and determine its trends.

Justification of the proposed indicators

The first fraction of indicators defines the port-industrial component of the transport complex of the water routes of the country's region. This is a set of terminals, buildings, structures, vessels, and equipment located within the territory of sea or river ports and used for the activities of transporting goods and carrying passengers.

Using these indicators, it is possible to assess the level of competitiveness of the water infrastructure, which is capable of not only meeting the demands of domestic clients and foreign transiters but also ensuring that the Russian maritime and river fleet achieves global standards and corresponding profitability.

The study of sources dedicated to this topic indicates a high level of work carried out by Russian scientists — Yu.A. Lepekhin, E.D. Pasyuk, M.I. Klassovskaya [17], and others.

Today, the key factor in improving the hydraulic structures of berths is the integration of IT processes into their operation, which requires both significant capital investments and trained personnel [17].

Due to the specifics of the activity, the berthing system can be represented as a mass service system, where consumers are in line to receive loading and unloading services (taking into account the duration of the service). It is important to consider that its non-provision may be due to either an excess in the number of requests (ships waiting in line) compared to the total number of sea or river berths, or the maximum size of the waiting queue.

The number of groups of riggers is limited by the capacity of the ship's cargo holds, as well as the technical capabilities for conducting terminal and warehouse operations.

In this regard, the key indicator in this group will be the *speed of service*.

For the purpose of understanding all the rigging processes occurring at the docks, it is advisable to use a system of equations and concepts to describe and predict them — below are the author's explanations related to this.

The average interval before the start of loading (unloading) is directly dependent on the period of terminal operations and the number of berthing facilities for mooring ships.

The average duration of a request in the queue (the duration of the transport vessel's stay at the dock or pier) is the sum of the average interval until the start of loading (unloading) and the average time required for rigging operations.

It is obvious that the speed of service acts here as an indicator determining consumers' evaluation of the performance of all the mooring equipment.

The author's proposal for deriving this coefficient is based on the idea that this speed should be directly proportional to the number of involved crews (groups) of stevedores and berths and inversely proportional to the average duration of a request in the queue:

$$k_{pi} = \begin{cases} \frac{n}{t_r} \text{if } n = m \\ \frac{m}{t_r} \text{ if } n > m \end{cases}, \quad (1)$$

where k_{pi} — coefficient of the port-industrial component; n — the total number of sea or river berths; m — the number of rigging crews; t_r — average duration of a request in the queue.

The situation where $m > n$ is not considered due to economic impracticality.

The numerical characteristics of the second group pertain exclusively to the industrial component of the circulation of the water transport complex of the region, directly interacting with all sectors of the national economy.

Its characteristic (excluding the volume of transported products) is the *freight turnover*, i.e., the total volume of expedition activities for the movement of goods, expressed in ton-kilometers (t*km).

At the same time, it must be acknowledged that this criterion is likely to be incomplete (subjective) — primarily because it does not take into account the transportation period of goods and industrial products from the manufacturer to the end consumer.

After conducting a review of the scientific literature on the research topic [6, 13, 14], the authors of this article draw a well-founded conclusion about the significant impact of the industrial characteristics of the water transport complex on the economic activities of the subject of the Russian Federation and the potential for its development through the transportation of goods on international routes.

It is quite clear that the industrial potential of the maritime and river infrastructure of any territory is directly dependent on the industrial products produced by its enterprises, which is reflected in the overall volume of the gross regional product (GRP) and,

consequently, in the gross domestic product (GDP) of the entire country.

GRP is a criterion that represents the difference between the output of goods and services and intermediate consumption, and is used to measure the contribution to GDP of an individual producer, industry, or sector of the economy. A. A. Nechay and N. G. Kudryashov [6] introduced a criterion for the purpose of general economic evaluation of international transportation (regardless of the means and methods of movement), which shows the turnover of cargo in ton-kilometers attributable to GDP:

$$d_T = \frac{\sum QL}{GPD}, \quad (2)$$

where Q — the aggregated weight of cargo transported along international transport corridors (ITC) passing through the territory of a subject of the Russian Federation; L — the length of the ITC within a specific administrative-territorial unit of the state; d_T — indicator of freight turnover in ton-kilometers per GDP.

Thus, for the purpose of evaluating the industrial component of the subject's transport and logistics potential of the water transport complex based on a comprehensive and objective approach (as well as the obtained criterion d_T), taking into account the specifics of maritime and river cargo transportation in each individual region, it is quite reasonable to operate with such a criterion as the industrial component coefficient, which shows the volume of water transport cargo turnover attributable to the transport sector in the region's GRP:

$$k_i = \frac{TW_v}{d_T GRP}, \quad (3)$$

where k_i — industrial component coefficient; TW_v — the volume of cargo turnover in water transport; $d_T GRP$ — the share of transport in the region's GRP.

The criterion k_i, in the authors' opinion, most fully reflects the industrial component of the water transport sector at the meso-level and meets the previously stated requirements for selecting quantitative data. In this regard, it can be applied in the developing evaluation framework.

The criteria of the third group show the state of distribution activities in a particular administrative-territorial entity of the country. The importance of this component is due to the fact that, on a global scale, the share of logistics costs accounts for 13–14% of GDP. In the Russian Federation, this indicator is higher — it ranges from 12 to 25% [18].

Monitoring scientific research on the subject of the study provides grounds to assert that the term "regional logistics system" is inseparable from the concept of "regional logistics potential". Distribution activity and its key characteristics at the meso-level were studied in sufficient detail by Ya. Yu. Pavlova [19]. By studying the patterns of statistical analysis of socio-economic phenomena, she identified particularly important factors influencing the growth of distribution activity, considering it from a regional perspective.

According to Rosstat data, the researcher established mutual dependence (determined correlation coefficients) of different (and frequently occurring in real life) criteria, and also assigned a rating to each subject of the Russian Federation by calculating the weights of these factors [19] (4):

$$R_j = \sum_{j=1}^{k} r_j \beta_j , \quad (4)$$

where R_j — logistics rating of the j-th region of Russia; r_j — the place occupied by the region in

the ranking of Ya. Yu. Pavlova; β_j — weight of factors; k — number of factor samples.

Thus, for calculating the third criterion, which characterizes the distribution component of the transport and logistics potential, it is quite acceptable, in the authors' opinion, to use the aforementioned rating of the subjects of our country based on the quality of conditions for logistics development.

The application of the proposed ranking scheme in the developing methodology for assessing transport and logistics potential does not contradict the second requirement for criterion selection due to the existence of an established rating.

At the same time, the specific feature of the latter is that the higher the rank, the worse the conditions for the development of logistics in the administrative-territorial entity of the countries. This circumstance contradicts the first requirement for selecting criteria.

To apply Pavlova's rating list in the developing methodology, it needs to be accommodated. In accordance with the provided arguments, the third criterion k_d — the distribution component coefficient, which shows the logistical component of the transport and logistics potential of the region's water transport complex, taking into account formula (4), will have the following form

$$k_d = \frac{1}{R_j}. \quad (5)$$

k_d essentially responds to both statistical theory (using the standardized regression coefficient) and expert assessments, which undoubtedly reinforces its objectivity.

CONCLUSIONS

As a result of the conducted research to evaluate the transport and logistics potential of the water transport complex of the administrative-territorial entity of the country, three key criteria were selected:

1) k_{pi} as a port-industrial component;
2) k_i as an industrial component;
3) k_d as a distribution component.

The transport and logistics potential was presented in the form of a three-component model, and its integral assessment (final indicator) is calculated as a generalized value of selected criteria (qualifying each fraction of the components) taking into account their weighting coefficients:

$$\varphi = x_1 k_{pi} + x_2 k_i + x_3 k_{d,} \quad (6)$$

where φ — transport and logistics potential of the region's water transport complex; x_1, x_2, x_3 — weight coefficients.

$k_{pi,}$ k_i and k_d most objectively characterize the transport and logistics potential of the regional water transport complex, as they fully reveal its main components. The prospective modification of the established model involves the specification of the weights of each of the effective components, with the testing of the proposed methodology on specific examples in the subsequent works of the authors of this study.

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ABOUT THE AUTHORS

Vladislav S. Chebotarev — Dr. Sci. (Econ.), Prof., Chief Researcher of the Department of Economics and Management, Volga State University of Water Transport, Nizhny Novgorod, Russian Federation
https://orcid.org/0000-0002-2913-2360
vschebotarev@rambler.ru

Oleg L. Morozov — Cand. Sci. (Econ.), Deputy Head (for Scientific work), Nizhniy Novgorod academy of the Ministry of the Interior of Russia, Nizhny Novgorod, Russian Federation
https://orcid.org/0000-0001-6526-2755
Corresponding author:
morozoole@yandex.ru

Dmitry V. Nazarychev — Cand. Sci. (Econ.), Assoc. Prof., Head of the Department of Finance, Taxes and Credit of the educational and Scientific complex for countering Economic and Tax Crimes, Nizhniy Novgorod academy of the Ministry of the Interior of Russia, Nizhny Novgorod, Russian Federation
https://orcid.org/0000-0003-4580-8823
dnazarychev@mail.ru

Authors' declared contribution:
V.S. Chebotarev — development of the concept of the article, formulation of the research hypothesis, interpretation of the results.
O.L. Morozov — problem statement, selection of sources, critical analysis of literature, development of model structure, drawing conclusions.
D.V. Nazarychev — substantiation of the choice of indicators, development of a calculation scheme, analysis of theoretical provisions on the research topic.

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