Problems and Prospects for Implementing Inter-dimensional and Inter-industry Projects in Digital Economy

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Abstract. The purpose of this study was to review the current issues of project management and their impact on the development of regions and industries in the new communication in environment, formed by the features of the digital economy. Concepts related to management of inter-branch, interregional projects are specified, their stages of management are considered. Paying attention to methodological problems related to the study of factors affecting the success of inter-branch and interregional projects in the context of an updated postindustrial society, an integral part of which is the digital economy. Express diagnosis of the status of the most important of them for projects implemented in Russia. The theoretical and practical basis was the regulatory provisions of the Russian Federation, research papers of Russian and foreign scientists related to problems of project management, as well as developed foreign standards. Methodical basis of the study were chosen system analysis, logical analysis methods and statistical methods. The developments outlined in this article represent an original contribution to improving the efficiency of development of territories and industries based on benchmarking of current global trends and Russian experience in managing globalization projects in the digital economy.

Keywords: Digital technologies · Inter-dimensional and inter-sectorial projects
Stakeholders · Expert analysis · Success factors

1 Introduction

According to the Strategy of Scientific and Technological Development of the Russian Federation, the key factors determining the competitiveness of national economies are the high rate of mastering a new knowledge and creating innovative products [8].

The most significant factors of the scientific and technological development of the Russian Federation in the context of the rapid change in the macro and mezzo environment under the Strategy are: reduction of the innovation cycle, erosion of territorial and sectorial boundaries; the emergence of fundamentally of new tools related to IT technology in the conduct of research and development; the importance of intellectual innovative human potential, the growing role of international standards. In accordance with the tasks set in the Strategy, the role of project management in the implementation of the scientific and technological development of the Russian Federation is becoming the key one.

Russian branches of territorial development are attractive for foreign investors, which was repeatedly confirmed at the Eurasian forums. Investors are ready to come with their finances, specialists, advanced technologies and localize them in this or that production in Russia. However, these tasks are encumbered by insufficient knowledge and thoroughness of this issue on the part of the Russian Federation, which naturally reduces the effectiveness of efforts [1, 2, 9].

Thus, the main goal of this research is to focus on methodological study of the priority aspects of managing inter-sectorial, interregional projects that potentially or really reduce the pace of their implementation in Russia.

2   Theoretical Basis of the Research

Let us turn to the concept of inter-industry, interregional project and project management. They are quite diverse, which is dictated by various standards existing today, for example, PMBOK, GOST R 54869-2011, DIN 69901, PRINCE2 [6, 7]

In our opinion, the main characteristics of the project management of the future are the speed of taking managerial decisions and erasing the sectorial and territorial boundaries. Therefore, we combined the class of inter-dimensional and inter-branch projects under the name *Spatial reactive projects (SRP)* [5]. *SRP* projects are a set of interrelated activities aimed at creating one or several innovative products or services in time and resource constraints based on several industries and territories, leading to their multiplicative development effect.

Note that the implementation of SRP occurs in the period of intensive development of the digital economy, including Russia. The digital economy is a new paradigm of accelerated economic development, which assumes the comprehensive integration of digital information technologies and real economic processes at the level of states, markets and companies. In Russia, the share of the digital economy in GDP is 2.8%, or $ 75 billion. Given the scale of SRP, the digital economy can have a significant impact on the implementation process. Analyzed the practice of implementation of inter-branch, interregional projects, we will outline the following stages:

1. Analysis of problems and motivations of the industry in general through expert analysis, compilation of various kinds of forecasts using the opportunities of online and innovative digital technologies.
2. Inventory resources of territories, industries and enterprises based on their potentials.

3. Formation of criteria, goals, motivation for enterprises, industries and territories.
4. Analysis of existing business processes and information flows between enterprises and territories in the digital economy.
5. Building relationships between enterprises and creating a single information space structure. Formation of "rules of the game" and organization of information flows in the digital economy.
6. Risk assessment of SRP in a digital economy.
7. Estimating the cost of SRP in a digital economy.
8. Financing.
9. Implementation.

Therefore, the speed of changing the macro environment does not allow us to focus on the long-term development of new technologies and the phased implementation of such projects. Reactivity should characterize the project management of the future and be the basis of the methodology for implementing inter-dimensional and inter-industry projects [4]. This is possible if you know in advance the problem areas (the most significant implementation factors) of such projects and take proactive actions for effective management, taking into account the features and capabilities of the digital economy.

3   Research Methodology

In the framework of this study, an assessment of the factors influencing the success of SRP implementation in the digital economy with the use of appropriate economic and mathematical methods, the possibilities of online and digital technologies. Express diagnostics of the current state of the most important of them was carried out, which gives an idea of the potential success of SRP in Russia.

The information was collected based on an expert survey conducted using a special assessment sheet, which lists the parameters that affect the level of success of the project. It was suggested to evaluate the significance of each parameter on a five-point scale, with "5" meaning that the parameter is very important, "4" has an important meaning, "3" has a rather important meaning, "2" does not have a great meaning, "1" does not really matter.

The tasks of organizing the survey included the development of questionnaires and selection of experts. The study was completed in a questionnaire, which was used in the survey of experts. The expert group was formed from leading specialists with extensive work experience. When conducting the survey, each expert was sent a questionnaire and complete list of factors that took into account, including the movement of information in the digital economy, such as the consistency of stakeholder interests, the completeness and reliability of information on the resource potential of the territories. The task of the experts was to fill out questionnaires according to the set of rules. Communication was carried out online, which allowed attracting experts from different regions to the survey.

The results of the survey were processed using economic-mathematical methods of rank correlation. Preliminary survey data for each of the experts participating in the evaluation were reduced to one table-matrix of ranks.

To assess the degree of consistency of expert's opinions, the concordance coefficient was calculated by formula (1) with intermediate calculation of the indicators according to formulas (2), (3) and (4)

$$W = \frac{S(d^2)}{\left(\left(\frac{1}{12}\right) n^2 (m^3 - m) - n \sum_{j=1}^{n} T_j \right)}, \tag{1}$$

Where

$S(d)$ is the sum of the squares of the differences in rank;
T_j is an indicator characterizing equal ranks;
m   total number of factors being evaluated;
n   is the total number of experts involved in assessing the significance of the factors

$$S(d^2) = \sum_{i=1}^{m} d_i^2 = \sum_{i=1}^{m} \left[\sum_{j}^{n} (x_{ij}) - X \right]^2, \tag{2}$$

Where d is the deviation of the sum of ranks from the j-th parameter from the average value of the sum of ranks.

$$X = \frac{1}{m} \sum_{i=1}^{m} \sum_{j=1}^{n} X_{ij} \text{ Or } X = \frac{n(m+1)}{2}, \tag{3}$$

$$T_j = \frac{1}{12} \sum_{t_j} (t_j^3 - t_j), \tag{4}$$

Where:
X_{ij} the rank of the i-th parameter and the j-th expert;
T_j is the number of identical ranks for the j-th expert.

When conducting an expert survey, the expert's opinions were completely independent, which contributed to an increase in the objectivity and reliability of the results of the examination.

As a result, we obtained a matrix of the values of the parameters of factors that affect the success of the project. They are presented in Table 1.

Table 1. Matrix of the values of the parameters of factors affecting the success of SRP in the digital economy

Factors	Expert assessments						
	1	2	3	4	5	6	7
1. Security assurance of return of funds to investors	5	5	5	5	5	5	5
2. State support	5	5	5	5	5	5	5
3. Availability of competent project personnel	5	4	4	5	5	5	5
4. A stable and transparent legal environment	4	4	4	5	5	5	5
5. Political stability	5	5	5	5	5	4	4
6. Consensus of stakeholder interests	5	5	5	5	5	5	4
7. Completeness and reliability of information on the resource potential of the territories	5	5	4	5	5	5	4
8. The presence of competitors	3	3	3	3	3	3	3
9. Variability of exchange rates	4	5	4	5	4	5	5
10. Favorable demographic environment	4	4	4	4	4	4	4
11. Favorable economic environment	4	4	5	4	4	4	4
12 Climate	3	3	4	4	4	4	4
13. Social and cultural environment	3	2	3	3	3	3	3

(A source: was compiled by the authors on the basis of the data of the expert survey conducted)

The results of the survey were processed using economic-mathematical methods of rank correlation. Preliminary survey data for each of the experts participating in the evaluation were summarized in one table-matrix of ranks, which is shown in Table 2.

Table 2. The matrix of the ranks of factors affecting the success of SRP in the digital economy

Factors	X	Sigma	V	Absolute values	Relative values
1. Security assurance of return of funds to investors	5	0	0	72.5	0.114
2. State support	5	0	0	72.5	0.114
3. Availability of competent project personnel	4.714	0.488	0.104	62	0.099
4. A stable and transparent legal environment	4.571	0.535	0.117	57	0.089
5. Polytic stability	4.714	0.488	0.104	61.5	0.097
6. Consensus of stakeholder interests	4.857	0.378	0.078	67	0.105
7. Completeness and reliability of information on the resource potential of the territories	4.714	0.488	0.104	61.5	0.099
8. The presence of competitors	3.000	0.000	0.000	12	0.019
9. Variability of exchange rates	4.571	0.535	0.117	56.5	0.089
10. A Favorable Demographic Environment	4.000	0.000	0.000	35	0.055
11. Favorable economic environment	4.143	0.378	0.091	40.5	0.064
12. The climate	3.714	0.488	0.131	28.5	0.045
13. Social and cultural environment	2.857	0.378	0.132	10.5	0.016
Coefficient of concordance	0.752093				
Pearson's criterion	63.1758				
Number of degrees of freedom	12				
Coefficient of concordance	0,72212				

(A source: was compiled by the authors on the basis of the data in Table 1)

The values of the concordance coefficient and Pearson's criterion, given in Table 2, indicate that the results of the expert survey processing can be considered reliable.

Following the logic of the analysis, we will also perform the Spearman rank correlation, which will allow us to study the congruence between each of the experts. [10] The results presented in Table 3 indicate that the consistency of opinions of the experts of the conducted survey is not accidental.

Table 3. Rank correlation of the Spearman factors affecting the success of SRP in the digital economy

	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7
Expert 1	0.858	0.744	0.878	0.916	0.768	0.595
Expert 2		0.752	0.881	0.773	0.773	0.603
Expert 3			0.668	0.702	0.539	0.501
Expert 4				0.922	0.922	0.810
Expert 5					0.834	0.693
Expert 6						0.862

(A source: was compiled by the authors on the basis of the data in Table 2)

4   Analysis of Research Results

According to the calculation in Table 3, we can say with confidence that all experts are similar to each other in opinion; there are no directly opposite opinions

Therefore, based on the analysis, we can conclude that the most significant factors for reducing the risks of an inter-territorial, inter-sectorial project are:

– governmental support;
– security assurance of return of funds to investors
– consistency of stakeholder interests.

We will perform an express diagnostics of the state of these factors.

Guarantees for the safety of return of funds to investors are provided by the legislation of the Russian Federation and international treaties in force on the territory of Russia (in particular, the Law on Foreign Investments). State support can be implemented both at the financial and organizational levels. To date, among the ways of financing SRP can be identified the following means:

– Means of the National Welfare Fund,
– Budgetary allocations, loans,
– Own net worth

In Russia, there is an example of this kind of financing. It is carried out, for example, within the framework of the implementation of the Interdisciplinary project "Eastern polygon" in Siberia and the Far East, which affects the development of the Baikal-Amur Mainline and the Trans-Siberian Railway and creating a global transport corridor. In the development passport of the Baikal-Amur Mainline and the

Trans-Siberian Railway with total financing of 560 billion rubles. It is shown that of them 110 billion rubles. - Federal budget funds; 150 - the National Welfare Fund; 302 billion rubles. - The investment program of Russian Railways. Today, this is the largest infrastructure project.

As for the organizational component, here it is worth mentioning the development of project offices in Russia designed to simplify the work of stakeholders of projects, including interregional and inter-branches. This work has recently been quite active, for example, in the Belgorod, Leningrad region and other areas.

Continuation of the organizational factor is the coordination of interests of stakeholders. The openness of the space formed by the digital economy, potentially provides unlimited attraction of resources in the form of investor interest, on the other hand is a potential source of problems, as the number of stakeholders is widening, which leads to certain difficulties in reconciling different and sometimes even divergent interests [11].

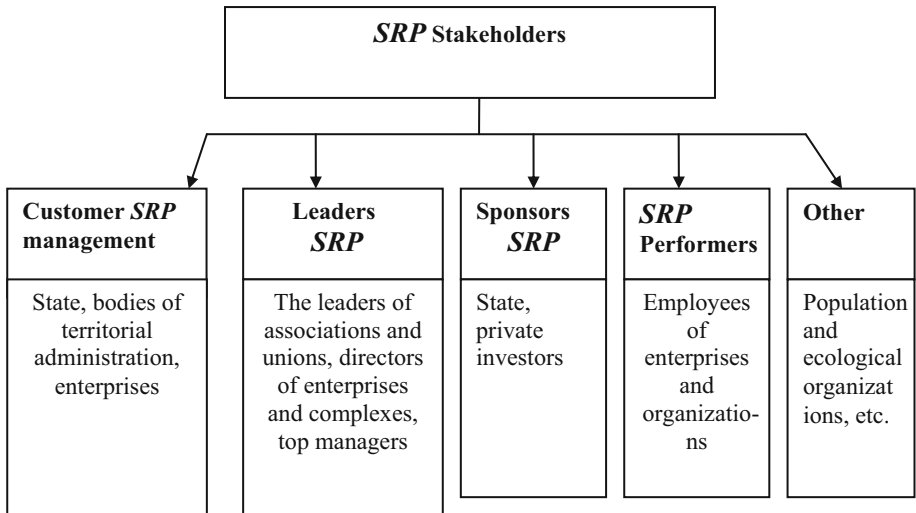The general classification of SRP stakeholders is shown in Fig. 1.

Fig. 1. SRP Stakeholders. A source: compiled by the authors

The SRP consists of projects of several hierarchical levels, which complicates the relationship between its participants. The enlarged SRP stakeholder scheme for the example of the development of high-speed water passenger and freight-and-passenger transportations in the Volga-Caspian and Azov-Black Sea basins is examined in Fig. 2. From it is clear that the potential risk of consistency of stakeholder interests in the project under consideration is certainly an environmental component, since the implementation of a project of this scale affects the ecosystem of the entire region.
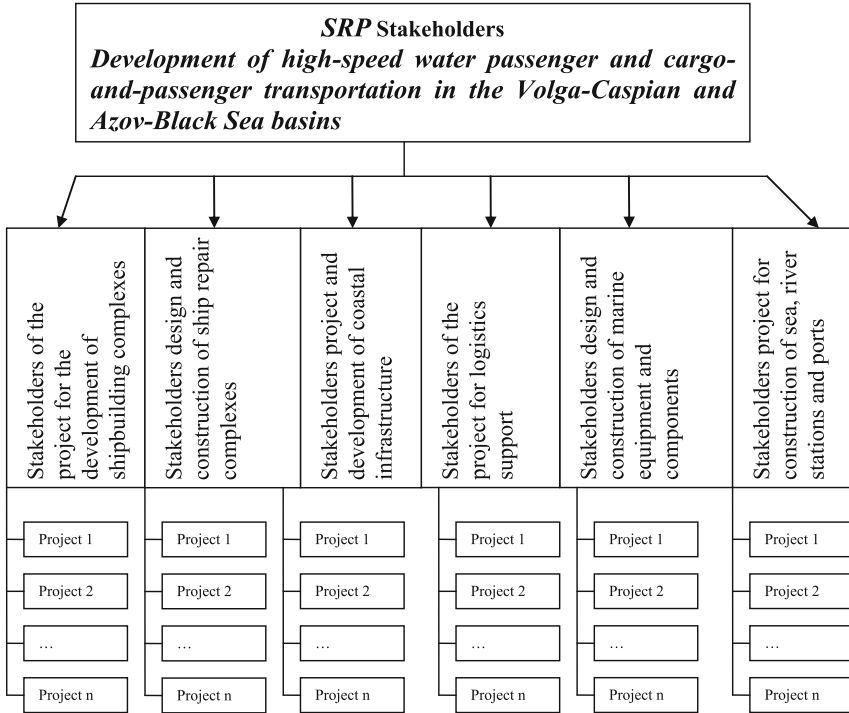
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┌─────────────────────────────────────────────────────────────────┐
│                        SRP Stakeholders                          │
│   Development of high-speed water passenger and cargo-           │
│   and-passenger transportation in the Volga-Caspian and          │
│   Azov-Black Sea basins                                          │
└─────────────────────────────────────────────────────────────────┘
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Stakeholders of the project for the development of shipbuilding complexes	Stakeholders design and construction of ship repair complexes	Stakeholders project and development of coastal infrastructure	Stakeholders of the project for logistics support	Stakeholders design and construction of marine equipment and components	Stakeholders project for construction of sea, river stations and ports
Project 1	Project 1	Project 1	Project 1	Project 1	Project 1
Project 2	Project 2	Project 2	Project 2	Project 2	Project 2
…	…	…	…	…	…
Project n	Project n	Project n	Project n	Project n	Project n

Fig. 2. Enlarged scheme of SRP stakeholders on the example of development of high-speed water passenger and cargo-and-freight transportation in the Volga-Caspian and Azov-Black sea basins. A source: compiled by the authors

It should be noted that the issue of building communication in the process of coordinating the interests of stakeholders of SRP, despite its importance, remains poorly understood. The authors believe that the expectations of stakeholders, linked to the strategic objectives of the project, should be placed at the center of the management of these communications [3].

5   Conclusions

Accelerated development of Russian territories is possible only with a comprehensive approach that bringing together the interests of businesses of different levels and territorial entities. The analysis shows that the implementation of projects of various levels of globalization without sufficient methodological elaboration of this issue reduces the effectiveness of efforts.

The importance of the presented study is to systematize data in the field of inter-branch and inter-dimensional projects on the basis of analysis of various scientific and practical studies.

In the course of the work, the concept of inter-branch and inter-dimensional projects was clarified, their participants were specified and the stages of SRP implementation in the conditions of the digital economy were formulated.

The success of the SRP implementation depends on various factors, which can be both potential opportunities and project risks. Based on the exclusively applied aspect of this study, an analysis was made on the success factors of SRP in Russia. As a research method, expert analysis was selected with the calculation of the verification coefficients of concordance, Pearson's criterion and Spearman's rank correlation.

Based on the analysis, significant factors of the success of inter-territorial and inter-sectorial projects were analyzed. Reviving that along with traditional business security factors, factors related to the characteristics of the digital economy have a potential serious impact on the success of SRP.

In general, the issue in question requires further close interaction between authorities and business, and intensification and institutionalization of regional cooperation is a necessary condition for ensuring the sustainable development of the Russian economy.

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