Implementation of an organizational mechanism for project approach realization to develop territorial innovative cluster strategic potential

Implementación de un mecanismo organizacional para la realización de un proyecto para desarrollar el potencial estratégico de un clúster innovador territorial

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Received: 07/06/2019 • Approved: 30/08/2019 • Published 09/09/2019

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ABSTRACT:
The systems of regional development management are undergoing active transformations at the current stage of the modern economy. The economic development trends in the context of the changing conditions have identified the problem of discovering new approaches, forms, mechanisms, and methods of management, at all levels of the federal structure, for the improvement of a country’s economic competitiveness and the population’s quality of life. In this regard, the project approach becomes most significant among all the other approaches of regional management. The purpose of this research was to establish and adapt the organizational mechanism for the project approach realization in the context of the development of the strategic potential of the territorial innovative cluster, by using the Republic of Mordovia as an example. The further organizational and regulatory support of the regional project approach enables the implementation of the strategic potential of territorial innovative clusters at a new qualitative level.

Keywords: territorial innovative cluster, project

RESUMEN:
Los sistemas de gestión del desarrollo regional están experimentando importantes transformaciones en la etapa actual de la economía moderna. Las tendencias de desarrollo económico en un contexto de condiciones cambiantes han planteado el problema de descubrir nuevos enfoques, formas, mecanismos y métodos de gestión, en todos los niveles de la estructura federal, para mejorar la competitividad económica de un país y la calidad de vida de la población. En este sentido, el enfoque del proyecto se vuelve más significativo entre todos los otros enfoques de gestión regional. El propósito de esta investigación fue establecer y adaptar el mecanismo organizacional para la realización del enfoque del proyecto en el contexto del desarrollo del potencial estratégico del clúster innovador territorial, utilizando la República de Mordovia como ejemplo. El mayor apoyo organizativo y regulatorio del enfoque del proyecto regional permite la implementación del potencial estratégico de los clústeres territoriales innovadores a un nuevo nivel cualitativo.

Palabras clave: cluster territorial, enfoque de
1. Introduction
The systems of regional development management in the Russian Federation are undergoing active transformations at the current stage of the modern economy. The economic development trends in the context of the changing conditions have identified the problem of discovering new approaches, forms, mechanisms, and methods of management at all levels of the federal structure for the improvement of a country’s economic competitiveness and the population’s quality of life.

In resolving this issue, the regions where the innovative economic and human potential of the society are created and reproduced play a significant role. The importance of the effective management of the infrastructure components of the regional economy, including territorial innovative clusters, increases in the context of the formation of the innovative development model.

The main strategic goals of Russia's present-day development that translate into the foundation of a prosperous state follow: to ensure economic growth; to solve demographic, environmental and social problems; to raise people's quality of life and well-being. Despite the fact that the Russian economy has demonstrated increases in quantitative values since the beginning of the 2000s (excluding the peak period of the global economic crisis), this growth has been unstable and various negative factors have influenced it. To a large extent, the growth did not contribute to the solution of such fundamentally important problems as the unfavorable demographic situation, the large social gap between the different sectors of society, the thin middle class, the insufficient development of the intellect-based spheres of economic activities etc.

Under such conditions, it is logical to assume that various spheres of Russian society need to benefit from additional impetus, which will ensure the high intensity of their development. In our opinion, the project approach, taking into account regional features of the business systems’ development, correlates tremendously with this solution.

2. Methodology
The theory of management defines the project as a set of measures aimed at achieving particular goals in a limited period of time with the application of the necessary funds. Projects are widely used in various areas of human activity (technology, science, business). Social projects, which are aimed at effectively solving specific problems, are used widely. The implementation of various projects is one of the aspects of the functioning of the state and municipal authorities.

The approach associated with the research topic is related to the investigations of the last 10 years. The mathematical apparatus, however, which was the basis for evaluating the effectiveness of the implementation of the project approach to the final results of the activity, the impact of the institutional mechanism and assessing the potential of a strategic innovative cluster, was developed in the 1960s – 1970s of the 20th century. For the last 10 years, the earlier developed models have been adapted to the current processes and phenomena. It is necessary to mention such mathematicians and economists studying this issue: K. Hartman, E. Letskiy and V. Sheffer (1977); K.Yu. Rihter (1982); V.G. Afanasev (1982). Later their ideas were developed by A.A. Emelyanov, E.A. Vlasova and R.V. Duma (2002); E.L. Pashnanov (2005); N.A Dubrovina (2006); Vasileva (2009); O.S. Evseev (2012); A.A. Alekseev (2012); M. Yu. Mahotaeva (2014), S. Monni, F. Palumbo, M. Tvaronavičienė (2017); O. Eddelani, N. E. Idrissi, S. Monni (2019), etc.

Since the end of the 10s of the 21st century a lot of scientists analyzed the formation and development of territorial innovative clusters. Among them the following researchers should be noted: F. Belussi and A. Sammarra (2009); S. MacNeill and M. Steiner (2010); F.X. Molina-Morales, P.M. García-Villaverde and G. Parra-Requena (2014); I.R. Gafurov, O.U.
The project approach to the socio-economic development is also provided at the regional level. Regional projects should be divided into those initiated by the federal government (the preparation and conducting of Asia-Pacific Economic Summit in Vladivostok, the Olympic Games in Sochi, and the Universiade in Kazan in 2013, and others) and by the regional authorities. The most famous examples of megaprojects are the following high-priority national projects: “Health”, “Education”, “Accommodation” and “AIC Development”. All of them are devoted to the human potential development. Besides the mentioned above projects, there are not so immense ones, namely the foundation of a world-class innovation center in the city of Skolkovo.

The Council for the project management approaches and criteria implementation into the institutions of federal executive authorities and state authorities of the Russian Federation was founded, the Regulations of the Council and its composition were approved in 2013. The Ministry of Economic Development of the Russian Federation assigned organizational and technical support of the Council activities to the Department of Strategic Management, State Programs and Investment Projects.

In 2014 methodological recommendations on the implementation of the project management into the executive branch were developed and approved by the Ministry of Economic Development of the Russian Federation in order to improve the activity of federal executive bodies and executive bodies of the subjects of the Russian Federation.

The experience of the project approach implementation was also developed in other spheres of the state institutions’ activity. It is necessary to note the significant contribution of Ministry of Digital Development, Communications and Mass Media of the Russian Federation to the development of the project management system of the state institutions digitization. In 2013 methodological recommendations were developed and approved in accordance with subparagraph “a” of paragraph 2 of the Resolution of the Government of the Russian Federation of April 25, 2012 No. 394 “On measures of the improvement of the implementation of the information and communication technologies into the state bodies’ activities” (Shlafman, 2014).

Agency for Strategic Initiatives (ASI) developed methodological recommendations, defining the principles; algorithm and implementation peculiarities of the project approach, providing the improvement of investment climate and the solution of the other issues of the state management in the Russian Federation that require the project management approach.

Current methodological recommendations contribute to the solution of the following problems:

- Formation of a single set of project management instruments, providing the improvement of regional investment climate and other issues requiring the project approach implementation;
- Provision of the methodological unity of the project management, contributing to the improvement of regional investment climate;

The solution of the problems revealed the following results:

- Development and implementation of the organizational structure and the required instruments of the regional project management;
- Implementation of the project management “road maps”;
- Improvement of the project management that contribute to the optimization of the regional investment climate.

In conclusion, nowadays the project approach to the development of the regional social and economic structures is much in demand and becomes one of the most effective methods of state and regional management development.
Hence, it is significantly important to analyze the information in terms of the selected project approach to provide the consequent development of the regional social and economic structures. It is difficult to recommend any single means of the information value definition. Depending on the indicated task various methods can be applied. Thus, according to the method of Harkevich (Vasileva, 2009) the information value for the systems with a clearly defined goal is expressed by means of its achievement probability increase.

If the number of the possible equiprobable outcomes constitutes \( N_o \) a priori, and decreases to \( N_1 \) after receiving the information, the amount of the received information is calculated as following:

\[
I = \log_2 N_o - \log_2 N_1 = \log_2 \frac{N_o}{N_1}
\]

If the received information contributes to the achieving of the definite goal, the value of the information can be determined by finding out how the received message approaches the goal. Therefore, if a goal is clearly defined, the value of the information can be expressed in terms of the probability of the goal achieving. If this probability constitutes \( p_o \), before receiving the message and changes into \( p_1 \), afterwards, the value will comprise the following:

\[
I = \log_2 p_1 - \log_2 p_o = \log_2 \frac{p_1}{p_o}
\]

Formulas 1 and 2 do not contradict each other if we assume that:

\[
p_o = \frac{1}{N_o}; p_1 = \frac{1}{N_1}
\]

This becomes obvious from the following reasoning. The probability \( p_o \) of achieving a goal after receiving a message will be the greater the less equiprobable outcomes remain after receiving the information, i.e. less than \( N_1 \). When determining the amount of information by means of receiving the external signals, the authors assume that there are 10 a priori equally probable outcomes \( (N_o) \), namely, five levels of receiving and not receiving signals. There are five possible outcomes. A weak signal is evaluated with two favourable outcomes (signals of level 1 and 2); a strong signal is evaluated with three possible favourable outcomes (signals levels 3-5). Therefore, the amount of information for both cases is equal to:

1) \( p_o = \frac{1}{10}; p_1 = \frac{2}{5}; I = \log_2 \frac{2}{10} = 2.00 \)

2) \( p_o = \frac{1}{10}; p_1 = \frac{3}{5}; I = \log_2 \frac{3}{10} = 2.58 \)

Obviously, when a strong signal is received, the amount of information of the external environment increases. Thus, it is the most valuable and complete information for making a decision about the enterprise’s reaction in instability.

3. Discussion

Adaptation of the above presented methodological base is revealed on the example of the Republic of Mordovia. Thus, the analysis of the socio-economic development of the republic confirms the necessity of the project approach used for the development and implementation of high-tech projects. One of the methods of the project approach implementation is to introduce the best practices of the National Rating of Investment Climate in the Republic of Mordovia. The national rating of the investment climate assesses the efforts of regional authorities for the creation of the favorable conditions for doing business and identifies the best practices; the results stimulate competition in investing at the regional level.

For these purposes, an interdepartmental commission (Project Office) was created in the republic to introduce the best practices of the National Investment Climate Rating in the Republic of Mordovia; the regulations on the interdepartmental commission and its composition were approved. The main tasks of the commission are the following:
1) To implement the best practices in accordance with the annual National investment climate rating in Russian regions;
2) To implement the plan of measures (“road map”) for the promotion of the Republic of Mordovia in the National investment climate rating of the Russian regions (hereinafter - “road map”);
3) To analyze the results of the implementation of the improvement of the investment climate in the Republic of Mordovia and in the municipal units in particular;
4) To organize and coordinate the implementation of changes in municipal units in the Republic of Mordovia devoted to the development of small and medium enterprises, to remove administrative barriers in municipal units, and to apply the successful practices in the Atlas of Municipal Practices;
5) To interact with the Agency for Strategic Initiatives on Promoting New Projects (ANO) in the initiatives aimed at the investment climate improvement;
6) To develop and strengthen the cooperation with the Republic of Mordovia’s executive authorities, territorial bodies of federal executive authorities, local governments, and public and other organizations on the implementation of the best practices of the National Rating;
7) To promote the Republic of Mordovia in the National rating of investment climate.

The use of the project approach in the implementation of the National Rating of the Investment Climate’s best practices is just one of the instruments of state management in the Republic of Mordovia, which is defined by federal regulatory documents. The project approach to the management of the regional innovation activities and, in particular, to the development of the strategic potential of the regional innovative clusters is equally in demand and relevant.

Innovative clusters of the republic include a significant number of participants. They represent various spheres of activity (state-owned enterprises, research and scientific-educational organizations, business structures, etc.) that have special interests but are united by common development goals, including their strategic potential to share in the current problem’s solution. This necessitates the development and effective use of an appropriate institutional mechanism of the project approach to the development of the strategic potential of the territorial innovative cluster. This will ensure its participants’ interests are balanced in the region and in the country as a whole.

Such a mechanism can be based on an automated information system for project management, implemented by the executive authorities of the region. For example, in the Republic of Mordovia, such a system has already been approved by the Regulations on project management, project office, and project committee, and was implemented by the executive authorities. Taking into account the key provisions of these documents, the authors of this research analyzed the basic elements of the organizational mechanism of the implementation of the project approach to the development of the strategic potential of a territorial innovative cluster.

The Agency for Strategic Initiatives of the Project Management (ASI PM) includes the following subsystems: directory service subsystem, Email, database management, infrastructure monitoring and management, integration subsystem, information security support systems, project and program management, project activities support, portal subsystem, analysis, and reporting subsystem. The project and program management subsystem performs the following functions:

- Project management: registration of a new project, project attributes’ change, format and logical control of the input data, project lifetime cycle management, project document files management, relationships with other information entities management, access control to the particular aspects of the project card, automatic notifications of the project participants in case of important changes in the project card, periodic project reports; search, filter and sort projects by attributes;
- Checkpoints management: new checkpoints creation, checkpoints’ attributes change, format and logical control of input data, periodic reports on checkpoints, ordered lists of
checkpoints formation with the possibility of grouping, access control to particular aspects of the checkpoint card, automatic notifications of the CP participants in case of the important changes in the checkpoint card, search, filter, and sort projects by attributes;

- Change requests management: registering a request for changing data in the system objects, rejection of a change request, approval of the change request, saving the data change history submitted by the change requests, and display of a list of change requests.

![Main components of the regional automatic project management system](image)

The subsystem of the project activities support of the territorial innovative cluster is based on the integration of the portal subsystem and the project and program management subsystem. It performs the following functions:

**Meeting Management:**
- Meeting card creation;
- Meeting participants’ indication;
- The participants’ notification on the meeting planned;
- Adding questions to the meeting card;
- Attachment of meeting materials;
- Differentiation of the access to the meetings;
- Automatic formation of the meeting agenda by a pattern;
- Automatic recording of the meeting by a pattern.

**Meeting issue management:**
- Formation of the issue card;
- Linking issue card and meeting card;
- Indication of the speakers on the issue;
- Differentiation of the access to the issue card;
- Attachment of the materials to the issue card.

**Assignment management:**
- Formation of the assignment card;
- Linking assignment card and the subsystem activity;
- Differentiation of the access to the assignment card;
- Attachment of the materials to the assignment card;
- Informing about the assignment complete;
- Control of the assignment complete.

Government Decree of the Republic of Mordovia No. 527 “On the Project Management
System of the Republic of Mordovia", approved on September, 14 2015, defines the main aspects of the project approach to the regional development (including the formation of the basis for the implementation of the institutional mechanism of the project approach to the strategic potential development of the territorial innovative cluster); although it does not fully correspond to the project management standards.

In our opinion it is necessary to make a number of changes in the current organizational, regulatory and methodological practice of regional management in order to improve the strategic potential of the territorial innovative cluster.

The structure of the project management of the regional executive bodies is represented with several control levels (Fig. 2):

The first control level (Federal control level) is presented with the Government of the Russian Federation, including other executive authorities of federal level;

The second control level (regional control level) is presented with the highest executive body of the regional level, namely the Government, as well as the Project Committee that manages the project portfolios;

The third control level (Project Office control level) is presented with the Project Office of the Regional Government, monitoring the projects realization;

The fourth control level (Operational control level) is performed with the Project Team, controlling and monitoring the projects realization.

The third control level (Project Office control level) is presented with the Project Office of the Regional Government, monitoring the projects realization;

The fourth control level (Operational control level) is performed with the Project Team, controlling and monitoring the projects realization.

The structure, functions and responsibilities of the Project Committee should be defined in the regulations on the Project Committee.

The structure, functions and responsibilities of the Project Office should be defined in the regulations on the Project Office.

To achieve the objectives of the project, a Project Team should be formed, whose work should be organized to provide the interests balance of the region, the cluster and its participants.

Project Team members receive tasks from the Project Manager and report to him directly or indirectly.

Project Team can include both the Project Office staff and the employees of the other organizations.
Project Team staff must carry out the assigned tasks efficiently and with high quality, namely: to meet tight deadlines, with no need for constant monitoring and to escalate the problems in time.

Team members are assigned with project roles for a clear distribution of responsibilities in the project. That means that in addition to the requirements of a job description, the specialist will perform functions corresponding to the assigned role.

The authors define three action types of the project management. Namely:
1. Characteristic (depending on the stage of the project);
2. Regular (always with a certain regularity);
3. Eventive (at the occurrence of the event).

The authors offer the following structure of the organizational profile of the project management of the territorial innovative cluster (Table 1).

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Organizational profile of the project management of a territorial innovative cluster</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Priority</strong></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>High</td>
</tr>
<tr>
<td><strong>Obligatory roles in the project</strong></td>
<td></td>
</tr>
<tr>
<td>Functional customer</td>
<td>obligatory</td>
</tr>
<tr>
<td>Project Curator</td>
<td>obligatory</td>
</tr>
<tr>
<td>Project Manager</td>
<td>obligatory</td>
</tr>
<tr>
<td>Deputy Project Manager</td>
<td>not obligatory</td>
</tr>
<tr>
<td>Project Administrator</td>
<td>not obligatory</td>
</tr>
<tr>
<td>Working Team Manager</td>
<td>not obligatory</td>
</tr>
<tr>
<td><strong>Required sections of the project Passport</strong></td>
<td></td>
</tr>
<tr>
<td>Project content</td>
<td>obligatory</td>
</tr>
<tr>
<td>Project role structure</td>
<td>obligatory</td>
</tr>
<tr>
<td>Risks</td>
<td>not obligatory</td>
</tr>
<tr>
<td>Communication</td>
<td>not obligatory</td>
</tr>
<tr>
<td>Quality</td>
<td>not obligatory</td>
</tr>
<tr>
<td><strong>Regularity of reporting</strong></td>
<td></td>
</tr>
<tr>
<td>Checkpoint stages and sub stages status report</td>
<td>monthly</td>
</tr>
<tr>
<td>Project status report</td>
<td>monthly</td>
</tr>
</tbody>
</table>
### Regularity of communication

<table>
<thead>
<tr>
<th>Meetings</th>
<th>Frequency</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Committee Meetings</td>
<td>monthly</td>
<td>Once in 2 weeks</td>
</tr>
<tr>
<td>Project Team Meetings</td>
<td>on PM demand</td>
<td>weekly</td>
</tr>
<tr>
<td>Project Committee Meetings</td>
<td>as required</td>
<td>as required</td>
</tr>
</tbody>
</table>

### Authority to make decisions on changing the project deadline parameters

<table>
<thead>
<tr>
<th>Checkpoint Period</th>
<th>Decision Authority</th>
<th>Decision Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Committee</td>
<td>Project Committee</td>
<td></td>
</tr>
<tr>
<td>Project Manager</td>
<td>Management Committee</td>
<td></td>
</tr>
</tbody>
</table>

### Authority to make decisions on changing the project content parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Decision Authority</th>
<th>Decision Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing in the project products’ content and / or requirements</td>
<td>Management Committee</td>
<td>Management Committee</td>
</tr>
</tbody>
</table>

### Authority to make decisions on changing the project cost parameters

<table>
<thead>
<tr>
<th>Costs</th>
<th>Decision Authority</th>
<th>Decision Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in the cost of the stage / sub-stage of the project by more than 1 million rubles</td>
<td>Project Committee</td>
<td>Project Committee</td>
</tr>
<tr>
<td>Changes in the cost of the stage / sub-stage of the project by less than 1 million rubles</td>
<td>Management Committee</td>
<td>Management Committee</td>
</tr>
</tbody>
</table>

### 4. Conclusion

Creation of the Project Committee and the Project Office for the implementation of an organizational mechanism for project approach realization to develop territorial innovative cluster strategic potential is necessary for the identification of the officials responsible for the functioning of the project committee and the project office as a part of a regional project management system.

Approval of the list of planned projects, as well as the officials responsible for their implementation, is necessary to secure the responsibility for the planned result.

Approval of the work rules for the project participants of an automated information system of the project management determines the procedure and deadlines for adding data into the system, as well as the responsibility of project participants, assigned to certain project roles, for regular reporting and monitoring during the project implementation. This should provide the awareness of the heads of the territorial innovative cluster of the Republic of Mordovia and other persons interested in the regional projects implementation.

The presented proposals for the implementation of an organizational mechanism for project approach realization to develop territorial innovative cluster strategic potential are to a certain extent based on the methodological principles of the Automated Project Management System of the Republic of Mordovia (ASI PM). It was created within the framework of the State contract concluded as a result of a competition held in accordance with the current
legislation between the Ministry of Informatization and Communication of the Republic of Mordovia and private limited company SoftLineTrade.

Further development of the organizational and regulatory support for the project approach at the regional level will also provide the development of the strategic potential of territorial innovative clusters at a new qualitative level.

Acknowledgment
The reported study was funded by Russian Foundation for Basic Research (RFBR); grant #17-02-00390-GSS “Project approach to the development of the strategic potential of regional innovation clusters” GSS-A - RFBR main competition, 2017.

Bibliographic references


Guseva, M. (2012). The zone of advanced economic development as an instrument of spatial clustering of the economy. Samara State University of Economics Bulletin, 10(96), 60-64.


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