

METHODOLOGICAL APPROACHES TO STIMULATING INNOVATIVE ACTIVITY

ABORDAGENS METODOLÓGICAS PARA ESTIMULAR A ATIVIDADE INOVADORA

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ABSTRACT

The article clarifies the principles of innovation management, taking into account participatory management as a new approach to project management. Based on an assessment of the current state and trends in the country's socio-economic development in the conditions of an innovative economy, a conceptual model for the formation and assessment of socio-economic development priorities has been developed. The conceptual provisions of the new paradigm of socio-economic development are revealed and justified. A set of theoretical provisions and practical tools for assessing the impact of innovative projects has been developed. The criticality of stakeholders in the management of innovation activities has been determined and assessed. A methodology and methods have been developed for integrating the management of innovation activities into the management system. A method is proposed for taking into account the influence of mutual risks and assessing changes in the cost part of the project taking into account risks based on determining the factors of interaction of innovative projects.

Keywords: management, innovation management, innovative project, innovation activities.

RESUMO

O artigo esclarece os princípios da gestão da inovação, considerando a gestão participativa como uma nova abordagem à gestão de projetos. Com base numa avaliação do estado actual e das tendências do desenvolvimento socioeconómico do país nas condições de uma economia inovadora, foi desenvolvido um modelo conceptual para a formação e avaliação das prioridades de desenvolvimento socioeconómico. As disposições conceituais do novo paradigma de desenvolvimento socioeconómico são reveladas e justificadas. Foi desenvolvido um conjunto de disposições teóricas e ferramentas práticas para avaliar o impacto de projetos inovadores. A criticidade das partes interessadas na gestão das atividades de inovação foi determinada e avaliada. Foram desenvolvidas uma metodologia e métodos para integrar a gestão das atividades de inovação no sistema de gestão. É proposto um método para levar em conta a influência dos riscos mútuos e avaliar as mudanças na parte de custos do projeto, levando em consideração os riscos com base na determinação dos fatores de interação de projetos inovadores.

Palavras-chave: gestão, gestão da inovação, projeto inovador, atividades de inovação.

Introduction

Activation of innovation activity is the most important task set at the present stage of economic development for government authorities.

A comparative analysis of a number of international indices assessing the level of socio-economic development (index of the economy of knowledge, education, innovation, human development) allows us to conclude that in this area it lags behind not only a significant number of developed, but also a number of developing countries. (Chesbrough, H., 2003) introduced the concept of open innovation, which states that companies can and should use external and internal ideas to create and commercialize their technologies. (Amatori, B., & Colli, A., 2011), reviews business history with an emphasis on the complexity and comparison of innovation processes across countries. (Gruber, M., & MacMillan, I. C., 2013), examines the application of real options to manage resources and investments under uncertainty, particularly in the context of innovation management. (Vernon, R., 1979), examines the product life cycle hypothesis in the new international environment, emphasizing innovation and economic change. (Orsini, L., & Viganò, L., 2012), examines the role of innovation in Italian economic development, including an analysis of innovation policy and its impact on the economy. (Montagna, S., 2011), focuses his research on innovation management and the new product development

process, including strategies and methodologies for successful innovation implementation. (Sandstrom, C., 2014), considers open innovation competitions as a way to stimulate collaborative innovation. (Andrade, R., 2017), explores the processes and challenges related to industrial innovation in Portugal. (Dosi, G., 1988), analyzes the nature of the innovation process and its impact on economic theory and technical change. (Petrova, L., 2015), examines the economic aspects of innovation activities, including an analysis of the costs and profitability of innovation. (Jacques, A. M., 2010), analyzes innovation policy in Europe, including successes and challenges facing European countries. (Sidorenko, M., 2018), explores the strategic management of innovation in developing countries with a focus on Ukraine. (Holthausen, P., 2019), Exploring corporate innovation strategies in the Netherlands. (Skog, I., 2016), looks at technological development and innovation management in Norway. (López, M., 2013), examines strategies and policies to stimulate innovation in Spanish SMEs. (Kowalski, J., 2014), Investigates entrepreneurial innovation and policy support in Poland.

Having studied the international experience in the formation and development of innovation systems, we can come to the conclusion that at the present stage of the economic cycle, the goals and objectives of the socio-economic development of regions are changing dramatically. This is predetermined by the transition to a post-industrial economic model, the humanization of the economy and the development of the knowledge economy, in which an increasing role is assigned to human capital, and country competition is determined by factors of the level and quality of life of the population.

The implementation of programs for the socio-economic development of regions should be carried out through the creation of mechanisms for project management of innovation activities that ensure the achievement of the main priorities of the socio-economic development of the regions, which include:

- increase in innovative activity;
- improving the quality of human resources;
- development of human potential.

The role of project management of innovation activities at the regional level involves creating prerequisites for initiating innovative projects, facilitating their implementation, identifying project stakeholders and assessing the consequences of project implementation, reducing adverse impacts on the population due to the implementation and operation of projects. Creating an effective system! Project management of innovation activities is thus impossible without its integration into the regional management system (Montagna, S, 2011).

Humanization of socio-economic development, changing the paradigm of socio-economic development of regions, the need to create an effective system of project management of innovation activities determined the relevance and significance of the introduction of methodological and methodological provisions for the integration of project management of innovation activities into the management system.

Despite a significant amount of research in the field of innovation management and project management, the approach to project management, taking into account the system of participatory interactions and the new paradigm of regional development, has practically not been developed in the scientific literature. The task of building a participatory project management system that takes into account the goals and objectives of stakeholders such as the population and regional authorities, and integrating project management of innovations into the management system is essentially new and has not been sufficiently reflected in the scientific and research literature. In addition, the relevant studies do not reflect the problems of determining the total cost of ownership of an innovative project at the regional level; the issues of determining direct and indirect costs of project management have practically not been studied. The relevance, ambiguity and lack of development of theoretical and practical provisions for the integration of project management into the regional management system determined the choice of research topic, its object, subject, goals and objectives, and research methods.

The purpose of the study is to develop theoretical principles and develop a methodology for integrating innovation management into the management system.

The subject of the study is the set of management relations that arise during project management of innovation activities and its integration into the management system.

Methodology

The methodological and theoretical basis of the study was the provisions and conclusions of the authors' works in the field of innovation project management and project management, management theory, innovation assessment, management systems for socio-economic development of regions, reflected in relevant publications, monographs, as well as in materials and recommendations of scientific conferences, where this problem was studied.

Results

The scientific novelty and results of the study lie in the development of theoretical and methodological foundations and methodological provisions for the integration of project management in the field of innovation into the management system. The main scientific findings are as follows:

I. The concept of project management of innovation activities has been developed, and a new approach to managing such activities based on participation has been proposed, including:

- the dual nature of functioning is revealed as institutions of innovative economic activity with resources and opportunities for competition, on the one hand, and as a subsystem of the state, the main task of which is to create a most favored nation regime not only for companies and entrepreneurs, but also for the population;

- the principles of project management, previously not formalized in theoretical and scientific research, have been identified, the peculiarity of which is participatory (involvement) management and an integrated approach to the system

of mutual interactions between participants in the innovation process in the region, management of relationship assets;

- a classification of innovative projects is proposed, taking into account the assessment of regional competitiveness factors both at the state level and in the global economy, based on the model of K. Christensen. Classification features include such features as the scope of innovation, level of competitiveness, and broadcastability to the international level, dependent prerequisites of projects.

2. The need for a paradigm shift in the priorities of socio-economic development is substantiated based on the development of modern approaches to determining the priorities of the country's socio-economic development, namely:

- a tendency has been developed to humanize the socio-economic development of regions and assess the socio-economic effectiveness of development, highlighting qualitative and quantitative indicators, such as a measure of economic well-being, indicators of genuine progress (assessing the sustainable and responsible development of the state), the well-being of the population, as priorities for the formation of a strategy for social -economic development of the state. This trend is confirmed by the results of scientific research by international organizations that are developing models for changing development priorities at the level of individual states and territories;

- the need has been established to use balanced economic quantitative assessments of regional development priorities that determine the level of economic development (such as gross regional product, the volume of budget expenditures per capita, the volume of investment per capita), qualitative social indicators for making management decisions in the new economy. The limited assessment of the prospects for the strategic development of the region and the focus on reflecting the current and retrospective economic state without taking into account the dynamics of qualitative indicators of development predetermine the emergence of global problems at the state level, such as negative demographic and migration trends, deterioration of the environmental and social situation. Thus, the need to develop and use additional indicators with a social focus, including

qualitative assessments of the level of socio-economic development, has been identified.

3. Based on the analysis of prerequisites and constituent elements, the modern paradigm of socio-economic development in the conditions of an innovative economy has been determined:

- strategic priorities are determined and a system of goals and objectives of state development is justified, which is the basis for the initiation and implementation of innovative projects;

- the prerequisites and principles of the new paradigm of socio-economic development are formulated, namely:

- competition between regions as open systems for high-quality human resources;

- departure from the local economy and transition to a network economy;

- change in relationship assets from the “business-government” model to the “business-population-government” model;

- orientation towards international standards of quality and standard of living.

4. A new approach to assessing the impact of innovative projects has been developed and theoretically justified, and tools for integrating project management of innovation activities into the management system have been proposed:

- conditions for increasing the efficiency of innovative projects for the state level at all stages of the project cycle have been identified, reflecting the cumulative result of changes in the well-being of the population and business entities, based on the principle of consistency of interests;

- a matrix of balanced priorities for socio-economic development has been developed, which is the basis for the selection and prioritization of governmental projects;

- the need to create a strategically consistent environment for innovative projects is substantiated and a mechanism for prioritizing innovative projects is determined based on the “funnel of strategic constraints”;

- the concept of “total cost of ownership of an innovative project” was introduced, reflecting the socio-economic effect of implemented innovative projects through a set of indicators such as the direct social effect of the project, meaningful transformation and extraterritoriality of the innovative project.

5. A methodological approach has been developed to determine and assess the criticality of stakeholders (stakeholders) of an innovative project, including:

- the composition and structure of stakeholders (stakeholders) of innovative projects have been determined;

- M. Storper’s model of connections has been clarified, which the author supplements with the “innovation projects” block;

- principles for identifying project stakeholders at all stages of the project cycle are formulated, including identifying the main stakeholder groups and their interests, the prerequisites for changing stakeholder priorities over time, and identifying temporal imbalances of interests;

- matrices for assessing the level of criticality of stakeholders for an innovative project have been developed based on the following parameters: “influence”, “change in interests”, “controllability”.

6. A methodology and methods for integrating project management of innovation activities into the management system has been developed, including:

The need to improve the regional management system is substantiated, based on the set goals of increasing the sustainability of socio-economic development in an innovative economy and increasing the well-being of the population, by changing management principles and building a management system based on project management, improving the system of initiation, planning and implementation of projects, monitoring and control projects (Orsini, L., & Viganò, L., 2012);

A cycle of project management of innovation activities has been developed, including such stages as creating an environment for innovation, forcing innovation, prioritizing projects, monitoring innovative projects;

- a system for monitoring project implementation has been developed, based on the proposed set of criticality indicators in the “region-project-stakeholders” system;

- the prerequisites and conditions for the implementation of project management of innovation activities at each stage of the project cycle are determined;

- a detailed classification of regional costs for project management of innovation activities has been proposed and justified; based on existing theoretical developments, the main components of costs have been identified (Gruber, M., & MacMillan, I. C., 2013); a system has been developed for balancing indicators by type of costs for innovative projects at the regional level. In particular, such groups of costs as externalization, direct budget, hidden (reflected through socio-economic indicators - reduction in the value of regional assets, natural and environmental indicators - use of non-renewable resources, increase in the area of disturbed land, changes in socio-economic living conditions and etc.);

- a cost breakdown scheme has been defined depending on the stages of the project life cycle and the focus of the set of measures and methods of their implementation (strategic, operational, anti-crisis);

A mechanism for calculating present value using a social discount rate for the selection and prioritization of innovative projects has been proposed and justified. A conceptual model for assessing the conditional cash inflow from project implementation has been developed.

7. A method is proposed for assessing the impact of mutual risks and changes in the cost part of the project based on a multi-attribute model, taking into account factors of interaction between the region of presence and innovative projects;

A method has been developed for assessing the influence of stakeholders on the release of an innovative project based on the creation of a risk map, monitoring and risk management;

- mutual risks of innovative projects are identified;

- a risk assessment method based on a multi-attribute model and a method for assessing changes in the cost part of the project have been developed and tested,

including calculation of the mathematical expectation of the increase in cost and the mutual influence of risks.

Discussion

In modern conditions of economic development, subjects of socio-economic development are faced with several important tasks:

- increasing the innovative activity of companies;
- development of competitiveness at the intercountry level (in the field of human capital, project allocation, development of new industries);
- improving the level and quality of life of the population.

Increasing the share of innovative projects in the total number of projects implemented by companies requires the provision of human capital, technical, technological, information infrastructure, and overcoming corporate “temporal imbalances” that give priority to shorter-term and less risky projects, which determines the need for enterprises to interact with management bodies, and competition between innovative projects for resources (including human capital). At the regional level, in turn, there is a need to create conditions, stimulate, select, prioritize, support and manage the consequences of innovative projects for the territory of presence (Chesbrough, H., 2003). Let us introduce the definition of the set of these measures as project management of innovation activities at the regional level, and companies implementing projects as project principal companies. Consequently, the possibility of implementing innovative projects is determined by a set of conditions and management decisions on the project management of industrial activities at the regional level and the management of specific projects at the level of principal companies.

It is proposed to consider the following principles for the implementation of project management:

- participatory management;
- sequence of implementation of all stages of the project management life cycle;

An integrated approach to relationship management in the process of implementing innovative projects.

To determine the significance of project management of innovations, it is proposed to distinguish three groups of projects:

- bringing positive economic added value for the principal due to market incentives;
- creation of positive economic added value of the principal through a government order for the project product (non-market incentives: reduction of tax or environmental payments, direct government order);
- not directly generating economic added value for the principal, but necessary for the sustainable development of the territory of presence (non-market incentives: forced innovation).

Globalization trends and the openness of national economies create the preconditions for the migration of the working population and the allocation of production for corporations, the redistribution of resources to more attractive regions (creating not only intra-country, but also global competition). In the modern development paradigm, regions need to change development priorities and approaches to regional management, integrating modern methods and tools of regional management and project management (Amatori, B., & Colli, A., 2011). The study, based on the study of global trends in the development of the state, the features of approaches to strategic planning, substantiates the need to change the paradigm of the socio-economic development of the state.

To determine the criteria for sustainable development, it is proposed to use performance indicators (effectiveness and increasing the efficiency of resource use, maximizing direct economic effect). At the same time, operational and strategic results are assessed. In terms of the sphere of influence on the socio-economic development of the region, those that influence the population of the region (social and integral indices) can be classified as effective; those that maximize financial flows and quantitative indicators of business can be classified as productive. Retrospective indicators include those that are based on existing facts (statistical),

while prospective indicators (traditional) include those that shape the future development and state of the region.

To ensure sustainable socio-economic development, a system of balanced key development indicators is needed, one of the approaches to determining which is the matrix of balanced indicators of socio-economic development.

When analyzing the correspondence between balanced indicators and the most frequently used socio-economic development priorities in the regions of Ukraine, the following strategic problems can be identified:

1. The gap between the declared strategy of socio-economic development and project management: the development strategy of many regions provides for the achievement of a number of target indicators, usually functional (demographic, economic, social) which, however, do not include the scope of specific tasks and projects and do not can be used to prioritize projects.

2. Business processes of project management at the regional level are fragmented; the system for monitoring and evaluating innovative projects and programs does not provide for measures to manage interactions with the population, business, key financial wallholders and does not include an integrated system for managing the performance of projects and solutions.

3. The management system of most regions is not transparent and does not provide for participation, that is, decision-making based on the participation of all interested parties, including the population, public organizations, and a qualitative assessment of changes in the well-being of the population of the region as a result of the implementation of projects and programs.

Based on an analysis of global trends, a modern development paradigm has been defined, which is based on the following conceptual provisions:

- a departure from a closed and transition to a network model of the economy, a change in assets from the “business-government” model to the “business-population-government” model. Information openness makes it possible for the population to focus on international standards of quality and standard of living. This forms the prerequisites for the creation of participatory corporate governance

models, on the basis of which participatory governance models for economic systems can be based;

- strengthening the role of the region in the context of strengthening the vertical of power creates not only decision-making powers, but also increases responsibility for innovative processes, creating conditions for competitive strategic development;

- the transition of competition from the level of corporations to the level of regions as open systems for high-quality human resources, the location of innovative production as a consequence of globalization processes;

The need to improve the regional management system, based on the set goals of increasing the sustainability of regions in an innovative economy, and improving the quality indicators of socio-economic development by changing development priorities.

Based on existing models for constructing stages of the project life cycle, project management tools have been identified at the regional level by cycle stages:

1. At the project initiation stage, new knowledge (products) are developed, new knowledge is applied (creation of new production facilities), and the improvement of the efficiency of existing business models by adapting knowledge is assessed (production modernization, business model transformation). This requires access to existing knowledge bases, the organization of information systems, the creation of a territory for generating projects, the support of the scientific and expert community, and the creation of an environment friendly to innovation. It is also necessary to highlight the specific function of project management for the regional level of government - forcing the implementation of innovative projects.

2. The project planning stage requires the implementation of public-private partnership mechanisms, since most projects generated by small and medium-sized businesses cannot receive investments due to poor formalization of business plans; a system of external expert assessment of the feasibility and usefulness of the project is also necessary, as a whole, and for the region. At the planning stage, the selection of those projects that should or can be implemented in a particular region

and their prioritization are also carried out. One of the areas of activity of the region within the framework of project management is information support for projects, including the inclusion of projects in the list of “regional” ones, widespread media coverage of the need and usefulness of these projects, and attracting public attention to the positive results of project implementation.

3. At the implementation stage, decisions are made on assistance in providing resources, including financial ones, and reducing risks (including through the management of project stakeholders).

4. Monitoring of projects includes assessing the mutual influence of the region and the project, minimizing the negative impact, assessing changes in the socio-economic parameters of the region, assessing the effectiveness of the project for the territory of presence. In particular, monitoring involves tracking project stakeholders, determining the impact of the project on their interests and developing measures to stabilize interests.

5. The project analysis stage includes the formation of an expert environment for the timely assessment and management of project risks, optimization of the project, maintaining information openness, and assessing compliance with the initially set goals and objectives.

6. After the completion of the project and the introduction of the project product into industrial operation, within the framework of project management, an analysis of the possibility of reducing administrative and legal barriers is proposed (which will indirectly reduce the costs of regional management), and will also allow taking measures to support those stakeholders whose interests are affected by the project.

7. The project control function requires special attention. At the level, control implies tracking the impact of the project on key indicators of the region’s development and other projects, while control over the implementation of the project is the authority of the project owner.

The need to improve the regional management system, based on the set goals of increasing the sustainability of socio-economic development of the regions and increasing the number of innovative projects proposed for implementation,

predetermines a change in the regional management system, including a change in management principles.

Conclusion

Thus, the development of theoretical and methodological foundations and methodological provisions for the integration of project management in the field of innovation into the management system. The main scientific results are as follows:

I. The concept of project management of innovation activities has been developed, and a new approach to managing such activities based on participation has been proposed, including:

- the dual nature of functioning is revealed as institutions of innovative economic activity with resources and opportunities for competition, on the one hand, and as a subsystem of the state, the main task of which is to create a most favored nation regime not only for companies and entrepreneurs, but also for the population;

- the principles of project management have been identified, previously not formalized in theoretical and scientific research for the level, the peculiarity of which is participatory (involvement) management and an integrated approach to the system of mutual interactions between participants in the innovation process, management of relationship assets.

2. The need for a paradigm shift in the priorities of socio-economic development is substantiated based on the development of modern approaches to determining the priorities of the socio-economic development of regions, namely:

- a tendency has been developed to humanize socio-economic development and assess the socio-economic effectiveness of development, highlighting qualitative and quantitative indicators, such as a measure of economic well-being, indicators of genuine progress (evaluating the sustainable and responsible development of the state), the well-being of the population, as priorities for the formation of a social- economic development of regions and the state. This trend is confirmed by the results of scientific research by international organizations that

are developing models for changing development priorities at the level of individual states and territories;

- the need has been established to use balanced economic quantitative assessments of development priorities that determine the level of economic development (such as gross regional product, the volume of budget expenditures per capita, the volume of investment per capita), qualitative social indicators for making management decisions in the new economy. The limited assessment of the prospects for the strategic development of the region and the focus on reflecting the current and retrospective economic state without taking into account the dynamics of qualitative indicators of development predetermine the emergence of global problems at the regional level, such as negative demographic and migration trends, deterioration of the environmental and social situation. Thus, the need has been identified for the development and use of additional indicators that have a social focus, including qualitative assessments of the level of socio-economic development.

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