

A.S. Yessengeldina<sup>1</sup>, D.A. Sitenko<sup>2</sup>

<sup>1</sup>The Academy of public administration under the President of the Republic of Kazakhstan, Astana;

<sup>2</sup>Ye.A. Buketov Karaganda State University  
(E-mail: yanar77@inbox.ru)

## **Modern problems of efficiency of the implementation of innovative projects**

The article considers the topical issues of realization of innovative projects in the Republic of Kazakhstan. The attention is focused on the provision at the enterprise of integrated activities for all types of innovation. Criteria of typology of innovative projects are investigated. It emphasizes the role of classification features of projects for the effective management of innovative projects. The main attention is paid on the JSC «National Agency for Technological Development», which supports innovative projects through the provision of innovative grants. The recommendations for the effective management of innovative projects using a project approach are offered.

*Key words:* innovation, design approach, innovative project, innovative grant, effectiveness, classification features.

The principles of project economics, proven in practice, are widely used in many countries. Implementation of the project approach to the Kazakhstan economy has the strategic importance because of its use contributes to efficient use of resources, implementation of the objectives of modernizing the economy, stimulates innovation orientation, reduces the level of corruption. Project approach assumes particular significance in the terms of limited resources, uncertainty and instability.

In the field of innovation development project approach is of particular importance, given the nature of innovation processes, especially the life cycle of innovation. The project approach allows to define more precisely the specific needs of the enterprise innovation, accelerates the process of creation and innovation, and finally, the innovation aims at solving the main task — improving the competitiveness of enterprises. At the same time it should be considered as an integral part of the innovative development of the enterprise management system. This system includes areas such as forecasting and planning of scientific and technological development on the basis of the chosen strategy of the enterprise, the establishment of the company the necessary conditions for innovation.

The main objective of the system of innovation management is to achieve integrated activities of the company for all types of innovation. Among which there are:

- conducting the research and development;
- the creation and acquisition of new equipment and technologies;
- the acquisition of licenses and rights to patents;
- the acquisition of software;
- implementation of innovations within the production design;
- education and training of personnel;
- market research and development.

These areas are accompanied by statistical reporting, are planned and financed in the process of activity of the enterprise.

Functioning of innovation management system in the enterprise creates the necessary environment for the initiation and implementation of innovative projects that provide a solution not every one, but the most important and priority tasks of innovative development of the enterprise and increase its competitiveness. In this context, innovative projects should be linked with the program of increasing the competitiveness of the enterprise.

Innovative project as a concept is interpreted by the majority of researchers with different interpretations, but essentially the same. It can be defined as a system of organizational, financial, research, production, technical and marketing activities aimed at the creation and implementation of a market of new products, services and technologies that have no analogues in the production practice and ensure a significant increase in efficiency and quality of enterprise performance.

Effective management of innovative projects requires accounting of their industry and functional characteristics, conditions of initiation and implementation. With this in mind, one can consider the various types of innovative projects for control purposes. Typology is advantageously carried out according to several criteria.

Firstly, it is an institutional criterion, which characterizes the subject of innovative design. Here innovative projects may be selected that carried out by government agencies, large corporations, small innovative enterprises, innovative companies with research institutions and universities, projects implemented on the principles of public-private partnerships and international initiatives.

Second, depending on the scope of implementation, it may be proposed a sectoral typology of innovation projects. Finally, depending on functional scope of innovative projects, they can be divided into projects aimed at these types of innovations as a process, technological, product, marketing, organizational, environmental, educational and human resources.

The project, according to several authors, is defined as «a system formulated in its framework objectives, established or upgraded for the implementation of physical objects, technical processes, technical and organizational documentation for them, material, financial, labor and other resources, as well as administrative decisions and measures for their implementation» [1].

It should be noted that quite often the term is put two different meanings, and understand it or as documentation, or both activity. But, in our opinion, the most correct understanding of the project is a combination of these two meanings.

There are three different approaches according to the nature of innovation projects. They may be considered as:

- a form of innovation management;
- process of the implementation of innovations;
- a set of documents [2].

According to the first point of view, an innovative project is a complex of different activities that are interdependent and linked to resources, performers, dates, and also have a focus on the achievement of specific objectives (tasks) in priority areas of science and technology.

In the second case, an innovative project is a collection of different activities, the implementation of which leads to innovation. It should be noted that these activities may be scientific, industrial, technological, organizational, commercial, financial, and often performed in a certain sequence.

The third option implies that an innovative project is a collection of all the technical, organizational and planning, as well as settlement and financial records, which is an integral part of the implementation of the project.

If we combine all of the above point of view, then we obtain the definition of an innovative project in a broader sense, and that it is, in our opinion, is the most accurate and complete.

Innovation project is a system of interrelated objectives and programs to achieve them, representing a range of research, development, manufacturing, organizational, financial, commercial and other activities, appropriately organized (linked on the resources, time and performers) accompanying with the design documentation and provides an effective solution to a specific scientific and technical task (problem), expressed in quantitative terms, and leads to innovation [3]. It should be noted that any innovative project is an investment, since it requires financial investments.

The specific characteristics of the innovative projects are:

- The implementation of innovation projects, as a rule, requires high initial investment.
- Innovative projects are characterized by a longer payback period.
- Innovative project can largely maximize cash flows, or on the basis of the feasibility of the product at a higher price (in the case of the introduction of radical innovation), or on the basis of minimizing the cost (through the introduction of process innovations). In many respects this aspect determines the contribution of the innovation project in the company's value.
- Innovative projects are characterized by a high level of risk, which leads to the need to use a higher discount rate for investment calculations. This causes a certain caution in initiating businesses and implementing innovative projects.

Unwilling to the implementation of innovative projects is often explained as so-called «agency problem», which consists in the asymmetry of the interests of shareholders, stakeholders, primarily in the growth of the value of shares, and management focused on maximizing turnover, which can not ensure the imple-

mentation of an innovative project in the short term. However, it should be noted that the maximization of turnover also requires investment. In the case of self-financing capacity is limited, managers have to turn to an innovative project from external sources. Providing debt financing largely depends on the location of the company in the market (the effect of the innovative project on market capitalization already discussed above). In the case of growth of the market value of quoted shares provides the ability to receive more funds from the placement of new shares.

In his monograph «The innovative project: conception, algorithms, marketing, management», Mustafin M.A. gives this definition: «The project is a complex, non-repeating event, involves the introduction of a new, limited time, budget, resources, as well as clear guidance on the implementation, developed under the requirements of the customer» [4].

It is obvious that the analysis of the innovation project requires to use multiple classifications.

Entrepreneurial Code of the Republic of Kazakhstan provides a definition of the concept of «industrial-innovation project». Industrial and innovative projects is a complex of measures aimed at technology transfer, the creation of new or improvement of existing production facilities, technologies, goods, works and services sold within a certain period of time [5].

It is clear that for the purposes of effective management of innovative projects must be the isolation of a sufficiently large number of types, given the scale of the national economy, sophisticated and extensive functional levels and control structure of the economy, as well as a large number of the objects of the innovation sphere.

The implementation of many projects requires the creation of a temporary organizational structure and appropriate project management systems. Therefore, one of the objectives of the project managers is the formation of a control system that allows planning and organizing the execution of works, control and coordination of the actions of all participants of the project [6].

JSC «National Agency for Technological Development» (JSC «NATD») is the main implementer of innovation policy determined by the government, the Ministry of Investment and Development of the Republic of Kazakhstan and Holding Baiterek.

Since the launch of the State program for accelerated industrial-innovative development of Kazakhstan is observed positive dynamics of growth of innovative development indicators. According to the Statistics Committee, the share of innovation active enterprises increased from 4.3 % in 2010 to 8.1 % in 2015. The volume of innovative products increased more than 2.6 times compared to 2010, reaching 377 billion tenge in 2015. The volume of domestic spending on research and development is increased from 33.4 billion tenge in 2010 to 69.3 billion in 2015. In general, an increase in innovation activity had a positive impact on the socio-economic development of the country [7].

JSC «NATD» under government programs continued to support innovative projects and promotes the transfer of technologies in priority sectors, including through the provision of innovative grants and development of innovation infrastructure. Since 2011, the Agency provided innovation grants for a total amount of 10.2 bln. tenge, a significant part of the funds were provided for the purchase and the commercialization of technology. From the 46 completed projects, for which were provided innovative grants, 11 projects or 23.9 % were commercialized in 2015, the volume of output amounted to more than 15 billion tenge.

In general, today is built system of tools, which is structured in such a way that any innovator can get the necessary support at all stages of the project.

However, the main priorities of activity are determined by the Nation Plan («100 concrete steps») and the State program of industrial-innovative development for 2015–2019.

JSC «NATD» plays an important role in the provision of innovative grants for innovative projects.

Table 1

**Number of innovative projects funded by the JSC «NATD» in 2013–2015**

Indicators	2013	2014	2015
Number of applications	186	280	462
Number of supported projects	44	38	51
The sum of innovative grants, mln. tenge	822,8	641,1	1623,5

*Note.* Compiled by the authors by [8].

According to the data in Table 1, the number of applications is annually increased. In 2013 there were declared 186 projects and in 2015 their number increased to 462. This is the result of the work of JSC «NATD» in informing of audience about the conditions of the provision of innovative grants in regions of Kazakhstan. As a result of activities undertaken during the implementation of the grant program in 2015 it received a record number of applications — 462, of which 51 projects worth a total of 1 billion 632 million tenge were supported. For comparison, the same indicator of the previous period amounted to 280 applications, of which 38 projects totally \$641 million tenge were supported. Of the 51 projects supported in 2015, most of the projects were aimed at the commercialization of technologies (31 projects), technology acquisition (7 projects), and support for the production of high-tech products at the initial stage of development (4 projects).

Sector-wise, the largest number of innovative grants were given to the information and communication technology, mechanical engineering, chemical and petrochemical industry (Table 2).

Table 2

**The number of projects by sector in 2015**

Sectors	Applied	Supported
Information and Communication technologies	110	12
Engineering	105	12
Agricultural	62	9
Pharmaceutical	35	2
Alternative energy	34	4
Chemistry and petrochemistry	30	4
Other	86	8
Total	462	51

*Note.* Compiled by the authors by [8].

At the end of 2015 grantees had created more than 740 job places, paid more than 1.25 billion tenge of taxes, issued the finished product on the total amount more than 24 bln. tenge, of which 8 bln. tenge of production were directed for export. In addition, 93 patents were received, 5 applications were filed for security documents, 5 certificates were obtained on the state registration of copyright.

However, to determine the feasibility of an innovative project, the project performance criteria need to be identified:

- the importance of innovation project risk;
- the amount of capital, intended for a specific innovation project, which is a constant value;
- independence of innovative projects from each other;
- the interest rate on the loan, which the firm takes on the foreign market (it should correspond to the rate that it can get on the market);
- Independence of consumer solutions from innovative ones.

Development of the innovative project is closely linked to the scientific and technical support that combines the knowledge and experience on the implementation of certain ideas. In this regard, an important condition for the effective management of the project is the correct definition of its borders in the environment (project participants) and the formation of own project environment, which specifies the purpose and form of implementation program. It is important not only to properly restrict the environment within the current project, but also the right to define and describe the interaction of the innovative project with the environment.

The implementation of innovation projects should take into account the methodology of project management. Project approach can significantly improve the efficiency of management of innovative development. It is one of the main functions of innovation management system in the enterprise, but does not replace it. Therefore, it is important to identify those tasks that are better resolved on the basis of the project approach and not to distribute it to those areas of the innovative activity of the enterprise where success may well be made in normal conditions.

The project approach allows to define more precisely the specific needs of the enterprise innovation, accelerates the process of creation and innovation, and finally, the innovation aims at solving the main task — improving the competitiveness of enterprises.

Innovative project can be defined as a system of organizational, financial, research, production, technical and marketing activities aimed at the creation and implementation in a market of new products, services and technologies that have no analogues in the production practice and ensure a significant increase in efficiency and quality of results of the company.

The specific characteristics peculiar to the innovative project are the need for significant upfront costs, longer payback periods, lack of certainty of the outcome of the difficulty of identifying specific needs in innovation, a high level of risk, the presence of psychological barriers in the processes of initiating and implementing of projects.

For the purposes of effective management of innovative projects it is required the use of typological approach and the selection of specific types of innovative projects, based on the scale of the national economy of the country, a variety of types of enterprises, complex and extensive functional levels and control structure of the economy, as well as a large number of the objects of the innovation sphere.

The base of the adoption of innovative solutions is an estimation of investment qualities of the offered investment objects, which, in accordance with the methodology of modern analysis are carried out on a specific set of criteria performance. Determination of performance indicators of innovation helps to evaluate the considered innovative object from the position of the eligibility for further analysis, makes a comparative evaluation of a number of competing innovative facilities and their ranking, makes a selection set of innovative objects providing a predetermined ratio of efficiency and risk.

Evaluating the effectiveness of innovation is the most responsible stage of the investment decision, from which results the degree of realization of investment objectives largely depend. In turn, the objectivity and reliability of the results are largely due to the methods of analysis used. In this regard, it is important to review existing methodological approaches to evaluating the effectiveness of innovation and to determine the possibility of their use in the rational choice of investment options.

For effective management of innovative projects we propose to use the following sequence:

- Statement of the main goals of realization of innovative projects such as «timely implementation of the project with minimal cost». Breaking the goal into sub-goals and setting goals related to their achievement. The first tier of the sub-partitions is defining the basic tasks to be undertaken under the various above-defined media of innovation project;
- Definition of technical and economic parameters describing the tasks and the associated adjustable parameters they depend on these indicators;
- Definition of acceptable values or the lower and upper boundaries of the changes specified parameters and corresponding adjustable parameters;
- Structuring the process of the project taking into account the restrictions adopted and the list of tasks and subtasks.

Thus, the development of new products should be clearly planned, and each phase of the new items carefully designed. Such an approach would seem to lead to increase in terms of innovation and development to them more expensive. However, it should be borne in mind that the most expensive is the final stage of the innovation process. With careful planning and systematic screening of at least promising ideas occurs earlier, most of the causes leading to the failure of the market is eliminated in time, thus saving considerable time and money.

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А.С. Есенгельдина, Д.А. Ситенко

## Инновациялық жобаларды тиімді жүргізудің қазіргі мәселелері

Қазақстан Республикасындағы инновациялық жобаларды жүргізудің өзекті мәселелері қарастырылған. Кәсіпорындағы инновациялық қызметтің барлық түрлері бойынша кешенді шараларды жүргізуді қамтуға көңіл бөлінген. Инновациялық жобаларды топтастыру тәсілдері зерттелген. Инновациялық жобаларды тиімді басқару мақсатында жобаларды сыныптау түрлерінің ролі анықталған. Инновациялық гранттар беру арқылы инновациялық жобаларға қолдау көрсететін «Технологиялық дамудың ұлттық агенттігі» АҚ басты назар аударылған. Жобалық әдіс көмегімен инновациялық жобаларды тиімді басқару бойынша ұсыныстар берілген.

А.С. Есенгельдина, Д.А. Ситенко

## Современные проблемы эффективности реализации инновационных проектов

Рассмотрены актуальные проблемы реализации инновационных проектов в Республике Казахстан. Внимание акцентировано на обеспечении проведения на предприятии комплексных мероприятий по всем видам инновационной деятельности. Исследованы критерии типологии инновационных проектов. Выделена роль классификационных признаков проектов для целей эффективного управления инновационными проектами. Основное внимание уделено АО «Национальное агентство по технологическому развитию», которое поддерживает инновационные проекты через предоставление инновационных грантов. Предложены рекомендации по эффективному управлению инновационными проектами с помощью проектного подхода.

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