

## Project-Based Approach to Managing Innovation Processes in Organisations

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### Abstract

*Technological advance has led to the rapid development of society and human life. Innovation strides ahead. In this context, the development of educational institutions is viewed as a sequence of managed discrete processes with clear characteristics: clear objectives, finite targets, limited resources and time.*

*The relevance of this issue reflects the fact that innovation management in organisations is mostly tactically operated as project management. Innovation project management provides a specification of the chosen innovation strategies and their implementation in production and business operations. Project management, in a nutshell, is a targeted systemic process of delivering and performing managerial decisions adopted across the stages of a particular design cycle and focused on its successful implementation within the set time, budget and resource constraints.*

*An important specific feature is that the key elements of the innovation management system are usually individual innovation projects.*

**Key-words:** Project-Based Approach, Management, Organisation Management, Innovation Projects.

### 1. Introduction

Scientific and technological advance drives every aspect of business operation. That is why one of the main objectives is the development of a scientific and technological policy to drive production growth by designing products to meet market needs.

In modern society, the rates of economic growth and country development profiles are largely determined by the role of scientific and technological advancements in the intellectualisation of production. Global economic competition is won by the countries that create favourable conditions for efficient innovation operations. Innovation activities involve designing innovation projects and programmes [5, p. 20].

According to Federal Law "On Amendments to Federal Law 'On Science and State Science and Technology Policy'" dated July 21, 2011, No. 254-FZ, "an innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations" [1].

Economically, a project is a set of documents defining the objectives of the envisaged activities and the specific complex of activities to achieve them. Therefore, a project may be defined as a set of both documents and activities subsisting the performance of project stages to achieve the project objective. Next, turn to the concept of an "innovation project" [7].

According to Federal Law No. 254-FZ dated July 21, 2011, part 10, the following definition applies that an innovation project is a set of activities that are organised and managed to achieve economic effects on the implementation of innovations, specifically through commercialisation of scientific and (or) scientific and technological results [2].

According to V. P. Barancheev, an innovation project is a set of intertwined objectives and programmes to achieve them, which represent a complex of R&D, process and technology, organisational, financial, commercial and other activities organised in accordance with resources, timelines and formal project documentation providing for the attainment of the specified scientific and technological task resulting in innovation [5, p. 40].

N. A. Poliakov believes an innovation project is a complex system of interdependent activities coordinated in terms of resources, timelines and contributors for the performance of specific objectives and tasks matching priority directions of science and technology [19, p. 32].

V. V. Kozlov defined an innovation programme as a complex of intertwined innovation projects and innovation support projects. An innovation project is a basic element in the organisation of innovation activities. The innovation process is a complex process taking form in the performance of individual innovation projects. It is important to understand the difference between the concepts of innovation process and innovation vs. innovation programme. Keep in mind that the term "innovation process" is relatively new not only for local but also for foreign research [13, p. 42].

Innovation projects represent organisational frameworks of the innovation process in a business or group of businesses conducted in a planned and systematic manner based on methodological rules of generating knowledge, ideas and results. Project organisations have become more widespread in the modern economy as a vehicle for both complex and relatively plain tasks.

## **2. Methods**

Innovations are quantitative and qualitative changes in production facilities and management aimed at producing new or improved products, introduction and use of new types of equipment, new forms of process engineering, marketing and management. Beyond a merely technical term, it is also an economic and social term.

Innovation, in general, is something first introduced which never existed before. Globally, something is an innovation only in the context of competition in the global markets of advanced technology. I. e., innovation is a product of creative activities, an invention or a discovery affecting productivity and competitiveness of the business or product [17, p. 67].

Research methods: analysis, synthesis, method of statistical analysis, method of comparison.

## **3. Results**

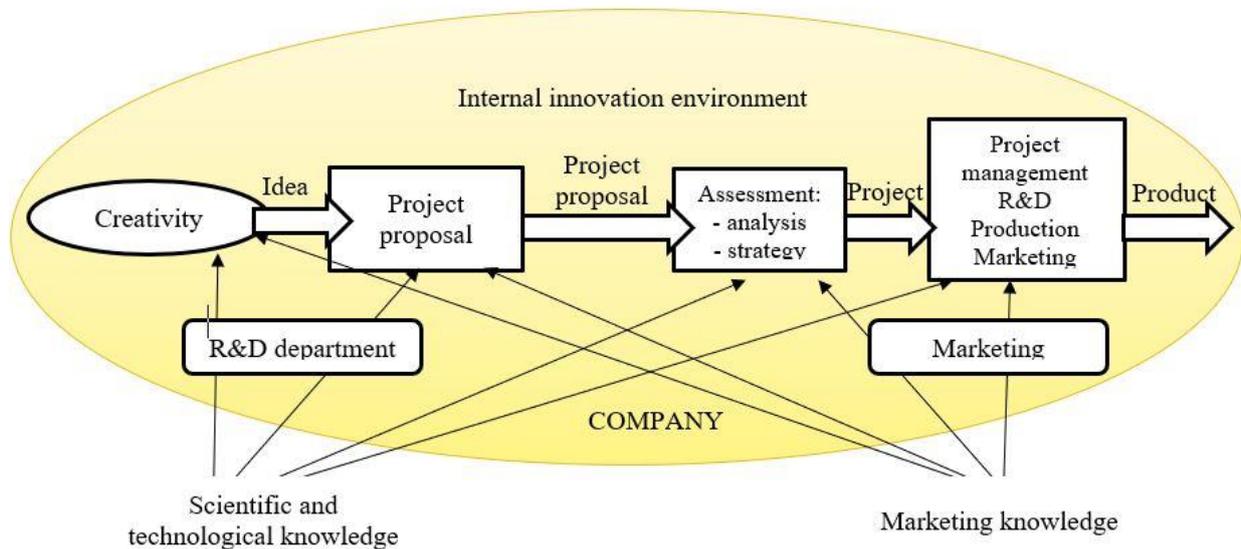
Innovation-driven development has lately become a "no alternative" economic path both abroad and in Russia. And from this point, experience built in this area becomes specifically relevant, as the analysis and adoption of such experience would drive the development of activity domains in general [9].

It is hard to overestimate the importance of innovation for local businesses, given their technological backwardness, high moral and physical wear and tear of fixed assets, high energy intensity and low productivity. Overcoming this backwardness in the Russian economy would require, among other things, a modernisation of innovation management and development of a complex system for effective managerial decision-making to obtain new competitive advantages both in terms of products and industries in general. This creates relevance in addressing the aspects of refining the models and mechanisms used to manage innovation projects, their underlying risks, appeal and institutional content.

Innovation projects are based on innovation. S. V. Ermasov believes that innovation is not merely an object put to production but an object adopted successfully and generating profit, resulting from conducted research or discovery and presenting a principal difference from the previous similar

product. Meanwhile, innovation is a result of interaction between the areas of R&D, marketing, production and management (Figure 1) [11, p. 50].

Figure 1. Innovation as a result of the interaction of R&D, marketing, production and management [11, p. 50]



The first step in bringing down the risks of innovation activities for an entrepreneurial firm is to conduct a detailed analysis of the proposed innovation project.

While an innovation project may be effective for one business, it may prove ineffective for another one for objective and subjective reasons, such as the territorial location of an enterprise, the level of competence in specific lines of the innovation project, condition of fixed assets. All these factors influence the outcome of the innovation project but are hard or, in some cases, impossible to assess, so they should be taken into account at the stage of project selection.

Given that each business is characterised by its own factors driving the effectiveness of innovation projects, there is no universal system for project assessment but some factors do apply for most innovation-driven businesses. These factors make the basis for specifying the criteria of innovation projects. Priority and government-supported projects should be those oriented at ultimate socioeconomic outcomes. Table 1 outlines a recommended list of innovation project assessment criteria [9, No. 5].

Table 1. List of innovation project assessment criteria

Socioeconomic characteristics	Description
Social (quality of life):	Wellbeing, health, personal safety and security, culture, education, living conditions, employment rate, contribution to major developmental priorities of Russia, provision of heating and energy, food supply, medication and health services, transport links and communication.
Economic:	Economic efficiency, resource efficiency, specifically in the use of labour, materials and finance, development of new cost-effective products, contribution toward major structural shifts in the economy.
Market parameters:	Competitiveness in the domestic market: demand, import substitution, product margin, economic efficiency of investment, competitive standing, commercial risk. Competitiveness in the external market: demand, improvement of export potential (foreign currency proceeds), economic efficiency of investments, competitive standing, commercial risk.
National security:	Contribution toward Russia's defence capacity, environmental security, air, water, soil pollution mitigation and environmental restoration efforts.
Scientific and technological:	Global relevance (competitiveness of know-how), contribution to support Russian leadership in research and manufacturing, development of other scientific and technological dimensions, major technological advancements, scientific and technological potential buildup, the degree of novelty, design timelines, degree (probability) of project feasibility, access to top-level research talent, access to experimental and manufacturing facilities, technical and organisational risk of timely implementation.
Economic characteristics of investment:	Project costs, research costs, experimental design costs, prototype development costs, capital investment in production engineering and process (working capital), payback period, estimated profit, potential amount of foreign currency profit, time-to-profitability, return rate of capital (investment).

Top-level indicators and priorities are important characteristics for the economy in general. They are integral for the analysis and control at all later stages at lower levels addressing discrete tasks.

The criteria to assess investment projects may differ depending on the organisation, its industry affiliation and strategic focus. When making up the list of criteria, use only those which directly reflect the goals, strategy and objectives of the organisation, its focus and long-term plans [3, 8].

Tactically, innovation management in most businesses is based on project management. Innovation project management provides a specification of the selected innovation strategies and their implementation in the production and economic operation of the business [1, 10].

The basic elements of the project management system in a business are innovation projects. Innovation project management is a complex task. The working group created to implement the project addresses new tasks that are different from tasks addressed by the existing functional units [7, p. 17].

There is a consistent relation between the working group and organisation in general, as project realisation should occur in coordination with the existing units and the result should be integrated into the existing structure [5].

A leader may be appointed for managing the project. The structure of the project group depends on the situation. If, for instance, the project is not complex, like product modification, then there is a limited working group including product design, production, marketing and service units. Such a group reports to the respective departmental leader [4, p. 38].

Where cardinal innovations are concerned, the following dedicated roles may be part of the group:

- technical director deciding what and when needs to be done by employees;
- research supervisor in charge of quality performance;
- organisational supervisor in charge of employees' personal interests.

The supervisors make up a coordination group responsible for the following tasks: setting project objectives, appointing working group leads, creating working groups, setting the task, project implementation control (quality, time, spending), making decisions on continuing operation, dissolving working groups.

Working groups are responsible for performance on their parts of the project; planning and control, making up reports for the coordination group and the whole organisation.

Some approaches and methods can be used by the manager in driving change [14, p. 53]:

1. Managing change. It is up to the manager to not only plan for change but also convince actual contributors that it is relevant and beneficial and to overcome resistance to change;

2. Developing a plan to manage influencing factors. The manager always needs an Emergency Response Plan, i. e., a complex of measures to address extraordinary developments. One of the natural ways to do it is by owning information helping to identify negative preconditions in the future;

3. Engaging employees in designing and implementing innovations. This only means charting major points and lines of operation while leaving details to employees. Those taking part in

innovation design will thus feel they share ownership of the outcome. An important task here is to communicate the manager's intentions to the employees.

The content of the main works on managing innovation projects is laid out in Table 2 [15, p. 34].

Table 2. Innovation project management

Initiation	Planning	Implementation	Control	Closure
Initiation of the project or a phase	Planning of the subject domain	Organisation and coordination of plan implementation	Filing progress reports	Administrative project closure
Developing project concept	Structural decomposition of the project	Developing a project team	Managing change	Closing contracts
Feasibility study	Mapping out works and their interrelations	Sharing information	Quality control	-
Analysis and approval of the project	Planning resources	Ascertaining the subject domain	Implementation control	-
-	Analysis of work duration	-	-	-

The development of innovation potential is one type of project management. The requisite parts of this process include determining the initial state of innovation potential and its relation with the overall industrial potential. The transition in innovation potential toward the projected state is maintained through the system of innovation management.

The successful operation of an organisation significantly depends on the innovation mindset of managers at all levels of the economy, as well as on overcoming resistance to change and stimulation of various initiatives. I. e., the core of modern management is its innovation aspect and, as a result, management in all aspects (investment management, risk management, crisis management, financial management, etc.) should be innovation-oriented for the achievement of the set goals [24, p. 44].

#### 4. Discussion

The key to innovation development is government support, which should be provided in a variety of directions for prompt and effective correction of crisis developments in the economy.

Table 3. Regulation of innovation activities [16, p. 67]

Forms of regulation	Methods of regulation
Organisational regulation of innovation activities	<ul style="list-style-type: none"> <li>- Development of innovation infrastructure;</li> <li>- Prioritising innovation activities;</li> <li>- Non-financial rewards for innovation proponents;</li> <li>- Fostering modernisation;</li> <li>- Advancing integration processes;</li> <li>- Advancing international ties.</li> </ul>
Economic and financial regulation of innovation activities	<ul style="list-style-type: none"> <li>- Building up innovation supply;</li> <li>- Expanding demand for innovations;</li> <li>- Supporting competition in the innovation area;</li> <li>- Fostering entrepreneurial business;</li> <li>- Ensuring employment in the innovation field;</li> <li>- Advancing leasing of knowledge-intensive products;</li> <li>- Investment in innovation and raising efficiency;</li> <li>- Development of a favourable investment climate.</li> </ul>
Legal regulation of innovation activities	<ul style="list-style-type: none"> <li>- Protecting the rights and interests of the subjects of innovation;</li> <li>- Protecting innovation ownership, use and possession rights;</li> <li>- Protecting industrial and intellectual property;</li> <li>- Advancement of contract relations.</li> </ul>

Innovation processes in modern companies affect all spheres, such as marketing, design and technological studies in preparation for the introduction of new products, arrangement of small series production, production management, etc. However, the axis of innovation activities runs along the development, adoption and use of technological innovations including product, process, organisational, managerial, resource and marketing innovations. This means businesses have to develop an innovation strategy supporting the achievement of strategic objectives in a competitive environment [6, p. 48].

An objective of innovation transformation in a business is performance improvement driven by the development, adoption and use of a complex of innovation, including new products, processes, promotion and services [8]. In modern contexts, an investment project concerned with innovative changes can be considered, first, as a form of focused management of innovation activities and, second, as a process of development of a complex of innovations [18, p. 24].

The objective of innovation transformation in a business is performance improvement driven by the development, adoption and use of a complex of innovation, including new products, processes, production engineering, promotion and services [8]. Innovation project management is realised in the following functions [21, p. 36]:

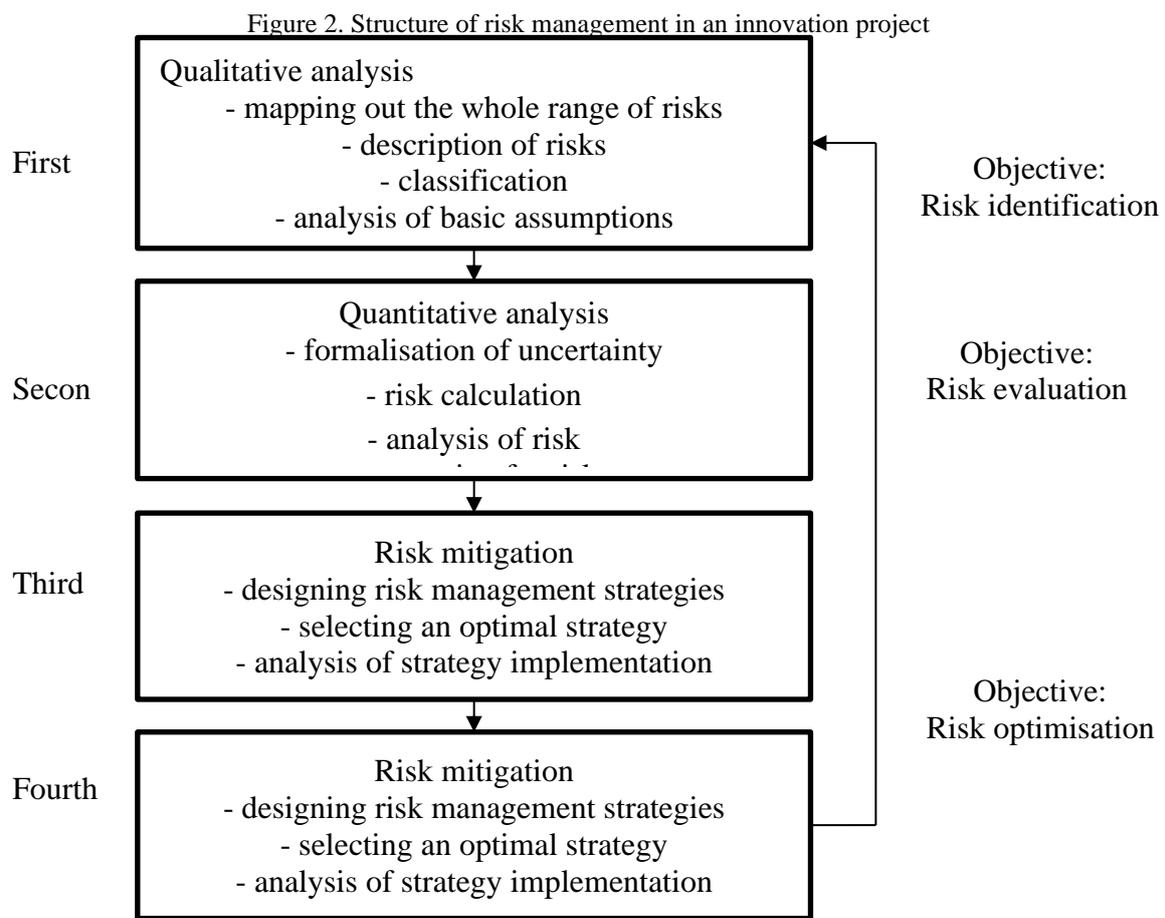
- the function of project quality management spans across the whole lifecycle and includes all project-related, organisational and managerial decisions, used materials, equipment, supplies, etc.

- the function of time management is related to the function of managing the subject domain and includes charting the content of works, beginning and completion times, phases, milestones and each of the jobs, etc.

- the function of managing value includes resource planning, estimating project-related costs, charting budgets, cash flows, forecasting revenues and profits, control of spending and making decisions in case of overspending and other digressions from financial plans [6].

- the functions of contract and supply management include selection processes to adopt a contract operation strategy, preparation of contract proposals and supporting documentation.

Risk in the project context (project risk) is approached as unexpected events influencing the project and its elements and potentially causing damage and hindering progress. Risk management applies in cases when the level of risk in the project is relatively high. The system of risk management in an innovation project should comprise stages as shown in Figure 2 [22, p.76].



The principal part of innovation process management in an organisation is the process of optimisation of the choice of innovation project from available alternatives to not only accommodate the strategic objectives of modernisation but also integrate the complete resource potential enabling innovations in the consumer market.

Therefore, a strong focus is on the process of innovation forecasting and planning innovation programmes. The choice of an innovation programme should be guided by criteria correlating with the organisation's strategic objectives and optimisation of the resource support of the innovation process.

## **5. Conclusion**

Project management has been the most dynamic direction of management over the past years. It is also one of the latest and growing domains of knowledge.

Another modern trend in focus is the field of innovation. The implementation of innovation by management specialists makes the basis of competitiveness for individual businesses and countries while building up complete national innovation systems. Studying innovations, in theory, has had a longer history than project management.

Innovations include all changes first put to use by a business and generating economic and/or social benefits.

In today's realities innovation process management at small production businesses relies on the project-based approach. Or, rather, on managers' or innovators' ideas of project management. This stronger role of the project-based approach was driven by market developments. It also concerns the transition from functional thinking to project management among managers and individual contributors [4].

Innovation management can be presented as a system of managing innovation, innovation process and relations emerging in the process of innovation.

Innovations now have become a key factor in the development of small and medium-sized businesses. Success in innovation management depends on the ability of businesses to create a stimulating internal and external framework for innovation. Moreover, the innovation process requires strategic planning and market-oriented management.

Innovations have their lifecycle starting with the emergence of a new idea and closing with the introduction and establishment of the new product in the market. This cycle can be divided into six typical phases with underlying typical activities, decision-making situations and results [2].

The innovation process cannot be seen as a consequence of more or less random technical inventions or other entrepreneurial ideas. It rather requires strategic planning and market-oriented management.

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