

# Methodological Approaches to the Management of Innovative Development of an Enterprise

Tatyana Borisovna Savchenko<sup>1</sup>, Victor Yurevich Rogov<sup>1</sup>, Gennady Ivanovich Shadov<sup>1</sup> & Valentina Aleksandrovna Verhozina<sup>1</sup>

<sup>1</sup> Irkutsk State Technical University, Russian Federation

Correspondence: Tatyana Borisovna Savchenko, Lermontov Street, 83, Irkutsk, 664074, Russian Federation.

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## Abstract

This article deals with the approaches to implementation of the strategy of management of innovative development of an industrial enterprise. Application of the existing approaches to innovative development of industrial enterprises has allowed to consider the innovative activity as a whole and to single out the main elements and their relationships. The author has proposed the concept of management of innovative development of an enterprise based on the logic of qualitative management. This concept allows ensuring control over processes and improving their reliability and predictability.

**Keywords:** business process, innovative development, process management, quality management, systems approach, process approach, target-oriented approach, synergetic approach

## 1. Introduction

In the current circumstances, in connection with the crisis in the global economy and Russia's joining the World Trade Organization, many domestic industrial enterprises have found themselves in tough competitive environment, which directly affects both the efficiency of their production, and their overall economic position. Enterprises have to change their approach to management and create such a management system, which would ensure their high effectiveness, competitiveness, and sustainability in the external market (Fursov & Streltsova, 2014).

The increasing competition in the markets, the emergence of new innovation-oriented counterparts offering a wide range of goods and services, the dynamism of market relations, the growth of the uncertainty of the external environment of an enterprise create the prerequisites for the formation of new approaches to the management of innovation development.

The strength and competitiveness determine the development strategy, and the strategic development is of non-linear nature with strong feedback; therefore, this issue is consistent with the management of innovative development. The need to study various aspects of management of the enterprise innovative development is determined by both the currently rapidly changing environment and the need to improve the ability to adapt to the changes taking place (Starikova, Mikalut, & Reznichenko, 2012). It should be noted that the formation of new approaches to the management of innovative development of an industrial enterprise is impossible without studying the existing approaches to its management.

## 2. Methodology

### 2.1 The Function-oriented Approach

The experience of many organizations has shown that a vertical organizational structure in the current context does not ensure competitiveness. Departments and services are weakly linked to each other. Each unit optimizes operations in its competence areas, which ultimately leads to the substitution of the strategic goal of the company with the objective functions of the units. The disunity and solution of problems without their clear alignment with the goals of the enterprise does not provide efficient development of the entire enterprise.

The functionalism results in the increasing number of the managers, creation of functional barriers, complication of interaction between divisions, and hindering implementation of new technologies. The deficiencies of the

function-oriented management have prompted companies to move to process-oriented management based on the system and process approaches (Skripko, 2011).

### *2.2 The System Approach*

Each enterprise has its own mission defining the relationship with the environment and with the consumers of its products. In return to meeting the need in particular products, an industrial enterprise receives the resources necessary for its operation and development. Considering this, we can consider innovative development of enterprise management as a target-oriented system with feedback. The feedback components include the requirements, customers' claims, new information of consumers of the company's products, arising from the unsatisfactory quality of goods, new achievements of the progress in science and technology, innovations, and other factors. Consumers can contact both the company that supplies the main product, and the suppliers (input) of the company (Fatkhutdinov, 2003).

Feedback provides management of the object - the set of interrelated business processes (the business processes system) - with the help of control actions produced by a certain management entity (Lopatin, 2008).

Communication of the management entity with the object of management is performed by means of the information flow. This information flow is the very process of management. Thus, the management process is a process of development and implementation of a control action of the management entity with regard to the management object. Development of a control action includes collection, transmission, and processing of the necessary information, as well as decision-making, which is sure to include the definition of the control action. Implementation of the control action involves the transfer of control actions and, if necessary, conversion of them in the form of directly perceived by the management object (Loshchilina, 2007).

For a process being the object of management, the following factors must be present:

The resources needed for the processes' functioning with a given efficiency and effectiveness;

The means and methods of achievement of the planned results and set goals;

The procedures for management of process changes;

The procedures and order of decision making in the event of emergence of non-compliances or failures in the process.

The subject of governance in innovation management can be one employee or a group of employees (specialists in marketing, finance, etc.), which through various techniques and methods of administrative influence implement target-oriented operation of the object of management. The objects of management in innovation management are innovations (products and operations), the innovation process, and economic relations between the participants of the market of innovations (producers, sellers, buyers).

The management process, regardless of its content, always involves obtaining, transferring, processing, and using information. The flow of information means the process of collecting, storing, processing, communicating the information, monitoring its flow, and assessing the performance of its use in order to provide necessary impacts by the management entity on the object of management. The importance of information support of the enterprise management system is determined by the external environment requirements and the internal changes of the enterprise.

Thus, the essence of the system approach in the management of innovative development resides in considering particular (major and minor) issues from a unified standpoint of integrity that allows analyzing internal and external communications and economic relations, considering their impact on those factors, the change of which leads to finding the best ways of the goal achievement (Leonov, 2012)

These relationships show how an enterprise functions (manufactures products, makes managerial decisions, provides research and development, design and technological activity, and so on), and those of its networks, which include all those with whom it interacts, including suppliers and consumers. Thanks to the organization's ability to build its relationship, it can quickly respond to what happens and to act effectively in the world where value is created based on the unique and individual experience of consumers. According to K. K. Prakhald, "Enterprises should focus on each consumer and his peculiar features. And to meet the needs of the consumer, enterprises must have access to the resources provided by other enterprises" (Prakhald, 2012)

### *2.3 Innovative Activity of an Enterprise*

Managing processes and continuously improving them, an organization achieves highly effective performance. The activity within the process produces a product, the specifications of which are completely determined by

internal and external customers, and these characteristics are measured continuously with simultaneous assessment of the consumers' satisfaction with the results.

The essence of innovation management is to identify the promising development lines and the list of possible scientific and technical solutions, and selecting the top priority ones from them.

The objectives of the innovation management system can be considered:

Formation of the innovative development goals;

Motivation of innovations' implementation;

Planning of the innovative activity;

Organization of works related to the implementation of innovations;

Management of innovative risks;

Implementation of innovations;

Control over implementation of innovations.

Generally, management of the innovative development of an enterprise is a set of activities that cause a variety of transformations in the organizational system, labor relations, and relationships with suppliers and consumers.

For arranging the process of management of the innovative activity, one needs to clearly formulate the management goals, evaluate the possibilities and capabilities, strengths and weaknesses, management methods, develop an appropriate organizational structure, and solve a number of other issues.

Gassmann and Enkel singled out the three key processes that can affect the innovative development (Alexandrova & Andreeva, 2014):

The external process directed inward - the search for sources and integration of external knowledge of clients, suppliers, universities, research organizations, competitors, etc.

The internal process directed outward - the launch of ideas of the company in the market, sale, licensing of intellectual property, which implies the development of various forms of cooperation with companies, partnership, alliance, joint ventures.

The double process - uniting the external and internal processes, buying (selling) a license, a patent, use of a venture capital scheme.

Empirical studies of these processes show that in the first case, an important role in the innovative activity of companies is played by suppliers and clients; and as for the external sources of knowledge and technology, the crucial role here belongs to foreign direct investments, selection of appropriate methods and partners at getting innovations from outside.

In Table 1, we consider the methods that should be used in the management of the innovative activity of an enterprise (Tukkel, 2013)

Table 1. Methods of the innovative activity management

Description of the method	Characteristics of the method
Resource management	An organization is treated as a total of resources that belong to the owners - legal entities, structural units of the organization, and individuals. The main purpose of the management in this approach is to provide the necessary resources and to monitor the use of these resources.
Process management	An organization is treated as a total of business processes, each of which is a set of interrelated procedures or actions that use the enterprise's resources to meet the needs of the customer.
Knowledge management	An organization is treated as a total of minor teams solving the general problem. The goal of management is to coordinate and ensure quick search for information to provide for independent decision-making.

Application of these methods in the innovative activity allows identifying the main aspects of the innovative development of enterprises:

Response to the changing environment and the allocation of resources, so as to improve the competitiveness of the organization;

Response of an organization to innovations, an action plan aimed at enhancing competitiveness.

Response of an organization to knowledge, which is intended to activate the internal innovations and expand the market for external use of the innovation results.

The particular response depends on the type of business, the environment variability, competition, and culture of the organization (Grey & Larson, 2003).

#### *2.4 The Process Approach*

The process approach forces a manager to identify the sources and the system of receiving the information about a process, the rules of operation and managerial decision-making, the resources controlled by the manager, and is the end link in the feedback chain aimed at achieving the best results (Efimov, 2008).

Process management in the innovative development of an enterprise assumes uniting departments and services with common processes. For the implementation of the process approach, an action plan is required (Taver, 2014):

To identify the activities that should be considered as a process, and their relationships;

To identify each of the processes in order to imagine how it is done, who needs its result (output), what indicators of quality, efficiency, effectiveness should be used for the process management, who of the staff is involved in it, what consumable resources and industrial infrastructure are needed for the process, and what costs it requires;

To analyze the results of identification and to search for opportunities to improve the processes, i.e. to improve their efficiency and effectiveness;

To develop and implement measures to improve the processes based on the results of the analysis;

To analyze the results of the implementation of the measures;

To assess the impact of the performed actions on the economic and financial results, primarily on the prime cost of the goods, the volume amount of profit and supplies.

Effective application of the process approach assumes moving from improvement of the quality of the influence factors to improvement of the effectiveness and efficiency of the innovation processes.

The influence factors include the quality of the technology, the staff qualifications, the quality of consumables, and the production infrastructure, the quality of management. Therefore, if we consider any industrial activities as processes, we can improve their quality.

First, the staff, the consumable resources, the production infrastructure, and the management are involved only in the processes. Managing the impact quality and, vice versa, managing the quality of the impact factors, we can manage the quality of processes.

Secondly, the composition, powers and responsibilities of personnel, requirements for it, its motivation criteria are defined and optimized depending on implementation of what processes and how the staff is involved.

Thirdly, management through processes can overcome the disunity of structural units engaged in solution of important, but particular problems, and concentrate their efforts on the production and supply of goods of due quality, in the right amount, and on time.

Fourthly, the analysis of the status and opportunities to improve the processes by improving the quality of the factors of influence is an effective way to search for and select areas for improvement of the organization's activity as a whole.

Fifthly, the specific requirements for production of a particular commodity (e.g., for sterility), and requirements for the protection of labor, environment, and for industrial safety are implemented and monitored through the requirements for processes.

Sixthly, the prime cost of goods is fully and reasonably determined by the expenses for various types of industrial activity, including the cost of processes.

#### *2.5 The Synergetic Approach*

Within the framework of synergetic representations, the innovative development of an enterprise is determined by Yu. V. Babanova (Babanova & Kireyeva, 2013) as a cyclic integrated process reflecting the qualitative

evolution of the enterprise over time, providing it with sustainable competitive advantage and strategic flexibility. In this case, management of innovative development of an enterprise is a function of the controlling subsystem, which through the systemic impact provides for economic stability and long-term competitiveness of the controlled subsystem by creating an innovative environment for using, building, and implementing the innovative capacity.

The essence of the synergetic approach in the innovative development of an enterprise resides in the dynamic interaction of four main causes: the target (for what?), material (of what?), driving (from where does the beginning of the movement come?), and formal (what is the result?) causes. The mechanism of this interaction operates continuously over time and space and is linear in its essence. In this case, nonlinearity is understood as (Leonov, 2012):

Formation of goals and objectives of innovative development corresponding to the level of threats to the national security;

Waiver of straightforward intention to implement all available domestic achievements;

Search for an adequate response to the challenges and threats to the security of the country with lower costs, including through the development of new equipment, production technology and the effective use of intellectual capacity and results of intellectual activity.

Thus, the necessity of using the synergetic approach in the innovative development of an enterprise is determined by the goals and objectives of formation of a new paradigm of innovation development of the economy, the presence of non-linear factors that emerge in the planning stages and significantly manifest themselves in the practical implementation of development programs and plans.

### *2.6 The Target-oriented Approach*

As is known, the milestones of innovative development are competitiveness and economic efficiency of production based on innovations. The concept of management by objectives, suggested by P. Drucker in the 1950s, was a revolutionary undertaking for the times when management was focused on functions and processes of the management. P. Drucker's idea was that management must begin with developing goals, and then proceed to the formation of the target achievement process based on determining the scope of authority and responsibilities of managers at all levels (Mullakhmetov, 2011).

The target-oriented approach provides a unified vector of the operations of the organization management system, effective use of resources at achieving the set goals, improvement of the psychological climate in the team. This allows addressing the solution of management situations based on the goals of the management levels, providing for the effectiveness of the management's actions by the criteria of necessity and sufficiency. The concept of management by objectives reduces the gaps in reference targets of managers of different management levels and facilitates the process of centralization in the organization.

## **3. The Result**

The study of the existing concepts of innovative development of industrial enterprises allowed developing and substantiating the author's approach to the management of innovative development of industrial enterprises.

### *3.1 Innovative Development of Industrial Enterprises*

Innovative development of industrial enterprises is a process of changes of the already existing or newly created products and technologies due to the implementation of innovations in the divisions of the enterprise and in the elements of the industrial and economic system. This process includes development, manufacture, implementation, and commissioning of innovations and aims to meet the needs.

Innovative development provides the ability to adapt quickly to the changing economic conditions and includes (Current approaches to the management of innovative activity of enterprises, 2014):

Development of an innovative program of the enterprise development;

Search for and selection of ideas;

Search for potential investors for implementation of innovation programs and projects;

Financial provisioning of the innovative activity;

Permanent improvement of business processes and the organizational structure of the enterprise;

Providing motivation for innovative activity of the highly skilled personnel;

Training and qualification upgrade of the personnel;

Development of an action plan for modernization and reconstruction of the production;  
 Control over the implementation of innovative projects;  
 Orientation of developers and the production to meeting the needs of consumers regarding the released products.

3.2 Innovative Development of Enterprises Based on the Logic of Qualitative Management

In our opinion, the system of change management must be based on the logic of qualitative management (Figure 1). Qualitative management is the management with good financial results. Good financial results in a saturated market appear only when customers are satisfied. The high level of customer satisfaction comes only when all processes of the enterprise work efficiently, effectively, and objectively.

The high level of processes quality is achieved only when the resources of the enterprise are of due quality. This means that human resources have competences, high motivation, high corporate culture; and the infrastructure of the enterprise (industrial and office equipment, computer hardware, communication lines, buildings and structures, etc.) are of high quality (Kruglov, 2010).

Consequently, the key factor contributing to the innovative development of a company is business processes documented as procedures. However, they can become a major obstacle to innovations.

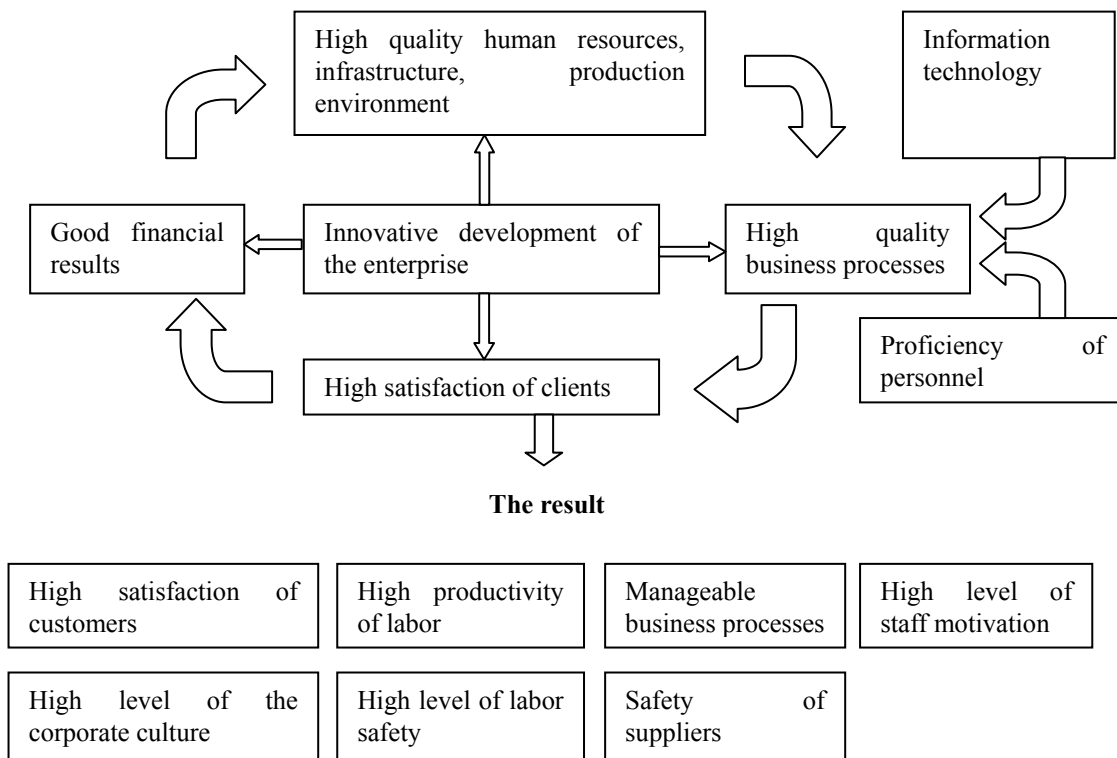


Figure 1. Concept of enterprise management based on the logic of qualitative management

A business process, on the one hand, is determined by information technology. Therefore, attention should be paid to databases, applications, computers, and servers. On the other hand, to make business processes effective, it is necessary to closely monitor the proficiency of all personnel and form the personnel's necessary skills and abilities.

Support of business processes is provided by the ICT architecture, the components of which are telecommunications systems, proprietary software and hardware, application software, proprietary and standard analytical tools (Figure 2).

Level 4 includes telecommunication channels, wired and wireless networks, as well as groups of servers and routers for connecting to external networks.

Level 3 includes proprietary information systems, which include a variety of hardware (computers, servers, operating systems, databases, etc.).

Level 2 includes applications required for specific types of business and business processes accompanying them.

Level 1 these are the basic interfaces of business interaction with customers, suppliers, partners, or investors.

Levels 3 and 4 are intended to ensure standardization and efficiency. These levels of the architecture also include suppliers and partners who are located outside of the company. The source of competitive advantage is located at levels 1 and 2.

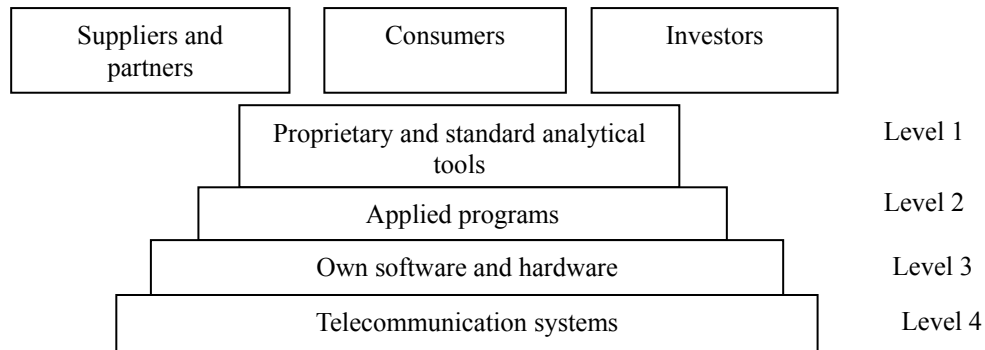


Figure 2. Structural blocks of the ICT architecture

### 3.3 Management of Competitiveness of Enterprises

Those market participants' competitiveness is higher, who are able to timely identify the new trends and use them promptly. Therefore, managers need to understand the new features. This requires them to be able to amplify weak signals that are sent by new ideas. To identify new ideas, it is necessary to analyze the technological changes, consumer behavior and their expectations, as well as to understand the nature of supply chains and the capacity of their improvement.

Thus, innovative management of enterprise development begins with an analysis of the current state of the innovation process, including the analysis of innovative attractiveness, innovative activity, and the analysis of customer satisfaction. (Figure 3) Information obtained as a result of this analysis facilitates identification of problems, allows adjusting the vectors of innovative development and predicting the likelihood and nature of the innovative activity results.

At the stage of development, selection, and implementation of efforts, the management takes managerial decisions aimed at improving the customer satisfaction, efficiency and effectiveness of processes, quality of resources. At this stage, effectiveness of the enterprise performance depends on wise decisions of the management. Making a decision, a manager must thoroughly understand the behavior of individual consumers and the patterns of the changes taking place; know the capabilities of each supplier, described in terms of costs, time, and quality, and match them with specific queries; evaluate the conformance of business processes to these queries; and, if necessary, set priorities and allocate appropriate investments assigned for information and communication technology and human resources in order to implement the necessary changes in the business processes. Innovative changes in business processes will help change the inflow of innovations (Kazakov, 2014).

Then, the performance of the made decisions is analyzed. The world's leading companies are currently involved in the analysis of the performed work, and most often use the balanced scorecard. Using the balanced scorecard enables a company to carry out continuous monitoring of performance of the adopted strategies and achievement of the specified performance criteria by analyzing the deviations from the performance targets. Based on this analysis, managers determine the effectiveness of strategies and develop appropriate corrective or preventive measures (Kovalev, 2005).

Permanent implementation of this cycle leads to continuous improvement of the system of management of the innovative activity and improvement of the enterprise's performance.

Management of innovative development of an enterprise based on the logic of qualitative management does not change the goal and essence of strategic management, but aims focusing on the organizational aspects of the creation of competitive advantages.

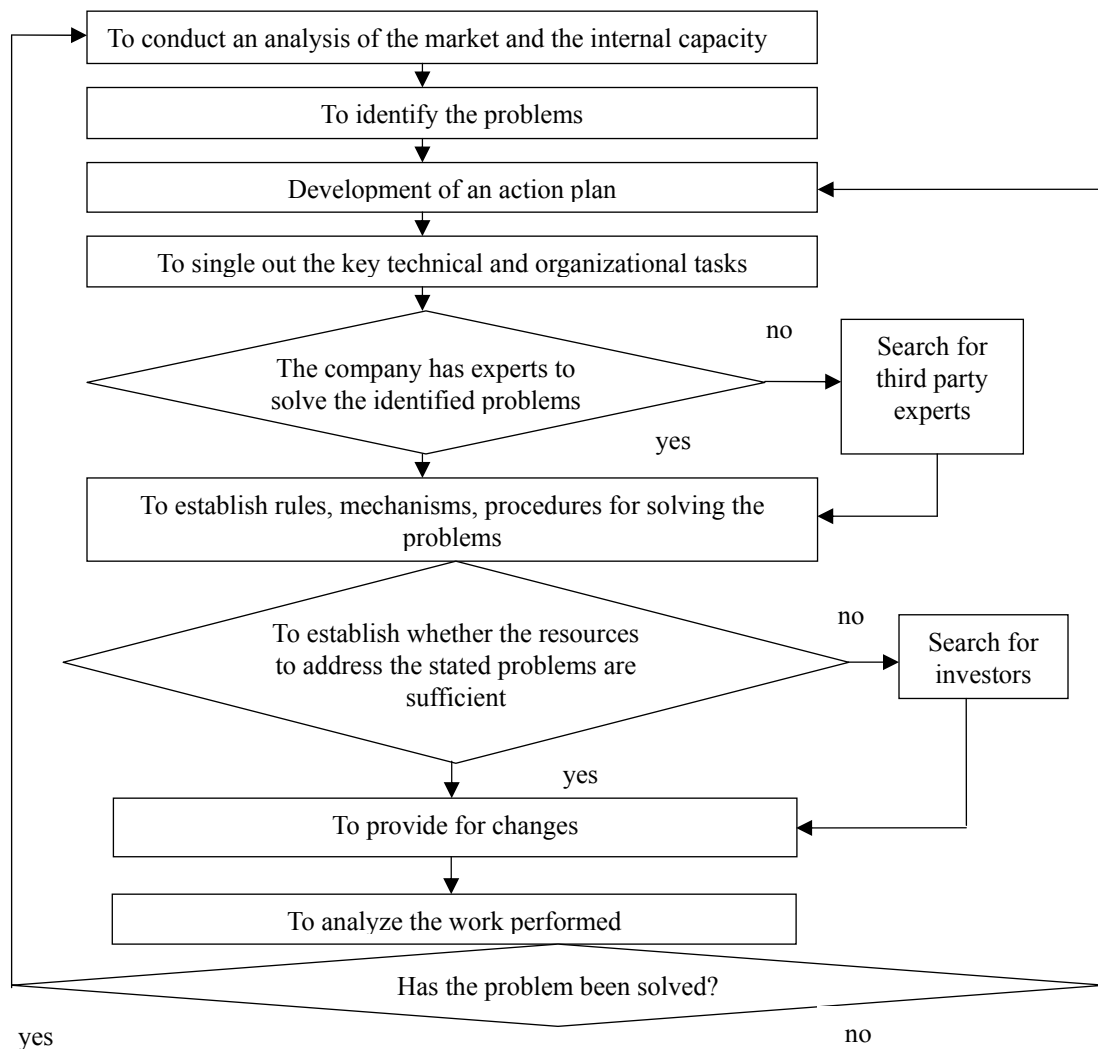


Figure 3. The mechanism of the innovative development management

#### 4. Summary

Management of innovative development of enterprises can be based on various approaches. These approaches to the management of development differ from each other by the principal settings that determine the nature of planning, organization, management, and control. (Drozdov, 2002) In general, we can distinguish the following attributes for distinguishing approaches to development management: the subject of development management, the essence of the management, the integrity of management, the type of the management's response to the changes (Table 2).

Thus, innovative development is based on the approaches characterized by the integration and establishment of linkages between the market demands and the existing capabilities of the enterprise. Integration is seen as an organizational and program-technical environment that provides tools for development and implementation of balanced managerial decisions (Dmitrieva, 2012).

Integration of approaches to innovative development is aimed at strengthening relationships:

- a) Between the stages of the innovation's life cycle,
- b) Between the levels of management vertically,
- c) Between the management entities horizontally.



Integration of approaches is related to the processes of formation of a new quality of the provided products and services, namely, the transition from the category of mass products and services to the category of high quality ones.

Table 2. Comparative analysis of the existing approaches to the management of innovative development

Approach	The management entity	The essence of management	Integrated management	The type of the management's response to changes
System approach	The entire staff	Consideration of an organization from the standpoint of integrity, which allows analyzing the internal and external links and economic relations and considering the impact on the factors, the change of which results in finding the best ways to achieve the goal	Assumes development of a project of the organization's future and a program of its implementation, in which each particular innovation serves the implementation of the general plan	A set of performance and risk indicators for the implementation of the program is formed
Process approach	Top management	The company is considered as a set of processes of innovations implementation.	Uniting departments and divisions with common processes is what provides development of uniform standards, procedures, techniques, and management practices.	A set of indicators is formed, the achievement of which is the criterion of effective performance of the innovative development
Synergetic approach	The entire staff	The essence of management resides in the dynamic interaction of the four main causes: the target (for what?), material (of what?), driving (from where does the beginning of the movement come?), and formal (what is the result?) causes.	The relationship of vertical and horizontal characteristics allowing to consider an enterprise as an open, complex, self-organizing, and self-developing system	A set of performance and risk indicators for the implementation of the target-oriented program is formed
Target-oriented approach	Top management	The desired result is determined, and then the innovation is sought for or developed, which will make it possible to achieve it. Each innovation is assessed primarily in terms of what kind of useful effect it can provide.	The common and private goals of development are defined as a project of the organization's future. Detailed plans for implementation of the project of the organization's future are developed.	A system of "milestones" (intermediate goals) is formed to timely identify the threats to achievement of the results.

## 5. Conclusion

Substantiation of the author's concept of innovative development has required conducting a comparative analysis of the existing approaches to the management of innovative development by such components as the essence, the entity of management, the system of indicators of response to a change. Its results show that the main elements of management of innovative development of an enterprise should be arrangement of the production process based on the process and system-synergetic approaches, as well as motivation of employees aimed at improving the efficiency of the production process, encouraging development of new ideas and innovations.

Application of the existing approaches to the management of innovative activity of enterprises will contribute to:

Increasing the range and quality of products and rendered services;

Winning new competitive advantages;

Reinforcing the position in the existing markets and promoting to new markets;

Improving the efficiency of the enterprises' operation and improving the economic situation in the country as a whole.

Analysis of the existing approaches to management of the innovative development has shown that the existing approaches to management do not contradict each other. If they are used "appropriately", they will complement and even reinforce each other.

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