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INNOVATION PROCESS MANAGEMENT OF INDUSTRIAL COMPLEX ENTERPRISES

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Abstract: *The relevance of the research subject is defined by the fact that the industrial enterprise management is the main process of business activities. For the purpose of competitiveness improvement the top-management of industrial enterprises constantly improves the management techniques to increase profit, to reduce production costs, to minimize unprofitable parts of production activity. All this requires a research of methodological tools of business process management and a development of new forms of innovation business process management. The goal of the article is to consider the essence and classification of business processes of industrial enterprises carrying out innovative*

activities, and to develop a management model for innovation business processes of industrial enterprises and their development directions. The main part of the article is devoted to the research of methodological tools for business process management. The article presents the main management methods, the main management forms and the author's contents of innovative business processes stages at industrial enterprises. Findings of the research are in presenting the structure of innovative business processes at industrial enterprises. The article proposes a model of innovative business processes management at industrial enterprises and a trend for their development. The article materials can be useful for managers of industrial enterprises, business economists and management specialists.

Keywords: *management, innovations, business processes, industrial enterprises, management principles, basic forms of business processes.*

INTRODUCTION

The arrangement of production activity in all industrial enterprises is related to the implementation of business process functions. A business process is a collection of related tasks or activities aimed at solution of a certain enterprise's task. They cover the whole variety of enterprise activities, and the main content and the aim of business processes is that in the process of their implementation and completion a certain income or profit is created. In other words, business processes are aimed at additional cost creation (1). Business process management – is management of developed standards inside a production cycle. The quality of business process management contributes to improvement of competitiveness of an enterprise and being a leader in its market.

Creation and implementation of innovation activity at industrial enterprises depend on the type of business activity, specifics, the resources used and the innovative potential. The results of the innovation activity are first the innovative products, innovative technologies, as well as innovative marketing transformations, innovative transformations of organizational structure and enterprise management (2). Functional and process approaches in activity of an enterprise are defined by the direction of the activity performed at production arrangement and reflect its structure. The functional approach supposes performance of certain functions in the enterprise management, and the process approach supposes implementation of certain processes in the enterprise activity. Nevertheless, all business processes have their functionality and direction of activity (23): production of marketable products (services); creation of added cost; organization and development of innovation activity; production of innovative products.

METHODOLOGICAL FRAMEWORK

Management – influence (of the control subject) on the controlled system (control object) to ensure the required behavior or change of its characteristics.

Innovation – an object implemented into the production as a result of the research performed or a discovery made, which is qualitatively different from the preceding analogue.

Business process – the process of operations sequences at an enterprise directed to transformation of some input information and material flow for getting results, which

are valuable for the client;

Industrial enterprise – a system of production means for performance of a technological process of manufacturing certain products.

Management principles – the foundational ideas, patterns, and rules of conduct of managers in relation to management functions performed (7).

Main forms of business processes – activities on setting their internal structure (technology, time, space, and organization) considering specific conditions of a company for a certain field.

LITERATURE REVIEW

Bibliographic survey on the issue of developing the author's content of stages of innovation business processes of industrial enterprises. The innovation model of industrial development of Russia is focused on technologizing, technical re-equipment, and human resources enhancement of the whole machine-building complex (16; 18). The study book of G.Ya. Goldstein (2004) presents the conceptual basis and analysis of strategic innovative management practices in conditions of global competition. The main attention is focused on the role of innovations in conditions of economy globalization, management of knowledge as a strategic resource of a company, strategy and arrangement of R&D, uncertainty management in R&D and in the process of innovation evaluation, strategic role of mass production preparation based on innovations.

M.H. Mescon, M. Albert & F. Khedouri (1992) describes in his book both theoretical and practical aspects of management activity considering the modern reality. Special attention is given to the contextual nature of management, which takes on even more importance, considering constant changes of contemporary business environment. Most scientists bring the focus on describing the approach to the enterprise management based on business process management; they show the character of changes in the organizational structure of an enterprise and the role of information technologies in their implementation, define the conditions of a success and business re-engineering tasks. (21; 12).

As a rule, the articles contain work technologies on business process re-engineering, define the organizational structure of a project, describe the main methods and means of business re-engineering works, including the methodology of structural, cost and dynamic analysis of business processes (5; 13). Thus, the research problem is to develop the author's content of stages of innovation business processes of industrial complex enterprises. The object of the research is the process of classification of innovation business process stages of industrial complex enterprises. The subject of the research is the innovation business processes of industrial complex enterprises. The goal of the research is to review the essence and classification of business processes of industrial enterprises carrying out innovative activities, and to develop a model of managing innovative business processes of industrial enterprises and directions of their development. The hypothesis of the research is an assumption that the presented management model of innovation business processes of industrial enterprises will help to manage business processes in enterprises of the industrial complex.

RESULTS

The Problem of Developing the Author's Content of Innovative Business Process Stages in Enterprises of Industrial Complex

Management business processes perform synchronization of all the entire business processes of the industrial enterprise, ensuring the optimum functionality mode (24). Innovation process includes three stages- preliminary, production and market stages, each of them including separate phases (19).

The first – preliminary stage includes the following phases:

1. Preliminary phase of innovative business processes. Scientific researches are performed on this stage, which are considered as scientific production preparation for performance of innovation activity, concept formation for future innovation. These researches are performed in Scientific and Research institutions and organizations, laboratories, engineering companies, High schools with a technological research base and highly qualified personnel (10; 8; 9). The first phase of creation and arrangement of innovation processes in industrial complex enterprises includes management of the fundamental scientific-technical developments, which are the base for further implementation of further innovation processes. The first stage is the concept generator, the source of new knowledge. Financing of scientific researches is required for functioning of this stage, which is normally done from the state budget.

The second phase of arranging innovation business processes in industrial enterprises includes management of applied scientific researches, which are focused on: researches in the sphere of effective usage of developed results of the fundamental base; creation of scientific-technical concepts on implementation of new knowledge and new scientific discoveries into production; study and creation of progressive methods of using technical innovations in industry; evaluation of technical implementation of innovation projects; development of forecasts for development of industrial complex enterprises (3).

The third phase of formation and implementation of innovation processes in industry is the management of R&D as a process of practical implementation of the received concepts of developing innovation activities of industrial enterprises. R&D phases include the following (14): development of design and technical documentation of the innovation project; design of items and pilot testing of innovative samples; development of technical and economic indices of innovative products; manufacturing of a pilot batch of innovative products; development of technological documentation for industrial production of products.

2. The second stage – production, including the fourth, the fifth and the sixth phases of managing innovation activity of industrial complex enterprises performed on the stage of mass production. The fourth phase is devoted to product development at the enterprise and includes the following: manufacturing of a development batch of innovative products; qualification tests on the products from the development batch; marketing research of innovative items; rework and adjustment of technological documentation (20).

The fifth phase includes management of mass production of the innovative products. It includes the following: design and technological preparation of the enterprise for production arrangement for manufacturing of new innovative products, development of new mostly important technical solutions for production; organizational

and technical preparation of production for innovations implementation; commercialization of innovations. Significant financing is required for mass production of innovative products, which can be both the finances of the enterprise, and finances of a customer, or bank loans.

The sixth phase of innovation processes – a transfer of the enterprise to the planed mass production of industrial products. Financing is performed by means of reinvested capital, bank loans.

3. The phase of placing the innovative products on the market includes the seventh and the eighth phases.

The seventh phase of management of innovation business processes of an enterprise consists in placing innovations in the market (4). The result of this phase is creation of a new market for innovation customers. Investing of this phase is in the expenses related to search for the marketplace, creation of new markets of products customers. The eighth phase of management of innovation business processes – aftersales services and operation of the innovative products. This phase includes the works related to maintenance, repair and disposal of innovations (25). The principles of managing innovation business processes in activity of industrial enterprises have their specifics. The authors complete the classic principles of management of Henri Fayol with the following: commitment to prospective demand for innovative products; import substitution; growth of "localization depth" of production performing manufacturing of innovative products; government control of scientific activities and R&D; cooperation arrangement in innovation activity with foreign partners; initiation of innovations; principle of advanced export market development (table 1).

Table 1. Authors' additions to the principles of business process management in industrial complex enterprises.

Principles	Content
Principle of a delayed demand for innovation products	According to this principle, future income of the industrial complex enterprise depends on future offer of the innovation product in the market, because no demand is created for this product so far, customers don't know its quality, they are "not accustomed to it".
Principle of import substitution	At production of innovation products in conditions of economic sanctions business entities focus on production of own products to provide itself with materials and goods. Import substitution supposes full local manufacturing of products, including the raw materials used.
Principle of advanced development of business process technologies	Advanced development of business process technologies means organization of Russian production of high-technology products for the purpose of creating competitive enterprises.
Governmental control of scientific activity and R&D – the principle of government transfer	The principle supposes governmental protection for inland (domestic) manufacturers provided as governmental control of the field: subsidies, fixing import duties, quotas, administrative support of domestic manufacturers, governmental investments, and governmental incentives of innovation activity in automotive industry.
Arrangement of cooperation in innovation activity with foreign partners	Partnership with foreign manufacturers provides for creation of mutually beneficial relations, development of such cooperation, arrangement of cooperation with stakeholders and other parties interested in innovation activity of industrial complex enterprises.
Principle of inventions generation and innovative ideas initiation	The principle stipulates continuous generation of ideas and scientific discoveries on implementation of innovations in Russian enterprises, anticipation of changes in the market demand for the products manufactured, creation of new "reality of innovative activity" and innovative products, which were previously in no demand.
Principle of advanced development of export market	The principle is used to enter the world market by the Russian industry, decreasing the dependence on the import products and components in the industrial production.

DISCUSSIONS AND CONCLUSION

The Issue of Developing the Author's Content of Innovative Business Process Stages of Industrial Complex Enterprises

Application of these principles in the sphere of innovative management allows for creation of a system of innovative business processes management, focused on potential customers for the purpose of accelerated commercialization of innovative products. Usage of these principles of innovation business processes management leads to more significant business activity results, because attraction of future, potential customers increases the profits of an enterprise, increases its innovative potential, improves the development of the used methods in arrangement of enterprise's innovative activity, optimum resources distribution and growth of personnel motivation to innovative activity. One of the main factors of developing competitiveness and stable functioning of Russian industrial production of innovative products is implementation of innovative business process management into the innovative activity practice. The main condition for ensuring focused development of domestic industrial R&D is provided for in the Strategy of social and economic development of the government up to 2030 – maximum "depth" increase of localization of the Russian production, growth of technological and design competences in manufacturing products and components, achievement of competitive positions in the sphere of science and intellectual activity in the world markets (11). "Industrial production localization" means creation on the territory of enterprises for production of components, units and parts necessary for assembly productions to create technological independence of the industrial complex from import supplies.

Depending on the structure of business processes and the future character of innovative activity of an industrial enterprise, the authors propose organizational structure of business process management (17). This picture shows innovative business processes as standard business processes for creation and implementation of innovative activity. Management goals are as follows: creation of innovative subdivisions; infrastructure formation, innovative products production, arrangement of technological, organizational and marketing changes, improvement of stability and competitiveness of industrial enterprises' activities.

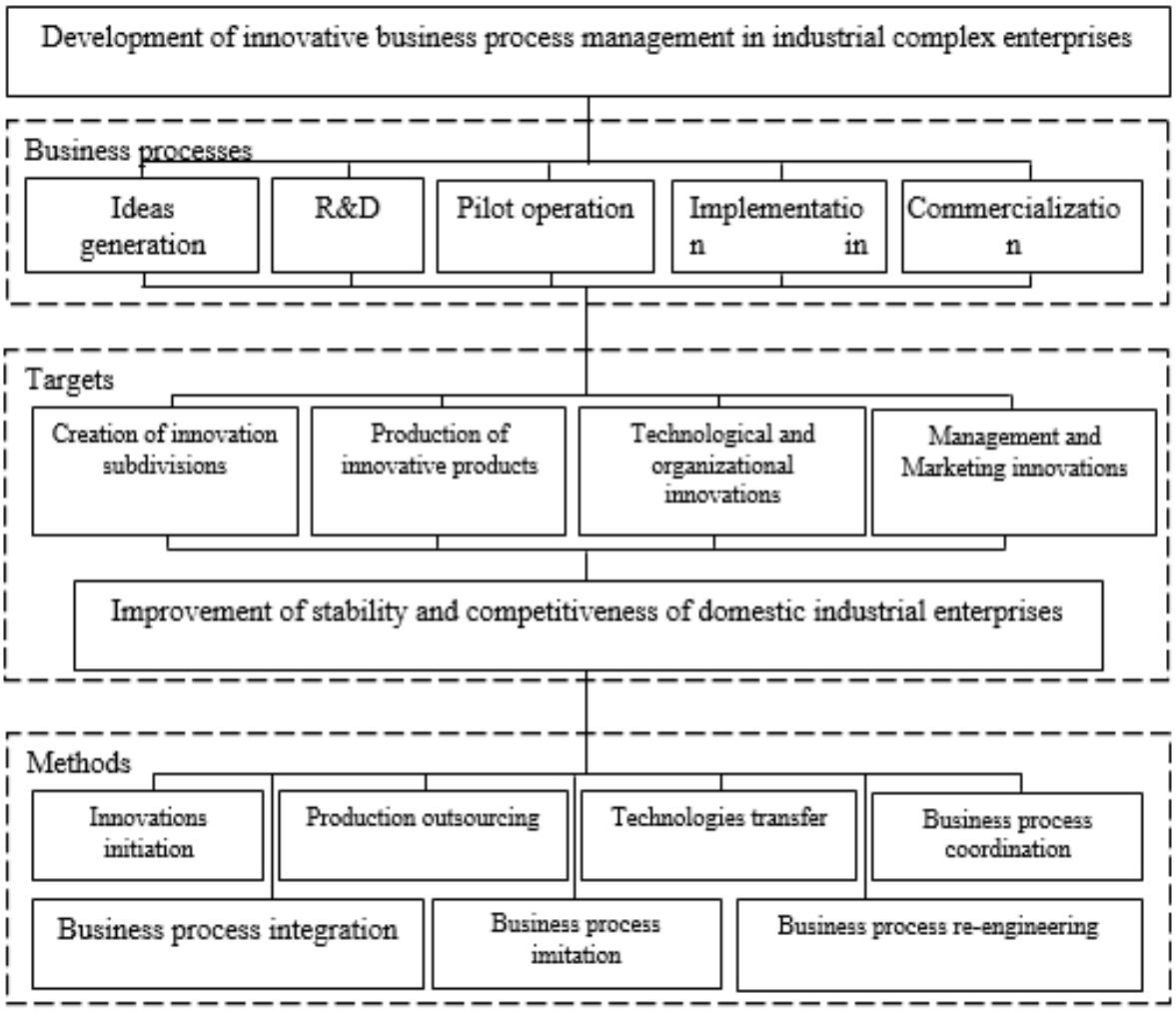
The main methods used for business process management are as follows (22):

- innovation initiation – an activity focused on development of scientific researches and R&D (Scientific, research and development works) in the industrial sphere, development of new projects, domestic production of pilot samples;
- production outsourcing, supposing that the industrial enterprises having no manufacturing capabilities for production of innovative products, as well as innovative centers, will have an opportunity to use services of outsourcing companies;
- technology transfer – supposes the usage of import innovative technologies on the initial stages of creating innovative activities; it is planned to create own innovative technologies on their base in the future;
- coordination of business processes – supposes availability of an industrial cluster, a technological center for management of activities of other enterprises in the cluster directing their R&D for creation of innovative products in their own enterprise;
- business process integration – supposes innovative activity development by

means of combining innovative solutions, ideas and products of several industrial enterprises with analogous products and joint development of new innovative products;

- business process imitation – supposes imitation of innovations of other industrial enterprises upon their approval in case of having no license for their production;
- business process re-engineering – supposes principal rethinking and a radical change of the business process structure for achievement of a maximum effect of production activity, registered by normative documents.

Figure 1. Business Process Management Organizational Structure industrial complex enterprises



Thus, the situation in the industrial complex of our country requires radical changes of the innovative business process structure, which is defined by the fact that production of innovative products of Russian industrial enterprises is on the unduly low level if compared to foreign analogues. This is caused by the efforts of Russia to arrange innovative activities on the old technological base with the usage of traditional production processes. Innovation business processes require a new approach: it is first necessary to create a technological base for performing innovative activity, and then "fill" this base with the content of business processes.

RECOMMENDATIONS

The research materials can be useful for the managers of industrial complex enterprises, specialists in the sphere of economics and management. In order to manage successfully the innovative processes at industrial enterprises it is necessary to create a complex management system, which is in the structure of the whole management system of industrial enterprises and to develop a strategy for management of innovative business processes.

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