INNOVATIVE TECHNOLOGIES IN THE ECONOMY

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Anotation

Despite the fact that the term "innovation" is not new today, it is often pronounced today and at the same time its almost everyday meaning is emphasized. Managers and economists of enterprises and institutions operate with this term, trying to emphasize their economic literacy, but in reality, few clearly understand what is behind this word. This article discusses the importance of innovation.

Key words. Innovation, development, implementation, dissemination.

Why is innovation required at an enterprise, how does it proceed and what techniques and processes are required for innovation?

Innovation, in our understanding, is such a change in the initial structure of the production system that leads to the emergence of a qualitatively new state. Therefore, we will agree to consider innovation as a targeted change in the functioning of an enterprise (institution) as a system.

The founder of the economic description of innovations, J. Schumpeter , was the first to identify five types of innovations:

- use of new equipment or new technologies for production and/or marketing;
- introduction of new products with new properties;
- use of new raw materials;
- changes in the organization of production and enterprise management;
- the emergence of new sales markets.

Despite such a variety of innovations, today there is a fairly powerful tool for creating, implementing and supporting innovations. This is marketing.

Marketing facilitates the innovation process through changes in the organizational structure and management procedures and methods. Therefore, the first innovation in importance should be considered organizational and management changes (all further work will be devoted to innovations in the field of management and organization).

In general terms, the innovation process consists of three stages:

- development – putting forward an initiative, proposal, idea or project for a possible solution to a problem, which, after development, will result in an innovation;
- implementation – scientific, technical, experimental or organizational activity, the purpose of which is to initiate innovation and maintain the necessary course of its development;
- dissemination – the use of an innovation that has already been mastered in new conditions or places of application.

Despite the specified sequence of the stages, such an arrangement often becomes unprofitable from the point of view of the time factor. Therefore, their compaction by the

degree of execution in parallel mode becomes an urgent need. The overlapping of the specified stages, their imposition on each other allows for the acceleration of development, implementation and dissemination of innovations, putting the entire process on a long-term basis, as if in a "conveyor" mode.

This mode is impossible without taking into account the life cycle of the product (or innovation). The fact is that the acceleration of scientific and technical progress reduces the time of useful use and obtaining an economic effect from the implementation of innovations. Often such changes occur not consistently, but spontaneously, in leaps and bounds, which does not allow the use of traditional methods of analysis and forecasting.

The life cycle of a product (innovation) reflects quantitative changes in needs (demand) and consists of five stages:

- product introduction;
- growth of production in accordance with growing demand;
- product maturity;
- satisfaction of needs;
- a decrease in demand due to increased requirements or the introduction of other innovations.

Let us consider the contents of individual phases in more detail:

1. The introduction of innovations is associated with informing potential consumers about the technical and economic properties of products through marketing, advertising and sales activities. At the same time, there is a record of and a quick response to the comments, experience and suggestions of consumers regarding the released products (innovations);

2. Production growth occurs as a result of established demand for products, when all of their required characteristics have been determined, production and sales processes have been developed, and after-sales service has been established;

3. Product maturity occurs during the period of sales expansion, intensification and improvement of individual elements of production, sales and management processes;

4. Saturation is the "beginning" of a product crisis caused by its technical and economic parameters. It quickly becomes obsolete and ceases to meet consumer demands, their pressure to achieve qualitative improvements in characteristics or price reductions increases;

5. The reduction is characterized by significant difficulties with sales. In already established production, this leads to excessive growth of stocks and, ultimately, to an inevitable stop.

The classification of innovations from the point of view of their structural characteristics is as follows:

Innovations at the "entrance" to the enterprise as a system. This implies a targeted qualitative or quantitative change in the selection and use of materials, raw materials, equipment, information, i.e. production resources.

Innovations "at the exit" of the enterprise as a system. Targeted qualitative or quantitative change in the results of the enterprise's economic activity, for example, manufactured products, services, technologies (in other words, the production product).

Innovations in the structure of the enterprise as a system. This can be a targeted change in production, service and auxiliary processes, both in quality or quantity, and in the organization and method of provision.

In addition, there is a classification of innovations according to individual areas of enterprise activity:

- technological innovations aimed at creating new products, technologies and materials;
- production innovations aimed at expanding production capacity, diversifying production activities and changing the ratio of production units;
- economic innovations aimed at changing methods and ways of managing, reducing production costs, and improving final financial results;
- trade innovations that are aimed at modifications in trade activities, pricing policy, offering related trade services, expanding the system and methods of product distribution;
- social innovations related to the improvement of working conditions and nature, social security, psychological climate and internal relationships;
- Innovations in the field of management involve improving the organizational structure, style and methods of decision-making, and the use of new means of information processing.

Quite often in the practice of leading developed countries, the following simple scheme of answers to questions is used to determine innovations:

- what is produced?
- how is it produced?
- Who is it produced for?

Depending on the answers to them, one or another classification of innovations is formed, from the point of view of what they change in the enterprise.

Typically, this involves four main types of innovation:

- product innovation;
- process innovation (technological);
- personnel innovation (human factor);
- innovations in management activities.

The basis of innovation policy at industrial enterprises of leading industries is created by product innovations. This is the guarantee of their competitiveness and economic growth. But management innovations are considered the most important, since it is the person who is the bearer of management activity, the main driving force for the implementation of innovations as a form (organization), as well as methods, ways and means of management work.

It should be emphasized that there are no isolated innovations at the enterprise. They are usually interconnected with each other and are carried out either sequentially or in parallel. The introduction and implementation of innovations in one area of the enterprise's activity in one way or another affects other areas and leads to the introduction of innovations in them.

Here it is necessary to dwell on the qualitative side of the innovation process. This can be done on the basis of the "ordinal" classification, which includes eight stages:

Zero-order innovations (regeneration of original properties) – a change aimed at preserving and updating the existing functions of a production system or part of it;

First-order innovations (quantity change) are simple targeted adaptations to quantitative requirements while maintaining the functions of the production system or part of it;

Second-order innovations (reorganization or organizational change) are simple organizational shifts to ensure better organization of the production system or part of it;

Third-order innovations (adaptive changes) are changes caused by the mutual adaptation of elements of the production system, leading to an increase in its efficiency as a whole;

Fourth-order innovations (new variant) – partial functional changes within the production system or its part, the emergence of "variants" with new useful properties or changed parameters;

Fifth-order innovations (new "generation") – changes in most or all of the initial properties of the production system, while maintaining the basic structural concept;

Innovations of the sixth order (new "type") – a qualitative change in the functional properties of a production system or its part, with a modification of the original concept;

Innovations of the seventh order (new "genus") are a fundamental change in the functional properties of a production system or its part, which changes its basic functional principle.

In general, it can be noted that the order of innovation is not only a "measure" of the nature and intensity of changes in the production system. The order can also act as a measure of the complexity of managing the innovation process. The higher the order of innovation, the higher the requirements for managing the innovation process. The dependence of the measure on the order in this case is nonlinear . If innovations of lower orders (from 0 to 4, inclusive) as quantitative changes can be relatively easily ensured within the framework of a conventional management system without increasing its complexity, then innovations of a higher order (from 5 to 7) require a different approach. Here, it is necessary to create a system of strategic and tactical management, clear provision of resources, and develop and optimize a plan for implementing interconnected innovation processes. This increasingly applies to each higher order of innovation.

It should be noted that the higher the order of innovation, the more sensitive it is to external influences. Advanced enterprises in the West began to pursue an innovation policy based on the prediction of changes, trying to respond to the first, still weak signals of the future development of science and technology. Creating and providing for timely adaptation relatively stable "reserve" development strategies.

In practice, enterprises feel not only the need to implement innovations, but also a growing need to manage innovation processes. In this case, the ability to promptly:

- anticipate innovative opportunities ahead of time;
- concentrate resources;
- manage the entire innovation process in a comprehensive and rapid manner;
- minimize the risk of making the wrong choice and being late.

In this case, flexible management of innovation processes becomes a necessity. Timeliness of making necessary decisions is ensured by the innovation management strategy. It is included as an integral part of the overall development strategy of the enterprise.

The meaning of the innovation management strategy is that it allows timely concentration of managers' efforts on mastering and using promising achievements of scientific and technical progress. This ensures stable dynamics of innovations in the interests of achieving the enterprise's goals, and also creates conditions for the long-term effectiveness of its activities.

Conclusion

The time in which we live is a time of constant change and the search for answers to emerging questions in the face of uncertainty in the world around us.

Scientific research shows that the innovation measures outlined in the Concept of Innovation Policy of the Russian Federation are not being fully implemented, and this is holding back the exit from the excessively protracted crisis and the transition to economic recovery based on increasing the competitiveness of domestic products, strengthening their positions in the domestic and foreign markets. There is no large-scale development of high-tech science-intensive products using the potential of conversion and dual-use technologies.

The objectives and priorities of state innovation policy should be reflected and specified in federal strategic documents that create a mechanism for implementing the concept of Russia's long-term socio-economic development.

It is necessary to define the objectives and mechanisms of innovation policy at the regional and local levels in strategic documents and innovation programs approved by the executive bodies of the constituent entities of the Russian Federation, reflecting the specifics of the regions and the priorities of federal innovation policy.

Work in the field of state innovation policy, not only in the technological, but also in the socio-political, managerial, and economic spheres, is just beginning.