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### **The mechanism of innovative management of industrial sector**

**Abstract:** The concept of «management mechanism», its essence and types, studied the problems of implementation of the mechanism of management innovation in industry. The effectiveness of the control mechanism depends largely on the factors formed under the influence of internal and external environment. At a qualitatively new level of development of the national economy, it is necessary to form a mechanism of innovative management focused on the economy of knowledge, the activation of, first of all, the production sector. Lack of development of the mechanism of innovative management of production complexes, and also effective ways of management of them point to importance and practical importance of studying of this aspect. Taking into account the application of new management methods, problem-target aspects of the implementation of innovative management of the industrial sector have been developed. The proposed mechanism is aimed at improving the performance indicators, which at the output form the quality characteristics of the results of management impact.

**Key words:** mechanism, innovations, methods, subject, object, management, industry, resources, efficiency.

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**Introduction.** The development of the economy at a qualitatively new level of development which is focused on the economy of knowledge involves the activation of innovative management, primarily in the production sector. The relevance and timeliness of the studied problem are due to the need to form a competitive economy, aimed at moving to higher technological structures. During the studies of the categories «innovation», «innovative management», the problematic aspects of this issue related to the definition of objects and subjects, the essence and development stages of their implementation were clarified. It is established that the study of this aspect is connected, first of all, with the further development of the mechanism of innovative management of production complexes and the definition of more effective ways of managing them.

**Problem statement.** In theory, there are many definitions of the concept of «mechanism». In many modern sources you can find such concepts as «mechanism of socio-economic development», «financial mechanism», «economic mechanism», «management mechanism», etc. [2].

Under the mechanism, it is possible to imply the state of the system, for example, a «financial mechanism» In the state of the financial system; «the mechanism of socio-economic development» - the complex of socio-economic conditions of the economic system. Also, the mechanism can act as the main tool for development, namely, as an element of the structure of the system during the interaction with other elements, etc.

According to L. I. Abalkin, the content of the term «mechanism» in the management of economic processes has excessively expanded features and has a rather complex structure [1]. The concept of management mechanism includes any organizational or economic process of the economic system. It is obvious that regardless of the primary sources and different interpretations of the concept of «mechanism», its essence lies in the understanding of it as a set of interacting elements that drive the object.

**Objectives.** Based on the relevance of the studied problem, the aim of the study is an attempt to develop recommendations and proposals for improving the mechanisms of management of industrial facilities by means of using new innovative management methods. In this regard, it becomes necessary to solve the problems associated with the modernization of management

of industrial and innovative technological production system in modern economic conditions. In addition, it is necessary to develop ways to ensure effective management of this economic sector by using innovative methods in order for it to progress in the context of digitalization.

**Prerequisites.** The mechanism considered here as an instrument of impact characterizes the whole management process over the object. Elements of this mechanism will comprise of the following: 1. object: a controllable element which varies under the action of management center; 2. subject: an individual or group of individuals that pose as carriers of the practical activities involved in the “mechanism”; 3. the center: control element exercising influence. Also the algorithm of the mechanism is included, that is, a set of methods and functions of control actions to achieve management goals; parametric description of the planned results that characterize the stage of development of the object; conditions that contribute to or hinder the «work» of the mechanism (factors that can change the algorithm of the «work» mechanism). In addition to these elements, this includes the limitations and assumptions made to the analysis of the mechanism under which it is possible to achieve the target efficiency. Also, the above elements include the characteristics of the description language: graphic, logical-analytical, mathematical, etc., as well as the characteristics of the objective function for the implementation of which a mechanism is created.

The peculiarity of the content of the management mechanism lies in a special function of the center, that is, the element that affects the «work» of the mechanism, as well as the creation of feedback between the subject and the center. The quality of feedback depends on the «size» of the object. For example, feedback, in the real sector of the economy as a capacious object of management, is a response of this sector to the control impact with the accumulated effect over the past period and possible assumptions of the subjects about the impact of this mechanism on their projected future.

Basically, it is a vertical interaction of such type as «top-down management». It is quite obvious that the management mechanism is quite a broader category than the organizational management system, for example, in terms of the interpretation of the object of the system [7, p. 195], which in management systems traditionally include the team, as a consequence, the separation of the concepts of object and subject.

There are many examples of management mechanisms. For example, at the level of the country’s economy as a whole there is a fiscal mechanism in state policy; organizational and economic mechanisms of sustainable development of industrial enterprises; mechanism of use and attraction of foreign investments; mechanism of elimination of regional socio-economic differentiation; mechanism of investment distribution at the stage of restructuring of financial institutions, etc.

In the management mechanism objects can be as follows: the economy of the country as a whole, its individual industries, enterprises and organizations of various types of property and fields of activity, individual private enterprises. For example, the mechanism of financial stabilization of the national economy, the mechanism of regulation of agriculture by the state, the mechanism of financial and economic evaluation of the effectiveness of investments in the selection and introduction of information systems in enterprises, the economic mechanism of compensation for social damage in industrial facilities, etc.

The centre of the management mechanism can be the state and state bodies of all types of power, management centers of corporations and public associations, as well as informal elements of the structure. For example, the mechanism of state regulation of energy efficiency of enterprises, the mechanism of management of entrepreneurial units in industrial facilities, the mechanism of regulation of public opinion.

In the management mechanism businesses and organizations, governmental bodies and individuals can serve as subjects directly as the center or facility, or indirectly, through the involvement in the process of «working» mechanism or through experiencing the results of operation of the mechanism. In this case, it is possible that the subject may coincide with an object, or center, or with a managed or management system.

**Method of research.** The following research methods were used in this paper: comparative, systematic and analytical.

**Discussion.** Taking into account the specifics of the matter, there are following types of management methods and tools used in the mechanisms: financial, innovative, organizational, institutional, adaptational, environmental, investment, socio-economic, transfer, anti-crisis, concession, etc.

The functions of control actions used by the mechanism are divided into motivational and coercive. In the first case, the mechanism creates conditions that indirectly affect the implementation of the target intentions and motivate the subject to achieve the goals set by the mechanism, as an example, a mechanism stimulating investment in industrial production. This option would take into account the interests and needs of the actors, and the quality of the «work» of the mechanism would depend largely on the degree of convergence of the interests and proposed incentives to the actors. In the second case, the mechanism directly dictates the rules of conduct of the subjects' actions; as an example, the financial mechanism of customs or fiscal recovery.

The effectiveness of the «work» of the mechanism is measured by quantitative and qualitative indicators, such as the level of efficiency of investment funds (quantitative indicator), the level of investment attractiveness (integral indicator) or the quality of industrial products; the degree and pace of development of the object, for example, the intensification of integration processes, reducing the prevalence of occupational diseases of workers in the coal industry; the quality of the outcome as a whole, such as, for example, a mechanism to stabilize national finances or a mechanism to address transformational decline.

The factors impeding or improving the operation of the mechanism can be divided into external (economic, political, legal, scientific, technical, social, etc.) and internal, i.e. included in the resources of the object (material, information, labor, human or psychophysiological, intellectual, etc.).

There are the following tools in the process of innovative management: self-government or self-organization; full or partial automation of management work; clustering; optimization and reorganization of managed elements.

The significance lies in the fact that these areas can be used in accordance with the factors of the management environment.

An effective mechanism of innovative management will help to cope with the quantitative limitations of natural and human resources and create conditions for long-term positive economic development and growth. At the global level, the positions of countries are determined by new competitive conditions, their ability to continuously transform scientific knowledge into innovative products sold in the markets. Countries that have established a mechanism for economic stimulation and financing of innovation are among the leaders and maintain their high competitive positions in international rankings even in times of crisis and recession.

Implementation of innovative technologies from the management point of view can be carried out by the following methods:

- the coercive method is based on the use of force to overcome resistance on the part of staff and may be appropriate when the nature of resistance is clear and innovations need to be implemented in a short time;

- the method of adaptive deviations, on the contrary, involves the gradual introduction of changes over a long period of time specially created for this project team, not the head of the company; conflicts are resolved by compromise.

At the same time, the staff does not have to «break» (which can negatively affect the quality of the work performed): employees themselves eventually accept the convenience and benefits of innovations. This method is used in cases where there is no urgency, and changes in the external environment are easy to foresee. However, it is ineffective in emergency situations;

- crisis management: a method applicable to the most adverse cases when the existence of the

company is threatened. Resistance in this case is usually low, but there is a large time deficit and the risk of failure;

- the method of resistance control: a flexible method involving a combination of adaptive deviations method and a coercive method, there should be maneuvering between them when the urgency of implementation changes [3, p. 112].

Regardless of methods, management must be effective. In a broad sense, effective management is the ratio between the result achieved and the total cost. In the controlled system, the efficiency is expressed by the formula 1 [5, p. 79]:

$$\mathfrak{E}_c = \frac{P_c}{Z_c} \quad [1]$$

where  $P_c$  – the economic result of the system for a certain period of time;

$Z_c$  – the total amount of resources spent by the system to get the result .

The management of the industrial sector is an integral part of the innovation management of both the national and regional economy. Industry is a supporting structure and basis of the economy. Quality, efficiency and competitiveness depends on the result of the economy as a whole. Therefore, to solve many problems in this sector of the economy, modification is needed in the management system at all hierarchical levels, the organization of the most effective hierarchical management system, which is capable to use available development resources. In particular, it is necessary for modern efficient scientific-industrial and financial organizations providing competitive complex industrial product for the production in relatively closed cycles.

In a broad sense, the management mechanism is the effect on an object by the subject in order to get the desired result. The innovative management mechanism of the industrial sector can be represented in the scheme shown in Figure 1.

The proposed mechanism for the industrial sector innovative management makes it possible to define and structure the main interrelations between the manager and the direction as the object (controlled subsystem) of management. The scheme takes into account the performance levels of innovation management. New structures and methods of innovation management are created within the state, regional and local policies. Focusing on the innovative path of development the subjects are more proactively participating in all innovation programs, encouraging the innovative activity of other participants in the innovation process within the industrial sector.

The operation of the mechanism largely depends on the factors formed under the influence of the environment. All environmental factors can be divided into two groups:

1) directly affecting innovation management (legislation and institutions of state regulation, the activities of other sectors of the economy, infrastructure elements);

2) indirectly affecting innovation management (economic condition, scientific and technological achievements, demographic, political, natural and cultural factors).

The environment of the mechanism consists of subsystems, forming a process leading to the development of innovative methods and forms of influence on the industrial sector. One of the main subjects in the environment is the subject and object of management, where the subject is declared in the form of public authorities and management bodies, regional authorities and management, local government; managers of industrial enterprises.

The object of management is the industrial sector, which consists of state-owned industrial enterprises engaged in activities of extraction, mineral resource processing, production of raw materials and finished goods. Also there are enterprises, which belong to the sectoral system (technical and service complexes), scientific and technical associations engaged in development and industrial implementation of innovative technologies, educational institutions, leading the training and retraining of specialists in various industrial sectors, etc.

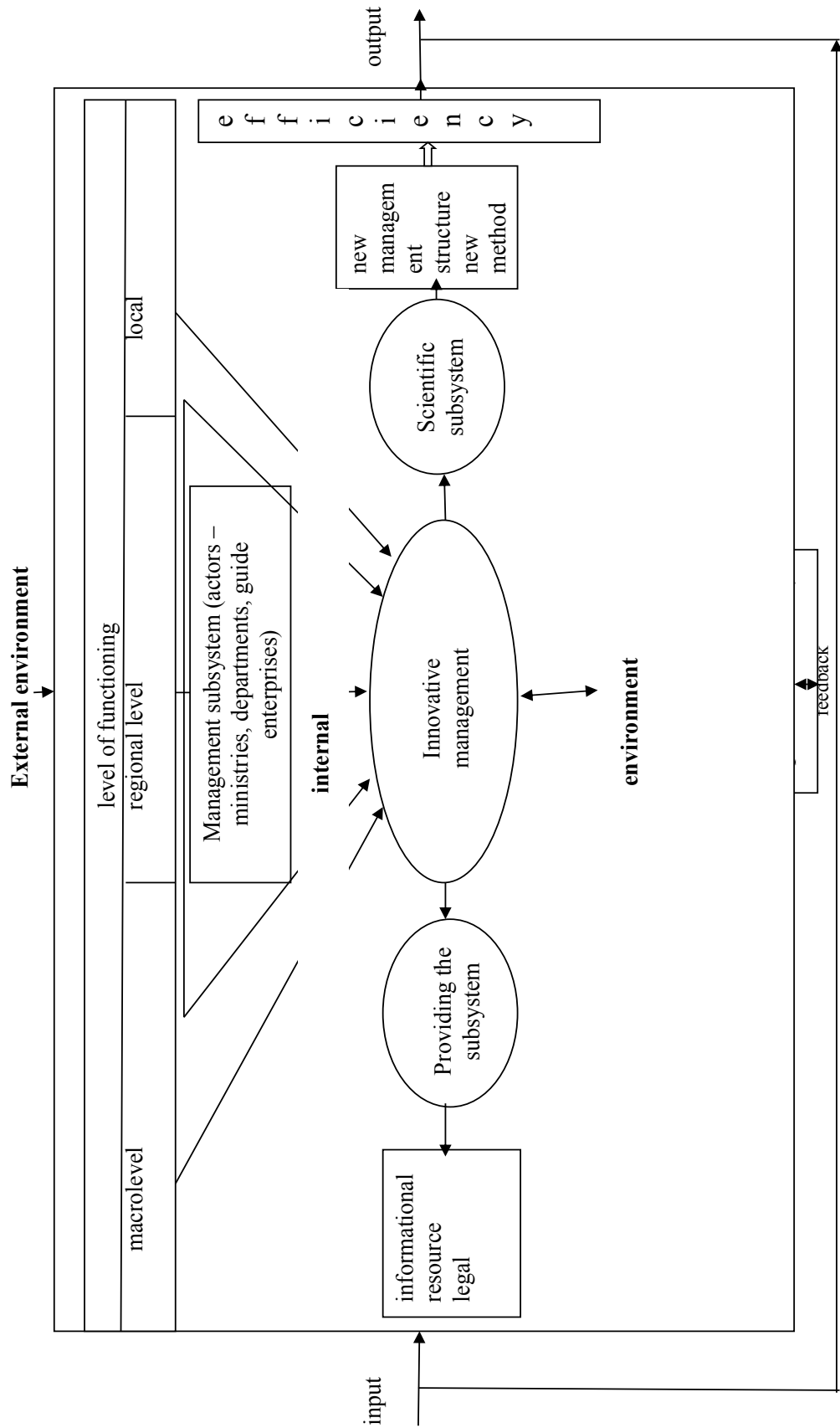


Figure 1 – Mechanism of innovative management of the industrial sector

Note : Developed by the authors

The subject of their interaction is innovative industrial management. The subject and the object in the management mechanism forms a controlled system. This system cannot be closed. In particular, the external sphere affects the subject as information from the outside. It is designated as entry in the figure. The object creates a product of activity, which goes to the exit [4, p.239].

Important components of the domestic environment of innovation management are supply and scientific subsystems. It becomes possible to launch the process in the scientific subsystem, where the result is realized as implementation of new management methods and the formation of the corresponding new structural basis due to the information, resource and legal elements. The whole logic of the described mechanism is aimed at improving the performance indicators, which form the quality characteristics of the obtained results of managerial influence.

Table 1 presents the main objectives (set trajectories) of innovation management [6, p. 181].

Table 1

**Managerial trajectories of industrial policy in the innovative economy**

| Management objectives                                | The result of management activities  |
|--|--|
| Structural transformation                            | Development of high value-added industries   |
| Investment support                                   | Growth of the indicators in priority sectors, holding positions in the foreign and domestic market |
| State protectionism                                  | Protection against external competition  |
| Antitrust management                                 | Improving the structure and location of production, optimizing market prices                       |
| State procurements                                   | Intensification of demand, impact on market conditions   |
| Establishing state standards                         | Improving product quality, increasing competitiveness  |
| Tax policy   | Favorable conditions for production growth   |
| Providing conditions for the lease of state property | Conditions for manufacturers, depending on the contribution to the development of industry         |

**Conclusion** Thus, in accordance with the objectives of this study we found out that the improvement of the innovative management mechanism of the industrial sector requires the implementation of a structural transformation of the economy. This type of change involves modification of the structure of the national economy in line with the current stage of market economy within the country, expansion of openness, creation of conditions for the competitiveness of the national economy in the domestic and foreign markets.

Using new management methods the goals of innovative management of the industrial sector can be represented in the following tasks:

- 1) achieving a tangible increase in industrial production;
- 2) consistently updating the technical and technological base of production;
- 3) efficient use of resource potential;
- 4) purposeful use of investment resources for the priority areas of industry development [8].

The identification of methods and ways of ensuring effective management on an innovative basis for the progress of this economy sector in the conditions of digitalization should be included among the topical areas of further scientific research.

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### **Өнеркәсіптік секторды инновациялық басқару тетігі**

**Андатпа.** «Басқару механизмі» ұғымы, оның мәні мен түрлері қарастырылды, өнеркәсіпте басқару инновациясының механизмін енгізу мәселелері зерделенді. Басқару механизмі әрекетінің тиімділігі көбінесе ішкі және сыртқы ортаның әсерінен қалыптасатын факторларға байланысты. Ұлттық шаруашылықты дамытудың сапалы жаңа деңгейінде білім экономикасына, ең алдымен өндірістік саланы жандандыруға бағдарланған инновациялық басқару тетігін қалыптастыру қажет. Өндірістік кешендерді инновациялық басқару тетігін, сондай-ақ оларды басқарудың тиімді тәсілдерін әзірлеудің жеткіліксіздігі осы аспектіні зерттеудің маңыздылығы мен практикалық маңыздылығын көрсетеді. Басқарудың жаңа әдістерін қолдануды ескере отырып, өнеркәсіптік секторды инновациялық басқаруды іске асырудың проблемалық-мақсатты аспектілері әзірленді. Ұсынылып отырған механизм тиімділік көрсеткіштерін жақсартуға бағытталған, олар шығуда сапа сипаттама-сын, алынған басқару әсерінің нәтижелерін құрайды.

**Түйін сөздер:** механизм, инновация, әдіс, субъект, объект, басқару, өнеркәсіп, ресурс, тиімділік.

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### **Механизм инновационного управления промышленным сектором**

**Аннотация:** Рассмотрено понятие «механизм управления», его сущность и виды, изучены проблемы внедрения механизма управленческих инноваций в промышленности. Эффективность действия механизма управления во многом зависит от факторов, формируемых под воздействием внутренней и внешней среды. На качественно новом уровне развития национального хозяйства не-

обходимо формирование механизма инновационного управления, ориентированного на экономику знаний, активизацию прежде всего производственной сферы. Недостаточность разработки механизма инновационного управления производственными комплексами, а также эффективных способов управления ими указывают на важность и практическую значимость изучения данного аспекта. С учетом применения новых методов управления разработаны проблемно-целевые аспекты реализации инновационного управления промышленным сектором. Предлагаемый механизм направлен на улучшение показателей эффективности, которые на выходе образуют характеристики качества полученных результатов управленческого воздействия.

**Ключевые слова:** механизм, инновации, методы, субъект, объект, управление, промышленность, ресурсы, эффективность.

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