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THE COORDINATING EFFECT FROM THE FORMATION OF THE PROJECTS MANAGEMENT OFFICES TO MODERNIZATION OF THE INDUSTRY

Abstract

***Objective*:** Acceleration technology upgrades, increase competition for resources, globalization, development of information technologies and the wide availability of modern production technology makes it especially important issues of the modernization management of industrial enterprises as the main stream of their development.

***Methods*:** Systemic, historical and comparative analysis of the modernization theories. Statistical economic analysis of technological environment of industrial enterprises and modernization directions within the framework of the innovative economy development.

***Results*:** Justified on objective, statistical data confirmed the need for systemic modernization of the enterprises, including a comprehensive technical (technological, informational and human resources) update for solving tasks of ensuring the production of competitive products. Analysis and synthesis of existing domestic and foreign scholars definition of modernization has allowed to define two fundamentally different approaches: modernization as a local process of improvement and modernization as the process of introduction of new approaches or enhance existing approaches to updating in the industry, including in the framework of overcoming technological dependence. The proposed development project approach to the management of modernization of the industry through the establishment of the project office as a system administrator of the Association of industrial enterprises for their comprehensive modernization. For the project office defined the functional tasks in the field of industrial, technological and consulting engineering.

***Scientific novelty*:** for the first time based on the results of the analysis of approaches to the implementation of modernization in the article justified the introduction of the coordination forms of projects realization for modernization of enterprises included in the Associations (clusters, networks of competencies, strategic alliances) – project office for modernization of the industry at the sectoral and regional levels.

***Practical significance*:** The main provisions and conclusions of the article can be used in research activities in the study of the modernization processes and administrative activity for solving problems of technological and technical updates.

Keywords: modernization, industry, project, project office, competition, coordination, engineering, cluster.

INTRODUCTION

The modern stage of socio-economic development of Russia is carried out in the context of modernization, when the world is undergoing profound technological and institutional changes. These changes imply a qualitative change in the system of enterprise management in connection with their adaptation to the changing market conditions of the digital economy for more efficient use of resources and production of competitive products.

The modernization reflects the processes of changes and updates in the technological and socio-economic development both at the level of country and industry and individual businesses and is accompanied by structural and technological and organizational changes in production, investment and innovation activities, institutional arrangements, the content of the ongoing state economic policy in relation to new modern requirements.

The main goal of modernization as a process of refinement and improvement in economy is the economic growth. Economic growth ensures economic development. In turn, for the economic development the in-

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creasing role played by scientific and technical progress, which provides up to 80% of economic growth [1].

CONCEPT HEADINGS

In the economic sphere the modernization, according to the founder of the modernization theory S. Eisenstadt [2], is accompanied by technological growth, which is stimulated by the systematic application of scientific knowledge (the development of which becomes area of specialized research institutions), development of secondary (industrial, commercial) and tertiary (service) sectors of the economy by reducing the values of the primary (extractive industry). That is, the economic modernization is presented as the development of the industrial system based on high level technologies, but also on the increasing scale and complexity of the main markets (goods, labour, finance).

In General, the modernization theory should be allocated to the following groups:

– the theory of progressive development on the basis of: innovation (J. Shumpeter [3], G. Mensch [4], S. Glaz'ev [5]), national patterns of development (F. Riggs, N. Zinger, D. Levin, C. Girz [6]), cultural modernization (S. Huntington [7]), ecological modernization (A. Giddens [8], U. Beck [9]);

– the theory of catch-up development based on: investments (R. Solow [10]), sustainable and non-sustainable growth (Hirschman A. [11]), the stages of economic growth (Rostow Y. [12]), the "big push" (P. Rosenstein-Rodan [13]), the "poles of development" (F. Perroux [14]), "circular causation" (Myrdal G. [15]), "crow's wedge" (K. Akamatzu [16]);

– the theory of dependent development based on: the development of foreign trade (V. Rao [17]), the system "center-periphery" (Prebisch R. [18]), dependent-associated society (F. Cardoso, E. Faletto [19]).

Based on the current economic situation in industry there is an objective, statistical data confirmed the need for systemic modernization of the enterprises, including the complex and technical (technological, informational and human resources) update, without which it is impossible to solve the problem of providing the production of competitive products.

RESEARCH FINDINGS

Statistical and economic analysis of modernization in the industry

In Russia in the period from 2004 to 2010, the extent of renewal of fixed assets was small and accounted for in natural resource industries from 5.3 to 6.7%, and for the processing and manufacturing industries - from 5.0 to 6.4% [20]. As at the end of 2015, the index of physical volume of investments in fixed capital aimed at reconstruction and modernization amounted to 91.5% (the minimum value for the last 6 years [21]).

Sectoral analysis of the Russian industry show that moderate (4-6%) increased production in the sectors tied to investment demand (metallurgy, production of construction materials), as well as in food production. It should be noted that the structure of industrial production is generally unsatisfactory from the viewpoint of its innovative orientation in the past 25 years almost 5-fold increase in the share of extractive industries, but more than 2.5 times decreased the share of machinery. The most worn are the main assets of enterprises in the industry of mining, processing industries (chemical industry, manufacture of machinery and equipment manufacture of transport equipment, manufacture of electrical equipment). Thus, in the fuel and energy complex, the average age of the loaded capacity is 16.7 years, and the index of the investment in machinery is 13 years, an average of 101% of the level of investment in Eastern Europe [22]. So upgrades and, accordingly, the incentive for development is not enough, and it was reflected in the falling growth in 2015 or early 2016. Of course, it is caused by existing distortions in the investment policy: the mining industry accounts for about 20% of all investments, while in processing industry, forming a new high-tech orders, sent about 3% of all investment in the economy, despite the fact that extractive industries provide 7-8% of GDP, and manufacturing to 25% of GDP.

Note to the fact that the greatest depreciation of fixed assets of domestic enterprises is observed exactly where, according to the world trends of economic development, maximally develop research and development. However, the policy of import substitution yielded the results – the volume of production in agriculture and the food industry are growing.

The priorities for modernization in the industry

The modernization of the industry is considered essentially as a technological modernization of the industry and is defined as the interconnected change of material and technological base of the complex of industries based on technological innovation and development of regional inter-industry innovation linkages in specific areas of specific industries on the basis of transfer in the production of the major achievements of science and technology. However, if we generalize the modernization

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terminology, then it can be considered as activities aimed at improving the process efficiency; the introduction of new products or the improvement of existing ones; change the set of activities types; transition into another value chain [23].

The modernization of industrial enterprises must be distinguished from other forms of radical renewal: the construction of new enterprises; expansion of existing enterprises; reconstruction; reorganization (reforming); adaptation of the enterprise; reengineering business processes; technical upgrade.

In General, the modernization of the enterprise aimed at solving the following tasks:

- issue new products and/or products with improved characteristics;
- improving the efficiency of the manufacturing equipment;
- reducing the labor intensity of production processes and, as a consequence, optimization of the number of operating staff;
- shortened the manufacturing production cycle;
- reduction of losses (productive and unproductive);
- reduction the product costs (through the use of progressive technologies, materials saving energy and labor resources);
- economic incentives for development of environmentally technologies (the so-called ecological modernization).

Analysis and synthesis of existing domestic and foreign scholars definitions of modernization [24] allows to set two fundamentally different approaches to its understanding:

- as a local process of improvement of something (an enhancement or improvement of the machine design);

- as a broad process of introducing new approaches or improving existing ones, improving economic and socio-political life (actually, the modernization theory).

Based on the foregoing, we can conclude that the modernization of industrial enterprises is seen not so much as the development of modern production facilities, how to overcome technological dependence. Basically, the emphasis is not on the creation of modern enterprises and the formation of the ability to generate innovative scientific and technical ideas, to export the results of R & D, and quickly switch to the use of information technologies and production of competitive products.

Modern industrial production is largely represented by the Value Chain. On the basis of this thesis (introduced by M. Porter [25] and confirmed in practice over the last two decades) modernization of individual enterprises does not always lead to the realization of the expectations placed on them. To get system effect of modernization must be implemented throughout the value chain, which requires strengthening the role of coordination and the search for a special element - such as project office.

The functionality of the project office for the modernization of the industry

In network associations of enterprises (cluster, network of competences, strategic alliance or Association), usually implemented more than one project, so the terminology "project management" is justified for use in the management of such associations. In the classic version of project management relates to project management within the company. We offer in terms of functioning of networks of enterprises to give priority to securing interactions between members of the Association.

Therefore, relevant project offices, allowing not only to manage projects but also manage communications between the members of the Association. The monitoring indicators of the project office include: the timing of the project; attract resources (material, technical, logistical, human, financial, etc.); planned results of the project (including risk), etc.

However, in modern conditions, the project office may also enable the modernization of industrial enterprises on a qualitatively new level. So, for the synergistic effect and implementation of individual technological processes with maximum efficiency and minimal costs we propose to establish a project office in the region (as a subdivision of a particular company or a separate company), acting as a system administrator of Association in the field of complex modernization of all actual and potential participants.

Therefore, the project office, in addition to conventional functions can perform the following functions:

- industrial engineering – focuses on the selection and supply of equipment and machinery, installation of building structures for purposes of production activities in associations;
- process engineering – includes the provision to the participant of the complex technologies necessary to implement the purposes of activities (including innovative ones), including training

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through the transfer of industrial know-how and knowledge;
- consulting engineering – technical documentation, research results, initial data for the industrial production management, economic calculations, estimates, recommendations, etc.

Thus, the presence the special integrating company in Association focused on providing engineering services to fully realize the modernization of the valid members or potential participants of the Association in part of technical re-equipment and comprehensive redesign of production processes of the regional or sectoral groups of companies with the priority orientation towards innovation activities.

For solving modernization tasks in the project office should be created the work group to technical and technological competencies. Experts of this group will focus on the collection and analysis of information about equipment, technologies and orders for the enterprises in Association, and also will lead in active negotiations on purchase of the equipment and, if necessary, arrange for training either through the equipment manufacturer or on the basis of a particular educational institution.

These project offices can be created within the industry supporting the processes of modernization or at the regional level to enhance the development of the industry. Then the efficiency of the project office provided not only professional activities, but also the fact that as a subject Association, it has the support of investment institutions and opportunities of coordination provided by the regional authorities.

Systematization of the effects for the industrial development

The development of existing structural elements of the regional economy as a system is carried out through associations of enterprises in industry (primarily in the form of clusters) with the following results:
- the accelerated development of enterprises in close collaboration in associations and ensure a high level of trust between partners;
- providing to the relevant legal, financial, technological, and other required information by each member of the Association;
- reduction of sources of state financing and the transition from subsidy to domestic lending;
- creation of necessary infrastructural facilities, providing high quality of services provided to participants;
- creating and strengthening within the organization vertically and horizontally integrated structures in scientific-technical and industrial-technological spheres;
- the development of the education in accordance with modern production requirements of high-tech products;
- the introduction of more loyal tax system for the participants and tariff regulation;
- transparency of interaction with federal and regional authorities and actualization of the requirements of local laws to the modern level of development of industry, science and education;
- creating opportunities for technological and equipment updates, as well as comprehensive modernization of industrial enterprises (members of Association) due to the presence in the Association is a manufacturer of high-performance equipment and infrastructure.

Ensuring more effective use of resource potential of industrial enterprises through the development of high-tech industries, the accumulation of competence and increase the competitive advantage is ensured through the following tasks:
- creating the transfer system from the results of scientific research and development work to production, bringing the results of research and development to a commercialization stage;
- support research and development that could lead to the deployment of competitive industries with high knowledge intensity and added value, and involvement in these projects of private funds (including venture capital) investors;
- creation and implementation of joint commercial funding that significantly improve the competitiveness of the manufacturers of high technology industrial products;
- the creation of infrastructure subjects to support of activities in the Association (centers for technology transfer, engineering, venture business, information and telecommunication and consulting companies, business incubators, technology parks, financial institutions, etc.).

The functioning of Association involves the continuous exchange of information not only between participants and facilitators, but also with respect to the external environment allowing further work on the selection

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of projects for further development and adjustment of the project to achieve the best results.

CONCLUSIONS

Created in the framework of the value chains the project management office to modernization allows to implement upgrade scripts of industrial enterprises (members of Associations), through enhancing their resource potential and formation of appropriate competencies and competitive advantages. Thus, the project office operating in the business combination, has the ability to implement flexible changes in the capacity of the enterprises in accordance with the requirements of the external competitive environment, taking into account the impact of changes in technologies and equipment, including the world level, with the aim of achieving a synergistic effect. The projects management offices to modernization of the industry focused on the implementation of a process-oriented approach, ensuring the effectiveness of future decisions based on coordination rather than on targeting individual companies.

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