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DEVELOPMENT STRATEGIES OF ORGANIZATIONAL STRUCTURES OF PETROCHEMICAL ENTERPRISES MANAGEMENT

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Abstract

Designing petrochemical enterprises' organizational structure is a tool to improve the management system's efficiency and is a complicated and time-consuming process. The purpose of the study is to identify the features of strategies for the development of organizational structures of petrochemical enterprises and design the organizational structure of management following the strategy in the digitalization conditions. The research's methodological basis is based on General scientific approaches to the study of strategies for developing organizational structures of management of petrochemical enterprises-descriptions, structural-functional and system analysis, and cause-and-effect relationships. Although implementing resource-saving production systems in the industry as a whole and its sectors have long permeated the world scientific community, the issue of integrating existing scientific concepts in the field of organizing resource efficiency technologies in the conditions of digitalization of economic sectors is currently urgent. Currently, petrochemical enterprises are characterized by a linear-functional organizational structure of management, which complicates their modern changing operating conditions. In this regard, it is recommended that petrochemical companies have a divisional, project-based organizational management structure and a linear-functional management structure to introduce a project management center.

Keywords: Development strategies, organizational structure, petrochemical companies

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1. Introduction

Currently, the petrochemical complex is one of the leading branches of the Russian economy. Petrochemical enterprises require the introduction of improved management methods and advanced production technologies. To ensure the petrochemical industry's efficiency, it is necessary to design an optimal organizational structure and improve the level of technological processes using new resources and internal reserves of effective production organization, labor stimulation methods, and the development of advanced production management methods in developed industrial countries.

In conditions of continuous development and improvement of production, the organization implemented new concepts to increase efficiency and productivity, lower production costs, accelerate new products to market, meet the population's needs, and increase production competitiveness.

2. Problem Statement

A key problem in the organization of production processes in petrochemical plants is the use of resource-and energy-saving technologies to optimize the entire production chain of a petrochemical enterprise and related industries. Although the issues of implementing resource-saving production systems in the industry as a whole and its individual sectors have long permeated the world scientific community, the issue of integrating existing scientific concepts in the field of organizing resource efficiency technologies in the conditions of digitalization of economic sectors is currently urgent (Barsegyan et al., 2020; Gölzer & Fritzsche, 2017; Samaranayake & Laosirihongthong, 2015). On the one hand, new approaches to the use of digital technologies for optimal organization of petrochemical production systems are needed; on the other, a more in-depth study of the issues of engineering and operation of sustainable production facilities in the petrochemical industry is needed.

In order to organize systems for planning and controlling production processes of petrochemical enterprises, it is of particular importance to solve the problem of using resource-and energy-saving technologies to optimize the entire production chain of a petrochemical enterprise and related industries (Kudryavtseva et al., 2020; Shinkevich, Klimenko et al., 2020). The works of both foreign scientists, such as Nasiri et al. (2015); Ram et al. (2017); Sovacool (2015); are devoted to reducing the level of energy consumption in the petrochemical complex; and domestic researchers – Shinkevich, Kudryavtseva et al. (2020). The main directions of research in the field of the concept of sustainable consumption of energy resources in the conditions of digitalization of the economy are considered in foreign scientists' works. For example, Mintzberg (1979) justified the role of institutional values in energy transformation; With & Klein (2018) developed key factors for energy-efficient supply chains.

3. Research Questions

Designing petrochemical enterprises' organizational structure is one of the tools to improve the management system's efficiency and is a complex and time-consuming process. In this regard, it is necessary to restructure, redesign or design the organizational structure of management on a scientific basis at domestic petrochemical enterprises, switch to new management standards, eliminate the lack of

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qualified managers, which will allow us to develop an optimal organizational structure of enterprise management that contributes to the most effective achievement of goals.

4. Purpose of the Study

Currently, there is no single approach to building enterprise management structures. There are many large enterprises whose management structure is complex in the petrochemical complex, and formal structural parameters need to be designed. In this regard, the purpose of the study is to identify the features of strategies for the development of organizational structures of petrochemical enterprises and design the organizational structure of management following the strategy in the digitalization conditions.

5. Research Methods

The research's methodological basis is based on General scientific approaches to the study of strategies for developing organizational structures of management of petrochemical enterprises-descriptions, structural-functional and system analysis, and cause-and-effect relationships. The research's theoretical basis was the work of foreign and domestic scientists in the research of approaches to the design of organizational structures and management systems, analysis of state strategies in resource conservation. The research was based on legal documents, scientific journals, conference materials, official websites of enterprises.

6. Findings

Solving problems of increasing the level of organization of production processes in the petrochemical complex is currently one of the most important issues, the relevance of which is confirmed by the relevant state programs, strategies, and legal documents: the state program of the Russian Federation "development of industry and increasing its competitiveness"; Decree of the President of the Russian Federation dated 07.05.2018 No. 204 "on national goals and strategic objectives of the development of the Russian Federation for the period up to 2024»; Strategy for socio-economic development of the Republic of Tatarstan till 2030; Strategy of information society development in Russian Federation to 2017 – 2030; the Program "the Digital Economy of the Russian Federation"; national project "Productivity and employment" and in other documents at various levels.

The effective use of hydrocarbon resources and the creation and development of integrated oil refining are based on a diversified petrochemical production strategy. The organizational structure of enterprise management is built under the strategy of its development.

The European Union countries, the United States and Japan, are traditional technological leaders in the market for the production of petrochemical products. Another powerful market for the production and sale of petrochemical products is China. The development strategies of the petrochemical industry in these countries are presented in table 1.

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Table 1. Strategies of the main players in the petrochemical market (compiled by the author based on Dellano-Paz et al., 2015)

Characteristics of countries	Strategies being implemented
The largest markets and manufacturers of petrochemical technology leaders	1. Developed infrastructure and taking advantage of the "shale revolution" (USA). 2. Focus on the production of new innovative products (products with high added value) (European countries, Japan). 3. Development of production of innovative petrochemical products (China).
Countries that successfully implement petrochemical development strategies that allow them to become one of the world leaders in 1990-2010	1. Transition to an export-oriented industrial development strategy. Transition to the production of high-quality products (South Korea). 2. Expanding the range of export-oriented petrochemical products, diversifying the economy, and increasing products' production with a high share of added value (Saudi Arabia, Iran). 3. Implementation of import substitution directions, using the advantages of geographical location.

Enterprises in the chemical and petrochemical industries differ in various ownership forms, structures, and types of products. However, all enterprises go through the same stages in the production process: identification of resource deposits, their extraction and transformation into a finished product for the consumer, product sales. In the petrochemical industry, major Russian companies are Gazprom, Rosneft, Lukoil, YUKOS, Surgutneftegaz, in the chemical industry – EuroChem, Sibur, Lukoil, Bashhim and several other companies that are difficult to manage organizations. Such organizational structures' management system is based on the divisional structure of the organization of links responsible for individual areas or processes of activity and is aimed at large-scale regional markets.

There are also several problems related to the enterprise management system, primarily in the field of design and development of the organizational structure, which are addressed by Akhavein & Porkar (2017); Tozzi & Jo (2017). For example, a study conducted as part of creating a program to improve labor productivity in the Republic of Tatarstan revealed that the number of management levels in business units varies and can reach up to 10, which leads to a low level of response to deviations from the plan. There is also an excessive number of administrative and managerial staff. Employees of enterprises do not always have an incentive to exceed the work plan or reduce the number of defects and are wary of any organizational changes and the introduction of new performance indicators.

The characteristics of enterprises in the Republic of Tatarstan's chemical and petrochemical industries in the context of their development strategies and corresponding organizational structures are presented in table 2.

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Table 2. Strategies for the development of the main petrochemical enterprises of the Republic of Tatarstan (compiled by the author on the basis of data from the official websites of enterprises)

Company / Characteristic	Development strategy	Characteristics management systems
PJSC Nizhnekamsk-Neftekhim	strengthening its leading position in global markets as a diversified producer of synthetic rubbers and plastics; energy saving is a priority area of activity	standardization of processes, continuous improvement, development of involvement and management skills of production personnel in order to maximize the effective use of existing assets and eliminate all types of losses
Kazanorgsintez PJSC	increasing production capacity and expanding the scope of activities towards the production of high-end products, maintaining its position as one of the most advanced manufacturers in the world	the quality management structure includes 3 departments: the product testing Department, the Department of product certification and management systems according to ISO standards, the Department of technical control and acceptance of finished products and raw materials
OJSC Kazan plant of SK	improving the efficiency of production and investment activities; corporate behavior; personnel policy	introduction of new types of products, modernization of production, improvement of technologies and product quality, introduction of automation-these goals must be met by the company's personnel
JSC KVART	improving product quality; expanding the product range; technical modernization of production; increasing labor productivity	optimization and stabilization of the company's personnel structure; improvement of personnel management in accordance with the company's strategy and trends in the labor market; introduction of modern standards in the company's personnel management system; development of approaches and improvement of personnel management technologies to achieve maximum results

In the research Barsegyan et al. (2020); Shinkevich, Kudryavtseva et al. (2020); Shinkevich, Mashkin et al. (2020), the directions of reforming the organizational structure of management are considered from the point of view of production. Large enterprises with continuous production and large material flows of shipped products within the same transport direction are recommended to improve the enterprise's organizational structure in the direction of a divisional structure, and investment in the implementation of APS production management systems is recommended. Among the companies with a divisional organizational structure of management in the Republic of Tatarstan can be attributed PJSC "Nizhnekamskneftekhim", JSC "Kazanorgsintez".

As part of the development of petrochemical enterprises, the divisional management structure improves functional divisions' performance, enabling them to quickly respond to rapidly changing

environmental conditions by separating operational and strategic management of the enterprise. At the same time, there is a high need for managerial personnel, which leads to an increase in management costs.

Highly specialized enterprises, low-tonnage by type of production, are offered a project organizational management structure; the direction of digitalization is the development of the CRM sector, focusing on stimulating the growth of material flows with high added value.

It is recommended that other cases preserve the linear-functional organizational structure, digitalization direction – organizational improvement of petrochemical production processes, and implement technological innovations.

Petrochemical enterprises are currently characterized by a linear-functional organizational structure of management, which complicates their activities in today's changing operating conditions.

7. Conclusion

Thus, the petrochemical industry is one of the priority sectors of the Russian economy, which enterprises must now implement effective management methods and new production technologies to improve the quality of products. To ensure the competitiveness of the petrochemical industry, it is necessary to build an optimal organizational structure and increase the technological level using new resources and internal reserves of effective production organization, labor stimulation methods, and the development of advanced production management methods in developed industrial countries.

In order to optimize the organizational structure of the petrochemical enterprise management, it is recommended to perform the following actions:

- reduce vertical and horizontal duplication of functions;
- reducing the number of management levels;
- development of a unified approach to the formation of the management structure and distribution of responsibility between departments;
- equal distribution of functional responsibilities and powers between posts at the same management level;
- even distribution of responsibility between non-production divisions.

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