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TÍTULO: Fundamentos metodológicos de un enfoque de sistema en la gestión de la industria del petróleo y el gas.

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RESUMEN: En nuestro tiempo, se está produciendo un progreso de conocimiento sin precedentes, que por un lado, ha llevado al descubrimiento y la acumulación de muchos hechos nuevos, información de diversas áreas de la vida, y por lo tanto, ha confrontado a la humanidad con la necesidad de sistematizarlos; busca lo común en lo particular, estable en el cambio. No existe un concepto claro del sistema. En su forma más general, un sistema se entiende como una combinación de elementos interconectados que forman cierta integridad, una cierta unidad. El estudio de los objetos y fenómenos como sistemas provocó el desarrollo de un nuevo enfoque en la ciencia: un enfoque de Sistema, lo cual se aborda en este artículo.

PALABRAS CLAVES: industria petrolera, industria del gas, gestión, enfoque de sistema.

TITLE: Methodological fundamentals of a system approach in the management of the oil and gas industry.

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ABSTRACT: In our time, there is an unprecedented progress of knowledge, which on the one hand, has led to the discovery and accumulation of many new facts, information from various areas of life, and therefore, has confronted humanity with the need to systematize them; look for the common in the particular, stable in the change. There is no clear concept of the system. In its most general form, a system is understood as a combination of interconnected elements that form a certain integrity, a certain unity. The study of objects and phenomena as systems caused the development of a new approach in science: a system approach, which is addressed in this article.

KEY WORDS: oil industry, gas industry, management, system approach.

INTRODUCTION.

It is known that the term “system” comes from the Greek word “systema” and means a whole, a particular connection made up of parts. Each system is formed from the set of its constituent elements that are in a relationship with each other, forming certain integrity, unity. Following the theory of consistency, the built-in system has such integral qualities and features that are not able to reproduce each element in the system (Abramenko & Shorin, 2001).

In the framework of system theory, system management is understood as a management process that is implemented considering all the relationships between managers, employees, colleagues, customers, suppliers, financiers, the market, society, culture and the environment in the aggregate. System management specialists are skeptical of individual targeted measures since in complex systems this or even greater success can be achieved by resolving and encouraging self-organization ("autopoiesis"). The actions of executives are only one of the many situational factors that exert their influence on subordinates (Sanalieva et al., 2018).

Systematic management approaches are a "frontal attack" on a traditional understanding of management. The image of the manager as an authoritarian leader who manages the enterprise with the help of a rigid hierarchy and monopoly of influence is replaced by a focus on autonomous, decentralized, independent and self-organizing subsystems ("fractal factory"). Meanwhile, management has long recommended a partnership management style, the formation of partially autonomous groups, the weakening of control, etc. to avoid the negative consequences of excessive directive management and regulation. All these recommendations are mainly developed on the ideology of "human relations", which is focused on self-realization, improving the production climate, establishing trusting relationships, etc. and, as a result, increased efficiency (Akhtyamov, 1997).

The systematic approach considers organizations, the industry as systems that under no circumstances can be completely organized "from above". Some experts deny any possibility of system management. The implementation of the concepts of system theory in the control range is often very difficult since representations and tools of thinking are not linked to an understanding of social reality (causal thinking) and the acquired models of perception that managers follow. Simple explanations are much more attractive than indications of complex and complex "relationships", which are not so easy to trace.

DEVELOPMENT.

The approach to system management is based on the postulates of new system theory, in particular, Luhmann's theory. In this case, the main attention is paid to the development of self-organization processes, as well as to the conscious formation of a “substantively organized” order.

According to the definition of the Academy of Management and Economics, systematic management involves the definition of framework conditions, as well as the formation and use of appropriate incentives (Makarenko, 1997). Leading employees who use a systematic approach, due to their personal qualities and competencies, initiate development processes, improve the structure and communication, that, in turn, have a positive impact on the communication process, remove mental blockages and thereby ensures an effective process of doing work.

Systematic management means that the focus is not only on the team and organization but also on individuals. Only when management at the individual level is not enough, should the processes occurring in the team and throughout the organization be considered. Leaders are also seen as an integral part of the system, subject to certain factors. The approach developed by Daniel F. Pinnow proceeds from the fact that the structures and cultures that form in organizations are too complex and are not included in the classical notions of management (and cause-effect relationships). In contrast to such concepts, the theory of social systems is formed on the model of networks of actions, consequences, and consequences with a wide variety of feedback cycles, while it is necessary to consider mechanisms that have the property of self-reinforcement.

Let us define the features of a systematic approach: a systematic approach is a form of methodological knowledge combined with the study and creation of objects as systems and applies only to systems.

The hierarchy of knowledge, requiring a multi-level study of the subject: the study of the subject itself is an “own” level; the study of the same subject as an element of a wider system - a “higher” level; the study of this subject in relation to the elements making up this subject is a “lower” level.

A systematic approach requires analyzing the problem, not in isolation, but in the unity of relations with the environment, to comprehend the essence of each connection and an individual element, to carry out associations between general and private goals.

Based on the foregoing, we define the concept of a systematic approach: in our opinion, a systematic approach is an approach to the study of an object (problem, phenomenon, process) as a system in which the elements, internal and external relationships that most affect the investigated results of its functioning are highlighted, and the goals of each of the elements, based on general purpose of the object.

We can also say that a systematic approach is such a trend in the methodology of scientific knowledge and practical activity, which is based on the study of any object as a complex single socio-economic system (Government of Kazakhstan, 2010).

Let us turn to history. Before the formation of the science of management at the beginning of the 20th century, rulers, ministers, generals, builders, making decisions were guided by intuition, experience, and traditions. Acting in specific situations, they sought to find the best solutions. Depending on experience and talent, the manager could expand the spatial and temporal framework of the situation and spontaneously comprehend his control object more or less systematically. Nevertheless, until the XX century, management was dominated by a situational approach. Accordingly, the determining principle of this approach is the adequacy of the managerial decision in a relatively specific situation. Adequate in this situation is the decision that is best from changing the situation, immediately after exerting appropriate managerial influence on it.

Thus, the situational approach is the focus on the nearest positive result ("and then we will see ..."). It is thought that "further" again, there will be a search for a better solution in the situation that will arise. However, the solution at the moment is the best, it may turn out to be completely different as soon as the situation changes or in it, unaccounted circumstances are discovered.

The desire to respond to each new turn or turn (change of vision) of the situation in an adequate way will lead to the fact that the manager is forced to take more and more new decisions that are contrary to the previous ones. He ceases to control events and floats along their course.

The foregoing does not mean that management in circumstances is inefficient in principle. A situational approach to decision-making is needed and justified when the situation itself is extraordinary and the use of previous experience is risky when the situation changes quickly and unpredictably when there is no time to consider all circumstances. Therefore, for example, rescuers of the Ministry of Emergencies often happen to look for the best solution precisely in the context of a specific situation. Nevertheless, in the general case, the situational approach is not effective enough and must be overcome, replaced or supplemented by a systematic approach.

Next, we consider the following basic principles of a system approach (system analysis):

1. *Integrity*; allowing us to simultaneously consider the system as a single whole and at the same time as a subsystem for higher levels.

2. *The hierarchical structure*; i.e. the presence of a plurality of (at least two) elements located based on the subordination of lower-level elements to higher-level elements. The implementation of this principle is visible in the example of each specific organization. As you know, any organization is an interaction of two subsystems: managing and managed. One obeys the other.

3. *Structuring*; allowing to analyze the components of the system and their relationships within a specific organizational structure. As a rule, the process of functioning of a system is determined not so much by the properties of its elements as by the properties of the structure itself.

4. *Multiplicity*; allowing the use of many cybernetic, economic and mathematical models to describe individual elements and the system as a whole.

The systematic approach as a general methodical principle is applied in various branches of science and human activities. The epistemological basis (epistemology is a branch of philosophy, the forms and methods of scientific cognition are comprehended) is the general theory of systems, the beginning of which was laid by the Australian biologist L. Bertalanffy.

In the early 1920s, the young biologist Ludwig von Bertalanffy began to study organisms as defined systems, summarizing his view in the book “Modern Theory of Development” (1929). In this book, he developed a systems approach to the study of biological organisms. In the book “Robots, Men and Minds” (1967), he transferred the general theory of systems to the analysis of processes and phenomena of social life. 1969 – “General System Theory”. L. Bertalanffy is turning his system theory into a disciplinary science. He saw the purpose of this science in the search for the structural similarity of laws established in various disciplines, from which general systematic laws can be deduced.

System management is based on the concept of the behavior of senior employees, which operates considering the structural and cultural aspects of management. At the same time, it is important that systemic thinking expands and complements the arsenal of tools used by the management team, and does not replace them. Also, system management focuses on the humanistic values of organizational formation, the concepts of system theory, the concept of constructivism and system consultation, as well as the concepts of enterprise economics and organization theory.

Let me remind you that the system theory was developed by Ludwig von Bertalanffy in the XX century. Systems theory deals with the analysis, design, and operation of systems - independent business units, which are formed by interacting, interconnected and interdependent parts. It is clear

that any organizational form of business meets these criteria and can be studied using the concepts and tools of systems theory.

The value of a systematic approach is that managers can easily coordinate their specific work with the work of the organization as a whole if they understand the system and their role in it. This is especially important for the CEO because a systematic approach stimulates him to maintain the necessary balance between the needs of individual departments and the goals of the entire organization. It makes him think about the flow of information passing through the entire system, and also focuses on the importance of communications.

A systematic approach aims to establish the reasons for making ineffective decisions; it also provides tools and techniques to improve planning and control. A modern leader should have systemic thinking that can be expressed as follows:

- A manager must perceive, process and systematize the huge amount of information and knowledge that is necessary for making management decisions.

- A leader needs a systematic methodology with which he could compare one area of his organization's activities with another, not allow quasi-optimization of managerial decisions.

- A manager must see the forest behind the trees, the private behind the general, rise above everyday life and realize what place his organization occupies in the external environment, how it interacts with another, larger system, of which it is a part.

- The systematic approach to management allows the leader to implement his/her main functions such as forecasting, planning, organization, management, and control more productively.

Systemic thinking not only contributed to the development of new ideas about the organization (in particular, special attention was paid to the integrated nature of the enterprise, as well as the paramount importance and importance of information systems), but also provided the development of useful mathematical tools and techniques that greatly facilitate the adoption of managerial

decisions, the use of more advanced planning and control systems. Therefore, the systematic approach allows us to comprehensively evaluate any production and business activities and the activities of the management system at the level of specific characteristics. This will help to analyze each situation within a single system, to reveal the nature of the problems of entry, process, and exit. The application of a systematic approach allows you to best organize the decision-making process at all levels in the management system.

Despite all the positive results, systemic thinking has not yet fulfilled its most important purpose. The assertion that it will allow the use of a modern scientific method for management has not yet been realized. This is partly because large-scale systems are very complex.

It is not easy to understand the many ways in which the external environment affects the internal organization. The interaction of many subsystems within an enterprise is not fully understood. It is very difficult to establish the boundaries of systems; too broad a definition will lead to the accumulation of expensive and unsuitable data and too narrow - to a partial solution of problems. It will not be easy to formulate the questions that will arise for the enterprise, to enter with accuracy the information necessary in the future. Even if the best and most logical solution is found, it may be impossible. Nevertheless, a systematic approach makes it possible to better understand how the enterprise and the industry as a whole work.

The oil industry is an independent component of the fuel and energy complex. It has its characteristics, specific technical base, and organization of production, development and placement conditions. The industry forms a whole chain of production processes that are organically interconnected and encompass the entire oil and gas economy, starting with the search, exploration, and preparation of oil and gas fields, including their rational development, ending with the production of an extensive assortment of products that are most valuable to the national economy.

According to confirmed oil reserves, Kazakhstan is among the 15 leading countries of the world. These figures are enough to say that Kazakhstan has an oil future. The question is only one thing - the wise use of the wealth of Kazakhstan and a prudent attitude to its natural and human potential. This task can and should be solved by the state through a whole system of methods and levers of influence available to it.

The oil and gas industry of the Republic of Kazakhstan is divided into four sub-sectors according to industrial specialization such as oil-producing, oil refining, gas production, and gas refining. They are mutually intertwined and complement each other in the process of extraction and processing.

In general, the oil industry includes three levels:

- *First level* - Organization of the oil industry.

- *Second level* - The infrastructure of the oil industry; i.e., institutions involved in the creation of conditions for the functioning of the main production. This category should include scientific organizations, executive bodies in this industry, associations coordinating the activities of oil industry entities.

- *Third level* - Business entities belonging to other industries for which oil is only a sphere of economic interests. This group should include educational institutions that produce specialists, oil industry workers, oil-oriented media, and various enterprises for the production, repair, and maintenance of oil equipment (Abykanova et al., 2019).

We believe that the management system in the oil and gas industry is based on the following principles:

- Systematic relationships and relationships of all elements of the management system.

- Purposefulness.

- The validity and objectivity of decisions.

- Stability and continuity in time and space.

- An adequate and optimal response to the impact of internal factors and environmental factors.

- Responsibility of both system managers and performers of the innovation process.

The methodology for the formation of control systems in the oil and gas industry involves the following steps:

- To identify and formulate objectively necessary goals, objectives and management functions.

- To determine, on the basis of scientific research and calculations, the necessary management operations, volumes and flows of information.

- To substantiate technologies and technical means for performing management functions.

- To determine the volume of necessary investments in the formation and technical equipment of the management system.

- To substantiate the professional composition of a specific governing body and its units.

- To determine the complexity of the management functions and the number of staff.

Based on a systematic approach, it is possible to determine a three-level management system in the oil and gas industry: at the macro-, meso-, and micro-levels and we offer an author's interpretation of the concept of "management system".

The management system in the oil and gas industry at the macro level is the targeted action by the state to develop and implement state policy to form the organizational, economic and legal mechanism for the functioning of the oil and gas sector.

The management system in the oil and gas industry at the mesoscale is the targeted actions of local authorities to develop and implement regional and municipal programs aimed at improving the oil and gas production, technology of operation and management, considering the achievements of scientific and technical progress and the demands of the regional market.

The organizational and economic mechanism for the development of the oil industry is a system of conditions, that on the one hand, carry out administrative and legal, and on the other, economic regulation of the oil industry. In accordance with this, the action of this mechanism should be aimed at creating an optimal structure for managing enterprises in the industry, streamlining the legislative framework and improving the regulatory framework, information support in this area, as well as stimulating the economic and social activity of various elements and subsystems in the oil industry (in accordance with Figure 1).

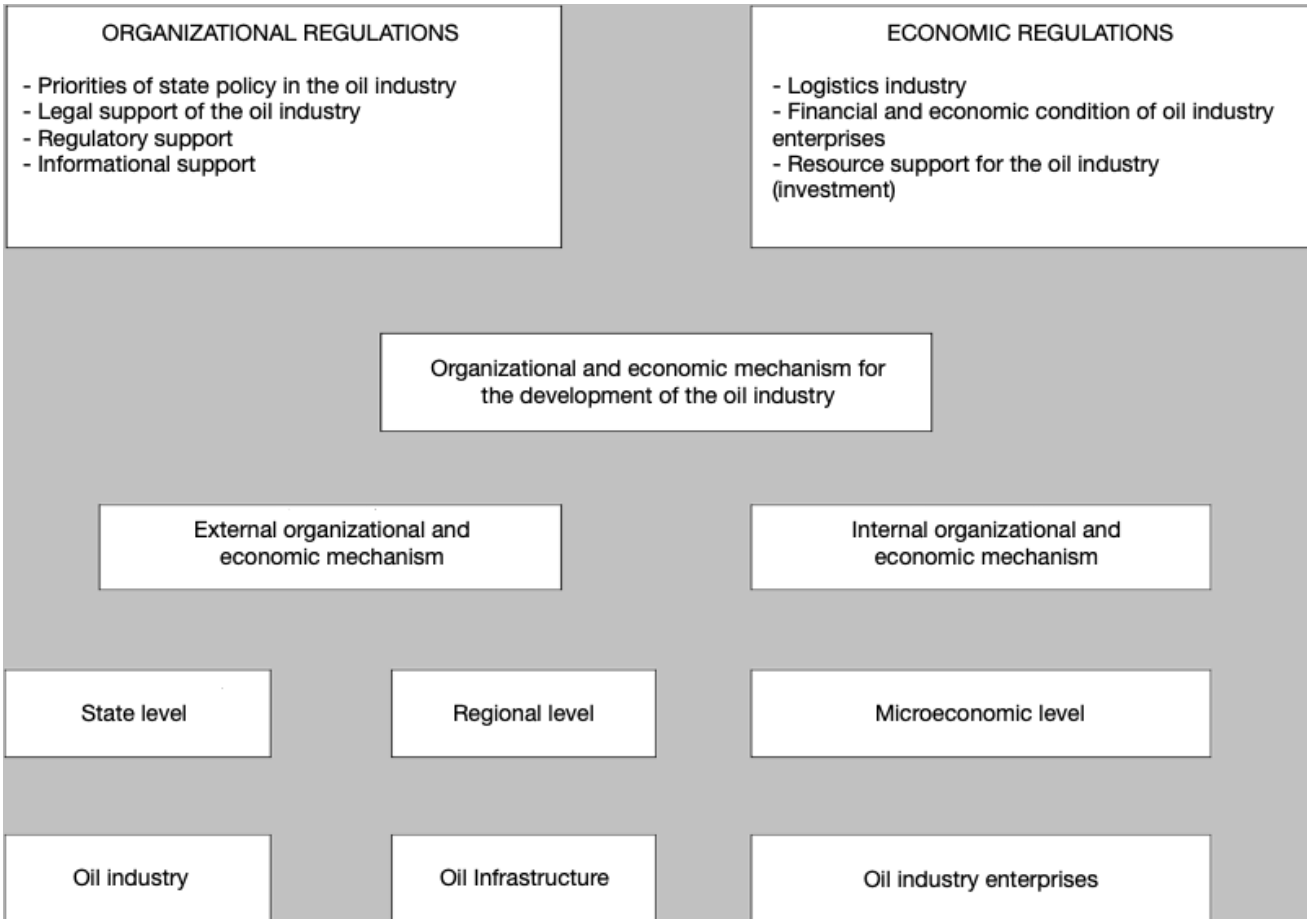

Figure 1. Structure of the organizational and economic mechanism of the oil industry

The control system in the oil and gas industry at the macro- and mesoscale suggests some subsystems that ensure its effective functioning (Figure 2). Malfunctioning in one part of the system causes difficulties in its other parts.

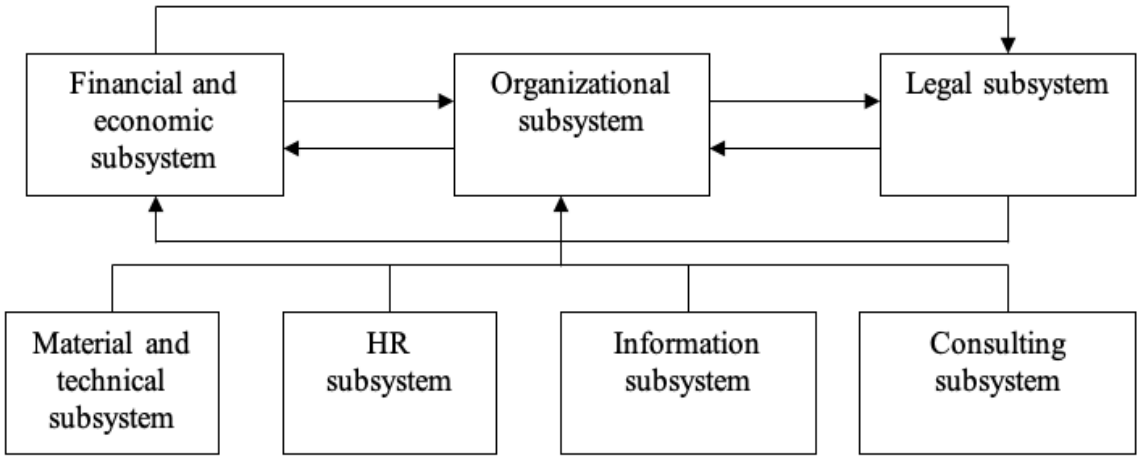

Figure 2. Management system structure in the oil and gas industry.

The implementation of a systematic approach to management is ensured by comprehensive target programs, which reflect in detail and work out not only the targets but also the relevant organizational, resource, methodological measures aimed at implementing the necessary conditions for achieving the ultimate goal.

The management system in the oil and gas industry at the micro-level is the targeted action of oil and gas producing and refining enterprises to form a fixed set of elements that are functionally interconnected with respect to setting goals, reproducing processes and achieving the specific greatest result with minimal cost of resources in cost terms over a certain period of time.

Therefore, in his scientific work, R.V. Ivanov (2007a) offers a comprehensive oil and gas industry enterprise management system based on a combination of functional and process-oriented approaches. Particular attention is paid to the difficult conditions of implementation, which are due to the complex scheme of technological processes and the important role of auxiliary industries, interacting not only with the main industries but also among themselves. Such intra-organizational interactions are reflected in the redistribution of resources between the links in the value chain of

manufactured products and, accordingly, should be considered when introducing management control tools (Figure 3).

R.V. Ivanov (2007a), who analyzed the existing elements of the management control subsystems at the enterprises of the oil and gas industry determines aspects of the implementation of process-oriented management control tools, and also determines the procedure for implementing an integrated management system at oil and gas enterprises, as well as expresses the following basic requirements for organizing this process:

- Firstly, the application of the process approach in management at an enterprise in the oil and gas industry should be focused on technological processes, which are divided into main and auxiliary. It is these processes that participate in the chain of creation of a marketable product and form its value. Their management will allow controlling the achievement of some general goals of enterprises: the implementation of the production program, the budget of revenues and expenses, the search for internal reserves, the optimization of the technological process and inter-functional interaction, etc.

- Secondly, the existing distribution of functions at enterprises of the oil and gas industry does not allow organizing transparent activities for strategic and operational planning and control, therefore, an essential organizational aspect of the application of the proposed concept is the creation of a separate controlling service that supports the enterprise management system.

- Thirdly, in order to create a process-oriented system of responsibility and budgeting, in all likelihood, employees and fixed assets should be assigned to processes.

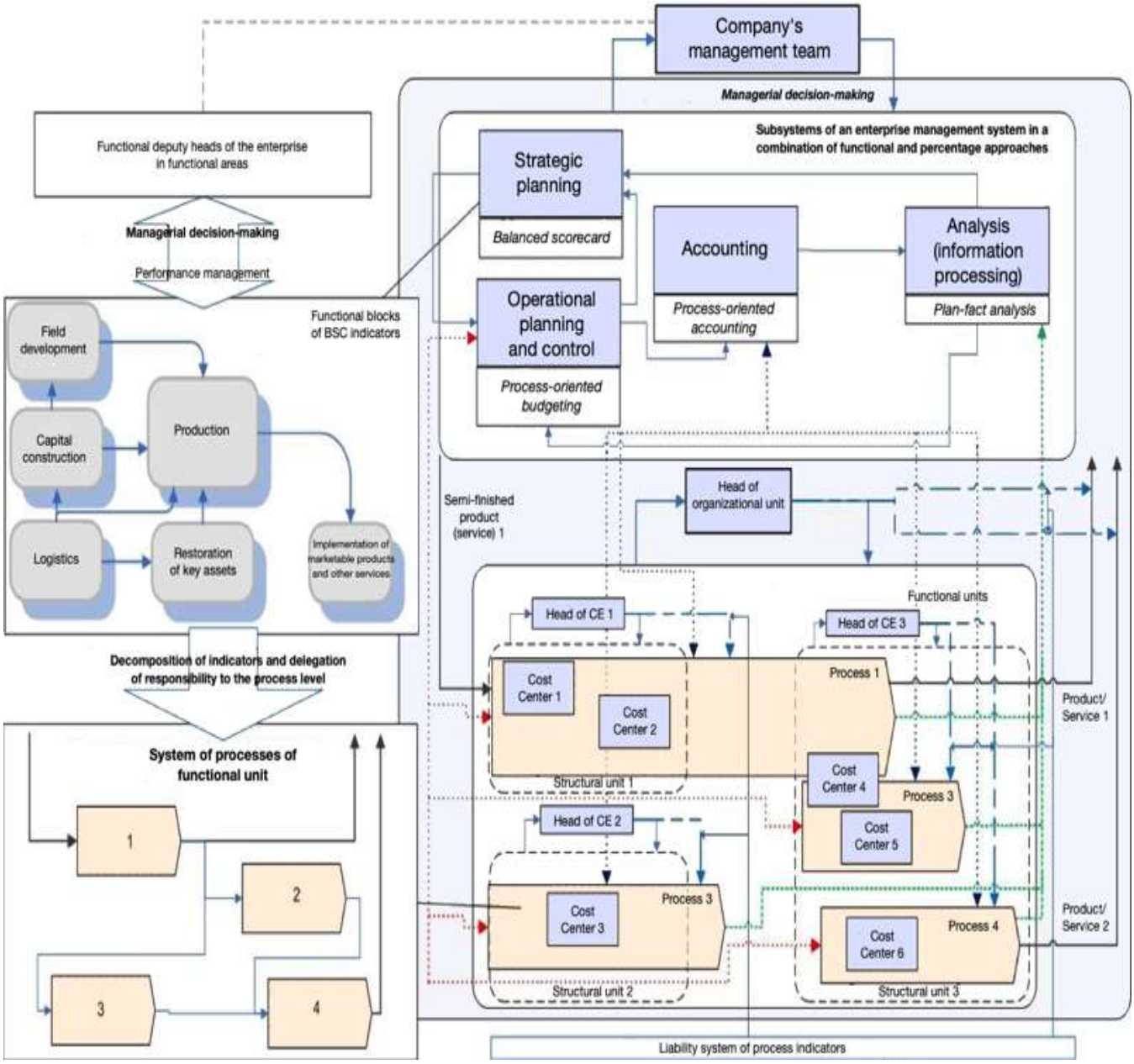

Figure 3. The oil and gas industry enterprise management system in a combination of functional and process approaches

Thus, one of the most important principles for implementing an enterprise management system based on a combination of process and functional approaches is the exclusively integrated use of process-oriented management control tools (Amanova, 2010).

Foreign experience in systems management in the oil and gas industry.

As practice shows, a cluster approach is used for effective system management in the oil and gas industry of foreign countries. The formation and development of industrial clusters that integrate the activities of various enterprises and organizations contribute to the effective implementation of these development strategies.

The cluster approach, as the world experience of its application shows, is an effective tool for building industrial and investment policies both for the state and for various firms and organizations. International practice indicates that clusters can increase the efficiency of introducing new technologies, reduce costs and improve the quality of high-tech services, unify approaches in quality, logistics, information technology, ensure consolidated lobbying for the interests of cluster members, etc. Companies win by having the opportunity to share positive experiences and reduce costs by sharing the same services and suppliers (Amanova, 2011).

A similar approach is adopted around the world: in Australia, Ireland, Croatia, Sweden, Finland, Denmark, Belgium, Spain, Italy, Brazil, the Netherlands, Slovenia, and others. In Germany, for example, since 1995 there have been clusters in the field of energy, transport, and the aircraft industry, as well as about 100 “networks of competence” in other areas related to the development of technology; these associations enjoy state support, in particular in reaching the international level.

The global practice of implementing cluster policy allows us to note the individuality of each country in the implementation of cluster initiatives, in which many levels of government assist many countries.

During the analysis of industrial clusters, the author paid special attention to the organization of relationships between enterprises and firms of the petrochemical and chemical cluster, which is shown schematically in Figure 4.

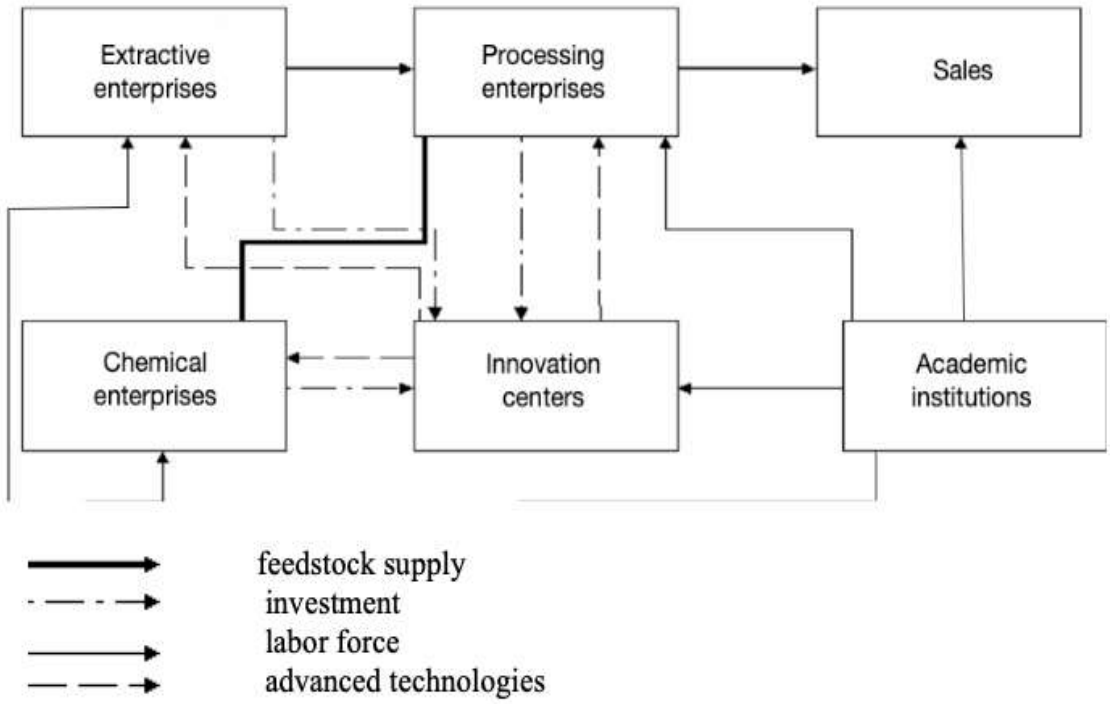

Figure 4. Interconnection of enterprises within the framework of the petrochemical cluster.

The cluster includes the following enterprises such as mining enterprises, processing enterprises, chemical production, innovative enterprises, and educational institutions. The core of the cluster consists of powerful mining enterprises, which are the initial link in the entire production chain. In addition, vertically integrated companies are used for system management in the oil and gas industry of foreign countries.

The development of the oil business in the West from the very beginning followed the path of vertical integration. The largest oil companies such as Standard Oil, Gulf, Texas, Shell, and others have established control over all areas of oil business on a national, and then international scale. Many small outsider companies adhered to the same approach, although they operated in limited territories.

In the 60-70s, serious changes took place in the global oil business. The oil-exporting countries that were part of OPEC have managed to significantly introduce control over their oil resources. Now almost all oil-producing countries have powerful national oil companies. However, even having

gained the right to dispose of most of the oil produced, the producing countries were not able to obtain a fair, in their opinion, share in the total revenues resulting from the exploitation of oil resources. The main reason for this is the lack of or limited access to markets for final products (Ivanov, 2007a).

Therefore, in the 70s, first for the self-sufficiency of petroleum products, and then intending to enter foreign markets with them, Saudi Arabia, the largest oil power in the world, and many other manufacturing countries began the construction of oil refineries and petrochemical plants. In the 80s, they diversified their policies by acquiring tangible and financial assets of oil refineries and marketing companies in the territories of oil-consuming countries - in North America and Western Europe.

From here, in the provided case, the process of vertical integration developed in the direction from oil exploration and production to the areas of its refining and product marketing. The most important prerequisites for such a process can be considered the desire to seize the markets of final demand and competition in the field of oil production in a saturated market and the declining efficiency of investments in the development of new oil resources (Ivanov, 2007a).

In another direction, integration was taking place in the oil companies of Western Europe, excluding British Petroleum and Shell, which had long been among the largest international companies. For example, in France and Italy, the powerful state sector in the oil refining and petrochemical industries, which was created back in the 1950s, was heavily dependent on supplies from the largest oil companies in the world. Using competitive contradictions between transnational oil corporations and the governments of oil-producing countries, primarily in North Africa, European state and private companies managed to break into the sphere of oil production on concession terms more acceptable for the countries-owners of resources. In other words, the key driver of this integration process was the desire to overcome dependence on raw material supplies.

As a result of this, large oil companies, such as the French Total and Italian ENI, are now included in the top twenty.

Analyzing the experience of forming vertically integrated oil companies in Western countries, the following should be noted among the most important priorities of vertical integration:

1. The desire of oil companies to control the markets for final products - first oil products, and then petrochemicals.

2. Due to natural, technological and economic factors, the need to form an effectively managed organization of production and marketing (Ivanov, 2007b).

3. The possibility of economies of scale. The concentration of capital and production, the availability of a unified infrastructure, and the possibility of maneuver (capital, capacity, flows of raw materials and products) contribute to a reduction in unit costs in production and lead to an increase in marketing activity, an increase in the mass and rate of profit.

4. Provision of vertically integrated structures of controlled sources of raw materials.

5. The international nature of the oil business and its relationship with the world and national politics.

The optimal strategy of vertical integration in the growing market of oil and oil products, which is just inherent in the People's Republic of China. Interesting observations can be drawn from an analysis of American experience in the development of the oil and gas sector. In the USA, a situation often arises when individual oil refineries dangerously come close to the bankruptcy line. The American oil business is organized in such a way that, except for some of the largest companies, there is a tough divide between primary oil production, its refining, and marketing of oil products.

It is not uncommon for companies that own oil refineries to show financial insolvency with rising oil prices and lower refiners' margins, and due to the impossibility of overflowing financial resources between the links in the value chain within the oil and gas complex, nothing can create a financial "pillow" for them. As a result, another argument in favor of vertically integrated companies in China, including all the links in the value chain, is the ability to constantly maintain the required level of production efficiency for them through the internal transfer of resources. This, in turn, creates stability for a large number of employees, supports the economy in the regions where companies are present (Ivanov, 2007b).

The abolition of the Ministry of Geology and Natural Resources was a significant milestone in the restructuring of the management structure of the Chinese oil and gas complex. The three largest companies after 1998 received more freedom of action. The functions of public administration and control were transferred to the State Administration of Petroleum and Chemical Industries (SAPCI), which is subordinate to the State Economic and Trade Commission (SETC). CNSPC acted as an independent company for less than two years; at the beginning of 2000, it became a part of Sinopec as a division and was renamed into Sinopec Star Petroleum Corporation (SSPC) (Gvishiani, 1982).

Natural gas is produced by units of all three leading oil and gas companies in the country; for example, in the Sichuan province - the main gas-producing region of China - Sichuan Petroleum Administration, a subsidiary of CNPC, is engaged in the exploration, production, transportation, and marketing of gas.

Trade, export, and import of crude oil and basic petroleum products is the responsibility of state-owned companies such as Unipec (United International Petroleum & Chemical Co., Ltd), Chinaoil (China National United Oil Corp.) and Sinochem (China National Chemical Import & Export Corp.). At the same time, Sinochem is a subdivision of the Ministry of Foreign Trade and Economic

Cooperation (since 2003 - the Ministry of Trade) and specializes in export-import operations with oil and oil products.

Thus, at present, China's oil and gas industry is divided between CNPC, Sinopec and CNOOC. The predominant position in oil production is held by CNPC, controlling the oil fields in the north, west, and east of China. In 2001, CNPC's share of China's total oil production was 67% or 2.1 million barrels per day. Sinopec (considering SSPC) produced 720 thousand barrels per day, which amounted to 23% of the total production. At the same time, it owns a large number of refineries and controls a large part of the retail market for petroleum products. The remaining 10% of oil production comes from CNOOC. The imbalance between CNPC and Sinopec is the need for Sinopec to buy crude oil from CNPC, and for CNPC, selling petroleum products in a market controlled by Sinopec. It is a serious problem for these two state-owned oil companies, especially in view of the need to increase economic efficiency as main argument in the restructuring of the oil industry in 1998.

CONCLUSIONS.

It can be concluded that the vertically integrated oil and gas companies are not fully balanced in terms of oil production and refining capacities. In the face of insufficient maturity of market relations, it will stimulate them to further improve the structure, competition and expansion into the "traditional" competitor markets (recall that in 1998, in CNPC and Sinopec were combined mining and processing facilities in two different geographical areas of China - the northern and southern parts of the country).

The current stage of corporate restructuring in the oil and gas complex of China is associated with the creation of three leading state-owned companies of holding-type oil and gas business groups, consisting of a complex of joint-stock companies and limited liability companies. Part of the shares

of joint-stock companies is intended for circulation on the national and foreign stock markets (KazMunayGaz, 2017).

The accumulated world experience in creating powerful vertically integrated entities indicates that an oil company, under any favorable raw material replenishment of its assets, will never enter the world market as an equal participant if its structure does not contain those components that determine the possibility to raise the technical level of own production, finance new construction (at least 50%), and guarantee the production of a wide range of oil and gas products.

The effectiveness of structural transformations in the oil and gas industry, the formation and effective functioning of vertically integrated oil and gas companies, their integrated use of oil and gas raw materials are noticeably felt on the results of their production and commercial activities.

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