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INTEGRATION OF OPERATIONAL AND STRATEGIC MANAGEMENT AS A CONCEPTUAL FRAMEWORK FOR THE DEVELOPMENT OF AN INDUSTRIAL ENTERPRISE

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Today business conduction requires an increasing number of highly diverse factors to be taken into consideration by its proprietors and managers. It is also necessary to analyze the impact of each of the many internal and external processes, which include global changes, social and economic dynamics, state of monetary systems and international markets.

The article describes results of the research of the said problem where influence of internal and external factors was taken into account. General management frameworks are reviewed and used for classification of common Russian practices in industrial enterprise management. Industrial enterprise management algorithms advisable for both stable and unstable development of the domestic business and global economy in general are analyzed as well.

In the conclusion structure of a modern industrial enterprise information-analytical system is outlined. Analysis of its limitations and implementation impeding factors is given.

Keywords: internal and external factors for an enterprise, management models, information-analytical management system.

Introduction

It can be stated, that the whole history of industrial (and other as well) enterprises leads to enlargement of the company. It is large and the largest enterprises that become defining element in harsh competition for national, regional and world leadership. In the same time, companies often pursue different goals related mostly to profit maximization. That being said, efficient management of industrial enterprise's most relevant production factors is especially acute problem.

Every industrial enterprise has to find alternative ways to overcome emerging difficulties more or less efficiently. Obviously, these alternatives may greatly differ not only within global scope, but also in the scope of individual countries. For example, in Russian Federation proprietors and managers of industrial enterprises follow one of the three common managerial ideologies.

First of them can be called "classic management". It is based on classic schools of western management (classic, behavioral, quantative analysis, etc.), as well as most common managerial approaches: system approach, process approach and case method. Classic management also refers to various leadership theories and all the western scientists' researches on management of enterprises and organizations, such as "lean manufacturing", McKinsey, Kaizen, limitations theory and so on [1, 2]. All foreign industrial enterprises and corporations use these concepts as a framework for development of their own management systems. Many Russian production companies and even the largest holding companies formed their own management systems in full accordance with classic guidelines [3–11].

Second industrial enterprise's management system construction ideology can be called rudimentary. Name itself shows the essence of the ideology – employment of obsolete approaches and principles of industrial's enterprises production management and organization, carried from the times of command-

administrative economy in Russia. Obviously, due to modern business conduction code, expansion of Russian companies toward foreign markets, ruble pegging to world reserve currencies and, most importantly, efforts to improve competitive qualities of production, rudimentary ideology of management system construction is not efficient enough and has no future. Therefore, industrial enterprises that keep on employing such ideology are doomed to go bankrupt or be consumed by their more progressive competitors. World and Russia changed drastically since the collapse of USSR and will continue to change further with an increasing pace [1, 2].

Many proprietors and managers of Russian industrial enterprises came to understanding that not only rudimentary ideology, but also classic ideology, which implements specifically western approaches, does not accord with modern domestic business practices and cannot provide tools necessary for highly efficient production activity. This led some of the industrial enterprises' proprietors to adapt their companies' management systems to meet new challenges and requirements.

1. An approach to analysis of the structure and substance of the most relevant factors in an industrial enterprise production activity

Modern vision of an effective industrial enterprise management is centered on delivering refined information about every division of the enterprise, as well as observation of suppliers, clients and competitors' activity with the means of latest automated management systems, various ERP-like and other information systems. For some reason, it is considered that managers of industrial enterprises can make right operative, tactic and strategic decisions while relying solely on said information. Such exaggeration of top-managers' capabilities exceeds the abilities of a normal man, even if the man possess an excellent memory, analytic mentality and vast experience of administrative work. This flaw has to be corrected in the development of the new approaches and concepts of improving enterprises and organizations management effectiveness.

Array of external factors that influence an enterprise includes large number of different impacts [12]. Some of them are intense and constantly active, while others are weak and seldom. Take into consideration all the factors practically isn't possible. Environment external in relation to the enterprise commonly include actors such as competitors, government bodies, a system of legislative documents, suppliers, consumers, banks and internal revenue service, trade unions. These factors are called direct effect factors and form so called direct effect environment. They influence the enterprise in a straightforward manner.

It has to be said, that external factors which cannot be taken out of consideration while managing a company include wide range of direct and indirect factors affecting every enterprise and organization. Direct factors, as mentioned before, consist of suppliers, consumers, competitors, government bodies and so on. Indirect factors form indirect effect environment and are comprised of politics, economic and social dynamics, scientific and technological achievements, etc. Although indirect factors do not affect an enterprise themselves, they cause a chain effect which sometimes can be much more intense than that of direct factors. In times of unstable economy and financial crises many indirect factors affect the enterprise and its strategy with increased intensity.

If in times of stability values of internal dynamics and direct factors are taken into account by managers of the enterprise during decision making process, then in the times of economic and financial crises, when all the indirect factors affect the enterprise's activity with increased strength, direct and internal factors does not define routes of development anymore. In the times of economic and financial crises export-oriented enterprises either reduce production rates as much as they can or stop production entirely.

For export-oriented enterprises such situation is worsened by the fact that specific production process type is continuous. In this case production cannot be stopped entirely and enterprise has to be running regardless of whether its products are on demand or not. In the result a situation emerges where production cannot be stopped and the enterprise keeps losing out on raw resources and materials, workers salary, electricity, transporting and maintenance and so on,

However, administration of an enterprise is unable to pay the bills without any sales. Therefore, all mentioned costs have to be covered by the enterprise's proprietors and as long as crises go on and global markets do not consume the enterprise's production, said proprietors have to carry the burden of both strategic and operational decision making.

Any significant decisions on industrial enterprise management must take into account the most important trends and situations relevant to current development state of the company. In particular, it is important to understand what economic structure is prevalent in the society at the moment and whether this economic structure is coming to an end [12].

Successful management of the modern industrial enterprises' activity requires understanding of the role that main production development factors play in the enterprise's functioning, as well as how do these factors contribute to achieving better controllability, profit maximization and other goals of the company.

Main production factors are commonly classified as follows:

– workforce;
– investments;
– land and natural resources;
– entrepreneurial talent;
– information.

Contribution of the production factors to the achievement of effective results changes with various historical periods and is defined by an aggregate of conditions in which business has to function.

2. New concept of industrial enterprise management based on strategic and adaptive approaches

These days Russian industrial enterprises have the same problems that the largest and efficiently developing world economics are trying to solve. One of the inherent features of our time, in particular, is an increase in consumption of resources and as a result – decrease in their yield. Growth of land, energy, raw materials prices is also related to information processes, necessity of salary indexation and so on. To solve these and other problems, company's proprietors and top-managers have to search for ways and tools of management effectiveness improvement, which include production costs cutting, reduction of raw material and product delivery costs.

A general approach to reduction of said costs is improvement of material resources efficiency. However, due to transition of Russian Federation towards the concept of sustainable development, formal definition of "material resources efficiency" has changed significantly: sustainable development concept states, that harmonious development of social, economic and ecological aspects of an enterprise is necessary for its successful functioning. It means that today it is not enough to evaluate economic effect of production and sales by only investments made (raw materials cost, salaries, energy cost, etc) and profits gained. It is also imperative to take into account generated waste and emissions and consider them as lost profits and productivity reserves. Identification of such opportunities and correct setting of their implementation priorities with this approach provide decision making support in strategic planning of the development of enterprise's main production assets and improvements in ecology [13].

An analysis of main production factors' structure and values, methods and models (economic, technological, etc.) used in modern time for large industrial enterprise, as well as all kinds of managerial problems (resources, sales, production, etc.) that take place in practice, shows that for modern large enterprises relevance of the production factors is not equal for each company's management goal and objective. Moreover, for modern industrial enterprise possibilities of increasing its efficiency generally come from following:

– correct mission formulation in accordance to global trends; identification of goals and objectives;

– design of the company management approaches, methods and models adequate to the system of external factors;

– search for reserves in labor efficiency improvement, profitability and yield of the enterprise, cost optimization for resources and materials, use of electricity, transport services and so on;

– efficient operational management of finances in rapidly changing conditions;

– development of thoughtful human resources management policy (experience, knowledge and skills of personnel is the main advantage which discern successful and ordinary companies);

– utilization of modern methods in production logistics and the latest energy saving industrial technologies;

– application of up-to-date tools and systems of information collection, storing and processing, along with services provided by global networks and capabilities of corporate information system of the enterprise itself.

One of the few attempts to create a company management system adequate to the modern challenges, which not only would allow to ensure effectiveness of the production, but also give the means for their further development in both near and distant future, is the described new concept of industrial enterprise management based on utilization of two approaches to management:

– strategic approach to the management of a company in the times of stable development of the economy;

– adaptive approach, which ensures effective management of the company in the times of global financial and economic crises [14].

The concept states that, firstly, none of the western management theories enables successful management of an enterprise in the conditions posed by Russian economy. This statement comes from the fact, that western approaches and management schools did not form simultaneously, but have more than hundred years of history. Emergence of each new school was a significant event not only for theory, but also for management practice.

Ideas of schools and approaches that were founded in the last century generally denied achievements of their predecessors and claimed that they have created a new, one of the kind panacea for all management problems. It should be acknowledged, that while theoreticians of the western management were creating their own concepts and approaches, they pointed out the disadvantages of the previous ones quite amply and concise. For example, while developing concept of the case method, its authors correctly noted disadvantages of highly popular system approach to management.

In particular, major result of system approach, which consists of systematic understanding and structuring of all management levels within the enterprise, after all does not provide any specific, efficient tools for their management. In its turn, critics of the case method indicate that the latter is meant only for operational decision making in one or another situation and cannot be used for formulation of reasonable forecasts and strategies of company's development, even in near future.

Secondly, the concept of industrial enterprise management proposed by the authors allowed integration of mission, goals and objectives of company management with such external environment's processes which affect it as formation of a new geo-economic configuration of the world, empowerment and enlargement of transnational corporations, universal modernization based on the latest industrial technologies, international economic and legal regulation, creation of global communication and information networks and systems and so on.

Today many Russian industrial enterprises and production corporations do not simply operate in foreign markets; a significant number of these enterprises opened their representative offices in almost all regions and countries that consume their products. Missions of these enterprises, their goals and production activity orientation became inseparable from the needs of the world's economy conjuncture. Moreover, many Russian industrial enterprises sell majority of their products abroad. This is why for industrial enterprises focused on production and sale of their goods in foreign markets factors of the foreign trade and politics (or, in terms of case method, external variables which cause an indirect effect on the enterprise) become prevalent in the management of the company. It is especially important, that indirect factors point to the necessity of changes in volumes and assortment of produced goods, price policy and others.

Needs of international markets and prices' level at which enterprise can sell its products are in essence the main limitation that arises during the preparation of the production plan, and also allows to assess profits that can be gained in current situation. Therefore, intensification of global instability, inability to formulate reasonable forecasts of international markets' demand, high volatility of currency exchange rates made popular concept of case method inappropriate to the challenges of modern time. Industrial enterprises in current conditions of business conduction in the first place have to consider not the factors that directly affect the enterprise and its internal development, but the indirect factors instead (demand of the largest consumers in the global market, prices of produced goods in international markets and others).

In the times of stability industrial enterprise can line up its mission, goals and the concept of development, including strategies not only for near future, but for distant future as well. After strategies are prepared, enterprise's proprietors can afford to entrust their implementation and actual management of the enterprise to highly qualified top-manager, while leaving for themselves only monthly or weekly supervision of the company. Delegation of authority to make management decisions from the owners to

the top manager of the company is fully justified by the fact that an experienced and professionally competent manager in times of stable progressive development of the world economy without additional consultation with the owners of the corporation can forecast production and sales dynamics for a certain perspective and quite correctly calculate emerging risks with the help of the available analytical services. However, during the periods of global market's instability and worldwide financial and economic crises such recipes of industrial enterprise's management cannot be applied.

It is worth noting, that an export-oriented industrial enterprise during the periods of economic growth of the countries that are main consumers of its products is able to work with maximal production rates and highest profits. It is funds accumulation under conditions of high and even the highest prices of the enterprise's products that allows proprietors of industrial companies ensure high yield of the productions they own, and also good salaries for all who work at the enterprise. All efforts of the company's administration and workforce in general must be aimed at increasing production and sales. In these periods top-managers of enterprises have to put aside all ideas about reconstruction and modernization of production lines. Funds accumulated during period of high buying capacity of the global market allow not only ensure running of the enterprise in times of crises (when enterprise work for filling its storages mostly), but also start reconstruction, modernization and expansion of production. During periods of crises all these activities cost relatively less than during periods of the world's economy rapid growth. That is why development and renovation of the enterprise is especially beneficial during periods of economic recess and financial crises when prices of building materials, equipment, and all other services of various firms are at their lowest.

Moreover, during the global financial and economic crises corporations' proprietors can afford to buy additional industrial property, enterprises that produce raw materials, and also objects and facilities of transport infrastructure that provide transporting services to the corporation.

To understand the complexity of managing large-scale export-oriented industrial enterprises in the conditions of global financial and economic crises, it is important to emphasize once again that for these companies in the periods mentioned is impossible to find effective behaviors. Anyone of them for the enterprise will certainly be unprofitable. The question of choosing the most appropriate option for the company's behavior is connected with the assessment of larger or smaller losses that it will incur in the case of the selection of a particular variant of their behavior in the face of uncertainty. With the arriving of the global financial and economic crisis, international markets behave so unpredictably that their dynamics forecasting becomes an extremely difficult task. It is very difficult to predict which of the daily changing external factors can have a significant impact on the company's activity. In these circumstances, even the outstanding executives must not without the counsel of the owners of the company make decisions about how the company should act, even in the nearest future. And the choice of a particular behavior of the enterprise depends directly on the amount of losses that it will incur. In such complicated administrative situations errors can occur during the selection of company's behavior. In such cases, the owners together with top-managers have to correct the selected course of action and a return to the most appropriate alternative.

Thus, the management of the industrial enterprise in times of global instability should have a much greater degree of flexibility than in periods of sustained growth of the global economy. Ensuring such flexibility places on managers of industrial enterprises not only increased responsibility, but also the obligation to provide the owners of the company with all the possible options for its course of action in rapidly changing circumstances, as well as the choice of the most appropriate options based on a comprehensive analysis of the forecast, technical and economic performance of the company and the level of financial and economic losses.

In times of global financial and economic instability and a significant drop in demand for the products of the industrial enterprise management must work under a much larger stress. Firstly, it must ensure the daily activities of all departments and services of the industrial enterprise, continuous operation of production units, logistics facilities, salaries for all employees of the company, as well as lease payments, payments for electricity, tax payments, payment transportation by road and railway, repairs, etc.

Secondly, the management of industrial enterprises should provide its owners with complete and qualitative information about changes in the situation on foreign markets, in-plant dynamics, forecasts of currently engaged affairs, along with the estimated possible courses of action and suggestions for choosing the most appropriate one.

However, not only the top managers of the enterprise have to work under heavy stress and with increased responsibility in times of crisis. The owners of the company also have to make management decisions based on the number of prepared and economically justified options during almost daily dialogues with the head of the enterprise. In this regard, the owners of the enterprise have complete control over all major management decisions within the company, financial flows, and even the operational control over the most important business processes.

A mathematical model, which ensures effective work of industrial enterprises for these two management approaches (in terms of sustainable economic development, as well as the financial and economic crises) is presented in [12, 14].

Thus, the use of presented conception of industrial enterprise management during periods of economy's sustainable development as well as financial and economic crises (the use of adaptive approach to company management) allows to reduce the impact of these crises on the activity of the enterprise. However, in case of long-term international economic instability, as well as sanctions of major world powers against Russian Federation and other countries, described concept of management of industrial enterprises should have been further developed to the extent that would allow industrial enterprise focus on the use of not only the adaptive management of the company, but would ensure the survival of the company in the long-term periods of continuing economic, political and social instability. This becomes possible with the appearance of mechanisms that allow reconciliation of plans with different perspective (long-term, medium-term, short-term, operational).

Indeed, international financial and economic instability, sometimes recessing and then intensifying again, prevents enterprise that operate on the basis of an effective in relatively short periods of crisis forecasting and adaptive management approach to develop their own enterprise in technical and technological aspects. And the latter play a particularly important role in creating competitive advantages in the medium and long-term dynamics. Therefore, to make money in times of stable economic development and short-term volatility by applying the concept described is unlikely to compensate for long-term strategic miscalculations and inactivity of technological and technical nature.

Thus, during long periods of global instability management of industrial enterprises should employ both mechanisms of adaptive control and technologies of the reconciliation of short-term, medium-term and long-term forecasting and the making of programs and projects of development of the enterprise for these periods [1].

3. The role of information-analytical systems in the management of large industrial enterprise

It is important to understand that even the use of the most advanced management concepts and technologies at industrial enterprises does not provide the desired effect without the creation of adequate information and analytical systems (IAS).

The practice of creation and development of information systems for industrial enterprises and corporations led Russian managers to more or less definite ideas about what a modern automated control system of the company should be. There is, however, no comprehensive theoretical basis for how to correctly develop IAS of large industrial enterprises. The reasons for this are rooted in that depending on the branch of industry information systems can significantly differ from each other. This applies to the diversity of requirements for automation tasks, information systems architecture, the composition of the major subsystems of software platforms and functions implemented by these subsystems and the fact that every industrial company uses different methods and mathematical models of business process management, and often has its own protocols of informing administration about current state of the enterprise. The logic of how an information system for industrial enterprise should be created and developed consists of the following.

The main idea which should serve as a base for building an automated corporation management information system is that the automation of the activities of all divisions of the company should be focused on providing top-managers with high-quality, consistent and timely information for decision-making. In the same time enterprise information system must enable effective management of company's operations. In this regard, the main objectives of the enterprise information system should come from nothing but using the latest information technologies and models in the business processes that implement procedures of preparation and execution of operational and strategic decisions made by corporation's administration.

Today, the opportunities provided by industrial enterprises and organizations for the creation of information systems, the development of their information infrastructure, use of the latest software tools and mathematical models of management, in fact, unlimited. It is possible to increase the speed of computers in the corporate network up to the overwhelming numbers, to endlessly increase the capacity of data storages, to use the latest peripherals and so on. All this is totally subjected to the wishes of the user and is can be easily achieved if the head of the industrial enterprise will find if expedient.

It is much harder for any industrial enterprise, especially large ones, to ensure interaction or, to be exact, integration of information subsystems of the most important divisions of the industrial enterprise. Often these subsystems were created at different times, based on different software and hardware platforms, and have not been designed to ensure the unity of used technical and economic indicators. As a result of such practice for many industrial enterprises managers of various departments provide top managers with information about their status which is, in essence, not reducible data. And this is not because the heads of the industrial enterprise's departments want to lead its administration astray, but because, firstly, the calculation of the resulting technical and economic parameters is based on various sources of primary information, and, secondly, the desire to show administration the work of the department in the most favorable manner, that is, to achieve the best possible result.

Both the first and the second is not acceptable for the management of the industrial enterprise, as any top manager would like to see all the heads of production and other departments to use in their relations system of uniform (common for the enterprise as a whole) technical and economic indicators, and also that the work results of all company's divisions led to the improvement of the enterprise as a whole.

It should be noted also that the success and long-term sustainability of enterprises and organizations in the conditions of globalization and post-industrial economy is largely determined by their ability to adequately respond to changing situations. In this regard, enterprises' managers must not only have all the modern tools offered by computer networks and communications, but also a variety of means of collection and analytical processing of data for the development and implementation of management options in all areas of the company's activity.

Only the efficient use of the organizational and management reserves of enterprises and the development of information-analytical technologies and resources is capable of mobilizing the existing company's potential for a successful solution of recurring problems within the company and in its environment. Thus, analytic functions of information systems become crucial for efficient operation of enterprises. That is why all over the world (and in Russia, in particular), business intelligence, the theoretical foundations of which were founded in the 70s of the last century in the writings of Stafford Beer [5], Norbert Wiener, Claude Shannon et al., is being reborn today.

It has to be said, however, that the term "business intelligence" still has no settled definition as too large range of technologies it incorporates. The following definition of reputable consulting firm IDC can be considered the most comprehensive and widely accepted: "Business intelligence is the set of tools and applications for search, analysis, modeling and delivery of information necessary for decision-making."

To compete on global markets domestic industries must create in their companies adequate information and analysis centers, based on the opportunities provided by the global networks, as well as various kinds of information sources that characterize the market of industrial products from different perspectives. Those companies that do not take seriously the importance of this work risk falling behind their competitors at any time and very quickly. The problems of creating such centers and services in large industrial enterprises and corporations, as well as the use of various concepts and technologies is subject of many scientific works, including those of domestic authors [15, 16].

Analytical centers of industrial enterprises have at their disposal tools of data collection and processing such as Data Mining, Knowledge Discovery Databases, data storages, data browsers, OLAP tools, analytical platform Deductor and others. Tasks of information-analytical support include:

– management goals analysis and formulation of information-analytical tasks;

– adaptive management of data collection in order to address management problems in a changing situation;

– analysis and evaluation of collected data in the context of management goals, identification of the essence of observed processes and phenomena;

– modeling of the research subject and its environment, testing of the model and its correction;

– planning and modeling of possible situation developments;
– interpretation of the modeling results and preparation of long-term forecasts;
– communication of the analytical work results to the decision maker.

Conclusion

Described approach of structure and significance analysis of factors influencing an industrial enterprise, and also the proposed concept of adaptive management are being used at "Kuznetsk Ferroalloys". The use of said approach and concept ensured stable operation of the enterprise during the years from 2007 to 2013 [11, 16]. Ideas provided in the third section of the article also were used in the design, implementation and development of information-analytical system of enterprise management. More detailed explanation of these concepts and results of their application in practice are shown in [11, 12, 16].

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ОБЕСПЕЧЕНИЕ ВЗАИМОСВЯЗИ СТРАТЕГИЧЕСКОГО И ОПЕРАТИВНОГО УПРАВЛЕНИЯ ПРОМЫШЛЕННЫМ ПРЕДПРИЯТИЕМ КАК КОНЦЕПТУАЛЬНАЯ ОСНОВА ЕГО РАЗВИТИЯ

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В современных условиях ведения бизнеса управление предприятиями и организациями требует от их собственников и руководителей учета все большего количества самых разнообразных факторов, оказывающих на них воздействие, а также анализа влияния различных процессов, происходящих как внутри компании, так и во внешней среде, включая глобальные изменения, социальную и экономическую динамику, состояние валютно-финансовых систем и международных рынков.

В статье проводятся результаты исследований в рамках обозначенной проблемы с учетом влияния внутренних и внешних факторов. Рассматриваются основные идеологии управления промышленным предприятием, под которые могут быть достаточно корректно дифференцированы различные используемые в практике российского корпоративного менеджмента системы управления. Анализируются схемы управления промышленным предприятием, которые целесообразно использовать в период стабильного и нестабильного развития отечественного бизнеса и мировой экономики в целом.

В заключении приводится структура информационно-аналитической системы современного промышленного предприятия и анализируются проблемы и сложности, возникающие при ее создании.

Ключевые слова: внутренние и внешние факторы, воздействующие на предприятие; модели управления; информационно-аналитическая система управления.

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