Approaches to management and digital hardware support of business processes of food facilities

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Abstract. The food industry is included in the process industries and is a strategically important sector of the Russian market economy, associated with processing, storage, distribution and marketing of products to consumers. The business processes of the studied industry are a form of communication and technological interaction of personnel to achieve the goals and objectives in the organization. In this industry with existing business models corresponding to their size, have different conditions for doing business, technical support for raw materials processing and the release of final products, availability or shortage of qualified personnel, different level, forms of support from state and municipal authorities. Building a process-oriented enterprise management structure concerns many traditional management approaches, however, many researchers suggest that with the development of digital economy technologies, many achievements of the scientific organization of work of domestic and foreign scientists. It should also be noted that any equipment has its own period of use, and many food industry enterprises in the Russian Federation have depreciation of production assets (more than 40%), unprofitability, insufficient support from regional and municipal authorities. As a result of these characteristics, the issue of ensuring the profitability of processing and marketing products, as well as ensuring that the needs of consumers are satisfied not only in the immediate environment, but also in other segments of the country's market, becomes acute for each head of the organization of the food industry, regardless of the size and form of ownership.

1 Introduction

Modern research in the field of management is devoted to the need to ensure automation and digitalization of not only management processes, but also updating equipment, introducing innovative equipment, technologies, improving the quality of marketing and products at domestic food industry enterprises, and increasing the efficiency of using human resources. However, the practical component of rationalization and their introduction into production activities are faced with investment problems, the lack of diagnostics of the strategic potential of the enterprise, monitoring and implementation of innovations in industries as a whole.
addition, one should take into account such an important factor as the approach to the implementation of management at the enterprise, as well as the fact that a professional and conscientious leader can be the most important competitive advantage of an enterprise. Many managers with great experience of a leader and specialist, who are professionally versed in intricacies of the business they are engaged in, who have risen through the ranks from a worker to a director, effectively understand and bring to their subordinates the full range of processes that must be performed for a specific goal.

On the other hand, the following argument can be made. If the manager is not interested in developing the enterprise, extending its life cycle and maximizing the life of the business, makes it clear that during a recession and crisis, he is ready to reduce staff and close the firm or company, then there will be no motivation and initiative from employees in order to improve processes. The corporate (organizational) culture, as a conductor of any guidelines or innovations, makes it immediately clear not only to the auditor, but also to any newcomer, that the company's management is not interested in the implementation of the strategic course and the fulfillment of the mission, as well as product improvement; there is only a short-term perspective of "cream skimming" and business closure.

Management in each organization is built at the following levels: strategic, functional, operational. As a result of the above approaches to solving managerial problems, it is possible to single out the first one typical for the operational level, although the experience of innovation shows that eastern companies have overtaken competitors due to a wider and more widespread involvement of performers in solving global problems and rationalization in production directly. As a rule, managers of enterprises in food and other industries, dealing with problems and multitasking, do not have time to apply the functional level. They do not always solve problems as efficiently as possible, without using delegation of authority in such a way as to free up their time and functionality as much as possible.

The third approach to management decisions can be implemented to a large extent with the help of the strategic level and top managers and a director, provided that the professional level and experience are as high as possible and allow to see systematically the scenario of ongoing events or the chain of problems and interference.

The main issue regarding building a structure that will most effectively solve current problems and achieve the goals set is solved if the optimization of business processes is carried out on a regular basis and with the help of own staff, understanding these actions from inside and more deeply. Due to the crisis trends in the country and the world, the number of employees of modern enterprises has decreased to a minimum, but, despite this, business processes may be associated with duplication or an increase in the period of their implementation, therefore, optimization of their cycle should begin from a certain starting point (as a rule, one "input") and with overcoming inconsistencies between departments, eliminating double coordination, striving for maximum two or three "outputs" to other processes or immediately to the final product, work, service.

The appeal to personal approaches to management forms a unique combination of internal and external factors for each enterprise, because the leadership style is built not only under three vectors: authoritarian, democratic and liberal. It is the approach and management style of the director of the enterprise that will act as the fundamental vector for the implementation of processes, as well as the decision-making algorithm in the course of production and other activities.

2 Methods

Such methods of economic research as analysis and synthesis, induction and deduction, abstract-logical and statistical methods were used. Enterprises in this sector of the economy have always been associated with a labor-intensive industry, with a more normalized number of employees.
of shifts and staff. The development trends of enterprises in this industry are also based on such laws of economics and management as: a steady increase in labor productivity, the law of value, the law of the correspondence of production relations to the nature and level of development of productive forces, etc.

When considering the essence and types of business processes at the enterprise, conceptual approaches to management were used: systemic, complex, process, situational, quantitative, behavioral, personal, innovative.

Regarding the development of the above approaches, methods, styles and types of management, among the publications of contemporaries, the following arguments can be distinguished. When hierarchical management encounters complex systems, it is necessary to transfer the management of organizations to the plane of flexible (agile) management. The difference in the features of hierarchical and agile management is shown in Table 1.

Table 1. The difference in the features of hierarchical and agile management

<table>
<thead>
<tr>
<th>Features of the agile management model</th>
<th>Features of the hierarchical management model</th>
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<tbody>
<tr>
<td>People and their interaction, building a comfortable environment, creating a healthy moral and psychological climate in teams</td>
<td>Management processes and tools, formal regulations, the top-down command structure and an arranged functioning mechanism for management links and structural divisions</td>
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<tr>
<td>A product, a focus on innovation</td>
<td>Full documentation, the vector for strategic indicators</td>
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<td>Cooperation with the customer</td>
<td>Conditions of a contract</td>
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<td>Responding to change</td>
<td>Responding to change</td>
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<td>Improving the efficiency of all types of activities and solving social and economic problems of personnel, maintaining a high reputation rating</td>
<td>Maximizing the profitability of activities (profits from the sale of products, works, services), maintaining and increasing competitiveness</td>
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Such recommendations may be more applicable to small and medium-sized enterprises, family firms, and individual entrepreneurs. Successful food industry enterprises often have a large size and scale of business, rely on their own regulations and management traditions, and have their own pronounced specifics. Actually, the question of the expediency of using the accumulated experience of classical management in conditions and environment of the digital economy is also becoming relevant. It is obvious that many managers and practicing consultants testify that the hierarchy and regulations rather restrain the flexible, rapidly developing world of innovations and the digital format for conducting qualitatively new processes in the organization of any sector of the national economy. When developing management decisions in a business process, management, in turn, relies on three approaches to solving problems:

- the solution of the problem for the short term, that is, to fulfill such conditions and actions that the solution will become relevant only in the near future, however, in terms of efficiency, this approach is minimal, typical for a situational approach to management and minimal in terms of effect on the formation of financial results;
- the solution of the problem is possible when implementing innovative activities, by choosing the most effective alternative from the proposed options for solving problems, using collegial decision-making methods, including those with the help of experts;
- global resolution of the problem, changing the nature of the environment that generates it, the managerial decision is solved so constructively that the found option completely eliminates the occurrence of such difficulties and crises, and the organization operates
as efficiently as possible, not only allocating resources, but increasing profitability, due to overcoming this situation. Actually, the results of all business processes are reflected in corporate document management systems. At the time of implementation, any organization, including the food industry, has to choose a system being most effective to apply it in production conditions. The 1C: Enterprise software system is designed to automate management, as well as to build a documentary business model for enterprises in all spheres of the national economy of the Russian Federation. Unlike foreign counterparts, it has exceptional advantages in the form of support for domestic GOSTs and legal support for maintaining documentation systems for large, medium and small enterprises. Thus, the system of all processes must be formally designated, regulated and enshrined in the Charter of the enterprise and other constituent documents, Regulations on divisions and internal regulations, standards and regulations on functional subsystems of the enterprise, job descriptions and also approved annually (as production needs), management structures. At many enterprises, job descriptions become only a formal document that does not help in activity, but condenses it, without a logical interweaving of results and relevant remuneration criteria for them. Management theorists insist that it is possible to achieve a real increase or fulfillment of the plan if the indicators for which the staff is stimulated are relevant and include three conditions. Performers are poorly oriented, if a large list of criteria for remuneration is presented, it is necessary to single out up to three most important ones for the process of processing and marketing products. When optimizing business processes, one should also adhere to 1-(3-5) principle, since a task, type of work is optimal if: the performer performs a minimum set of procedures (three to five) with clearly described rules and understandable content. In this case, attention should also be paid to instructing the manager with the performers according to adopted regulations and job descriptions. In the last document, many duties and rights are described in general terms, therefore, at the initial moment, it is necessary to resolve questions regarding how to conduct the process and, in the case of delegation, allocate areas of responsibility. The division of business processes into main, auxiliary and supporting allows to single out the first category of work that directly produces a product, work or service that bring profit to the enterprise. The task of supporting processes is to increase the efficiency of the main ones and maintain the infrastructure of each enterprise as a whole. Most modern organizations, including food industry enterprises, are transferred to the format of functioning in the pre-crisis state, as the number of personnel is reduced with a parallel consolidation of the combination of job responsibilities. Therefore, large enterprises are gradually becoming medium-sized, the latter joining the list of small or companies that are on the verge of bankruptcy. On the scale of modern business, the head of the enterprise, as its strategic center, must take into account and support the strategy vector (type), the hierarchy of goals and objectives, the implementation of the strategic course, the micro-macro environment and its impact on the internal environment, the level of development of innovations in the field of specialization, etc. At the same time, at present, the deputy director, chief specialist, head of the department of the enterprise do not actually fulfill the span of control in terms of workload and work with performers, due to the fact that the functional blocks of work are performed by themselves using digital technologies and software products. In general, in a small and medium-sized enterprise, the cumulative work of a department, service or another structural unit can be focused on one manager and specialist. The level of training and technical equipment, including management automation, can be different. At each stage of the digital era development, there may be appropriate leaders in software development and implementation. However, modern experience in information and other support has shown that it is best to focus on proposals of domestic companies. In
addition, one should not forget that business processes modeling is performed using the following well-established methods:

- **Data Flow Diagram or DFD** is used to show the data transfer from one operation of a process to another. DFD describes the relationship of operations through information and data.

- **Role Activity Diagram** is used to model a process in terms of individual roles, groups of roles, and the interaction of roles in a process.

- **IDEF (Integrated Definition for Function Modeling)** is a whole set of methods for describing various aspects of business processes (IDEF0, IDEF1, IDEF1X, IDEF2, IDEF3, IDEF4, IDEF5).

- **Colored Petri nets method** represents the process model in the form of a graph, where the vertices are actions of the process, and the arcs are events, due to which the process transits from one state to another.

- **Unified Modeling Language (UML)** is an object-oriented process modeling method.

### 3 Results and discussion

In relation to food industry enterprises, the concept under study can be represented as a form of cooperation, a series of interrelated, consistently performed works for the production and effective marketing of products with quality according to the industry standard. Most often, business processes are detailed according to the following types: main, auxiliary or additional, development, management, etc. The classification of business processes can also be based on activities of a structural unit of an organization or within the framework of its work performed by personnel, it is necessary to designate planned business processes from a strategic direction, highlighting specialization and additional industries.

Each position of a division of an enterprise includes not only regulated job duties, rights and responsibilities, but also the universal qualities of the organization of any human activity. In this regard, the employee's activity contains two approaches to the implementation of the algorithm: the process one, covering the volume, content and nature, the order of operations, functions, as well as the situational one, including directly the subject of activity, the quality of his thinking and actions, communication style, predisposition to managerial activity, the ability to keep working conditions and factors of the internal environment under regular control.

In modern conditions, there are not enough algorithms that help to perform general and specific management functions and business processes at any processing enterprise without losing the strategic course chosen specifically for each level of management and employee. For example, job descriptions of a manager or a specialist may indicate that the employee is obliged to plan, coordinate and improve certain processes without a clear answer to the question: how to implement one or another declared function optimally. At each enterprise, a visual demonstration of functions, processes and work performed, with a parallel display of labor contribution to the achievement of organizational goals and objectives is important.

Most often, the work of a manager is depersonalized in the sense that the work falls not on subordinates, but on overcoming problems and tasks associated with the impact of situational factors of the external and internal environment. Each manager in the current execution of tasks feels like a crisis manager, since he has to perform most of the work not within the framework of a service or labor contract, but by eliminating gaps or downtime between various business processes of the enterprise's departments. In this case, the opinion of the heads of processing organizations, especially representatives of small and medium-sized businesses, is unanimous: digitalization and automation of all processes at the enterprise has significant costs, innovative technologies for implementation are most often not available...
all manufacturers, so it is necessary to support projects that improve product quality and consumer properties of the product, solving issues of food and environmental security at all levels, keeping up with the pace of digitalization, which is developing at an accelerated pace in the country and the world [19, 20].

In this case, the management structure is the main tool for achieving the goal and a means of implementing a specific strategy developed by the director of the enterprise. An automated control system can help eliminate the low level of coordination between business processes, goals, sub-goals and tasks by combining all the work performed into a single information field and workspace. The main goal of the enterprise may be to maximize profits by providing the population with quality food and solving social and economic problems of the staff. Further, the general goal is divided into subgoals or functional tasks, forming the staff and personnel of this enterprise.

The management structure, which reflects the order and arrangement of elements in the system, suggests a vertical, horizontal and combined format for the presentation of business processes. Figure 1 shows real management links in the form of a director, chief specialists, heads of departments, and production departments in rectangular blocks. All blocks marked with a dotted border relate to electronic digital work processes and it is clearly seen that digitalization is able to fully compensate for functional connections. Blocks of work in the structure, linear, administrative influences are assigned to a responsible leader or a manager. The key blocks of work in production, economics, finance, marketing and personnel, as well as managers responsible for them in reality, are responsible for the implementation of tasks [21].

Fig. 1. Format of digitalization of the food industry enterprise, taking into account strategic management
Optimization of the management structure of an enterprise in the food industry can be brought to two levels of management, but the shop (industry) principle of its formation leads to the fact that the director of the enterprise, the chief technologist and the head of the shop are the key elements of receiving, adjusting, and monitoring processes. This is what should be prescribed when developers are trying to create an automated control system for a particular enterprise. The recommended algorithm should be based on the main components involved in the creation of business processes: strategy, the roles of managers in its implementation, performers, the product being produced and its production technology.

There is a moment when, for privacy reasons, the management does not share its inputs, parameters, and interactions with digital software developers. In this case, it is necessary to present a complete tree of goals or decisions on what is planned to be achieved not only at the end of the financial year, but also in the medium and long term. For example, the option when a marketer is not provided for by the state and the management of the enterprise does not have financial opportunities to involve him in functional activities at the enterprise. There are other ways to compensate for this block of work at a food production enterprise. There are various domestic Internet platforms that have the potential to create an online store for enterprises, such as: Insales, Ecwid, Tilda, etc. Many of these platforms are serviced free of charge and involve not only the full creation of an online store, but also a ready-made sales channel with customer and consumer group communication, based on feedback about products or services.

Each processing plant may have its own unique or similar goals, but the execution of tasks, works, services and procedures has some standard approaches and algorithms for performing.

In the format of implementing a digital strategy, it is possible to build the main directions indicated in Figure 2, which will help the manager in adjusting the assortment, producing the products necessary at the request of consumers, and more actively positioning their product in the digital market and environment.

**Fig. 2.** Directions of digital strategy

- Improving the efficiency of investments for promotion in the online environment
- Increasing sales, including indicators such as repeat purchases and average check
- Diversification of sales channels through the creation of opportunities for consumers to form and purchase the company's offers online, which ultimately reduces its dependence on traditional offline sales outlets
- The correct vision of the necessary actions to achieve clearly defined goals
- Maximum budget allocation and a higher return rate, in particular when integrated with the overall communication strategy of the company
workshop for processing and production of a particular product, it is possible to digitalize management in the form of introducing a program for distributing and controlling orders from LeaderTask (a domestic developer). For one manager or his device, this tool is provided free of charge and in conditions of a loss-making enterprise in this industry, it can be assessed as an additional and significant advantage that helps to solve up to 100 processes per day, various tasks in 3 directions or projects.

4 Discussion and conclusion

The issues of developing modern business models of enterprises with key issues of management, production of processed products should take into account the strategic potential, capabilities and professional needs of the enterprise's management in regulating and improving this activity. The main task for the management of each enterprise is to make transparent and effective the developed plan and its detailing into specific activities carried out according to the adopted schedule. The digitalization of individual functional subsystems including accounting, economics, marketing or motor transport will not lead to profit maximization, as the achievement of the general goal set by the majority of domestic enterprises. It is necessary to individually study the factors of the internal environment and to establish their dependence and degree of influence on factors of the external environment. For the developer of digital software it is required to design a complete algorithm for implementing the chosen strategy at the enterprise on the basis of a dedicated and rationalized staff of the organizational management structure.

The application of a systematic approach in the management of processing enterprises has corresponding problems, since not every director and manager can evaluate all the "inputs and outputs", see the strategic potential even in negative changes in the environment. Although the overall global focus of business indicates that market niches can be found in all ongoing phenomena of external and internal factors, even an economic crisis can be a kind of catalyst for further expansion and development of any organization. Actually, the management task being performed can be sublimated as a sequence of the following operations: acceptance, development, coordination, approval, execution, provision. It is from this that work on optimization begins, that is, the practice of developing and making managerial decisions shows that one should not expect a negative trend or an extreme deterioration in defective goods, as well as massive complaints from employees or customers, because this indicates an imbalance in the hierarchy and its relationships. In this case, the manager must respond to weak “symptoms and pre/symptoms” of problems, and the parallel grouping of business processes according to classification features and departments makes it possible to identify a gap in the chain of operations and the lack of necessary instructions for special cases of response in working with clients, equipment, resources, information.

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E3S Web of Conferences 431, 07012 (2023) ITSE-2023 https://doi.org/10.1051/e3sconf/202343107012