The essence of digital reengineering in enterprises

Abstract. One of the ways to improve the efficiency of enterprises is the reengineering of processes. Reengineering is based on management theory and is actively used by foreign enterprises. Reengineering involves the adoption of process thinking and the use of advanced information technologies in combination with an attempt to carry out organizational transformations. Reengineering allows you to change the key elements of the company's activities, such as: the speed of customer service, the cost of production, the quality of finished products. Therefore, it is relevant for many large and medium-sized enterprises in various industries. The article discusses one of the approaches to optimizing enterprise processes – digital reengineering. It is proved that the reengineering strategy can be very effective for enterprises that face difficulties in managing processes and achieving goals. Digital reengineering can lead to a significant improvement in business processes, increase productivity and increase the competitiveness of the enterprise. The practice of reengineering at enterprises can be different and depends on the specific conditions and goals of the company. It is revealed that the organization of reengineering at the enterprise requires significant resources and efforts. However, with the right approach, reengineering can lead to a significant improvement in the productivity of the company.

1 Introduction

In the digital environment, enterprises have broader business and process management capabilities. For example, with the help of digital technologies and software, it is possible to automate the processes of production, logistics, and personnel management. This allows you to reduce the cost of manual labor and improve the quality of products. The digital environment also contributes to the creation of new business models and opportunities for scaling. Many enterprises are starting to use cloud technologies, data analytics and machine learning to improve the efficiency of their processes.

However, digital transformation also requires enterprises to change their culture and train staff to work with new technologies. Some enterprises face problems with the introduction of new technologies and the need for additional financing. In general, *Corresponding author: kazminakazmina@yandex.ru*
Successful digital transformation can give an enterprise a competitive advantage in the market and contribute to sustainable business development. One of the approaches to the restructuring of enterprise processes focused on digital transformation is reengineering, which involves rethinking and revising business processes in order to rationalize them, improve the quality of work and increase the efficiency of the organization as a whole. As part of reengineering, business processes are analyzed, thought through, and optimized, leading to a significant improvement in the company's work in the digital environment. As a result of reengineering, there may be a reorientation of business to new types of activities or a redistribution of functions and responsibilities in the organization. Reengineering makes it possible to optimize the business processes of an enterprise, which improves its competitiveness and increases profitability. In addition, reengineering allows you to adapt to changing digital conditions and customer requirements. In general, reengineering is a necessary practice for any enterprise wishing to remain successful in the long term [1,2].

Modern information technologies act as the central link in reengineering, which in this case play the role of a constructive factor. Digital technologies are able to systematically organize and significantly accelerate the processes of transmission and processing of almost any information used in the enterprise. The real power of digital technology lies not only in the fact that it allows old processes to function better, but also in the fact that it makes it possible to break old rules and create new ways of working.

2 Methods

The classical approach to reengineering involves a focus on restructuring processes using new technologies and management methods. However, the modern approach to reengineering involves a more flexible and dynamic approach, which takes into account the complexity and diversity of the company's business processes. A reengineering strategy can be very effective for businesses that face difficulties in managing processes and achieving goals. However, the effectiveness of the strategy depends on the correct planning and implementation of the change process, as well as on a competent approach to the management of personnel and resources of the enterprise. The key elements of the reengineering strategy in the digital environment are:

1. Definition of goals. It is necessary to determine what specific goals the company wants to achieve as a result of reengineering: increasing productivity, reducing costs, improving the quality of products or services, etc.
2. Analysis of current processes. It is necessary to analyze all business processes at the enterprise, identify bottlenecks and problems that can be eliminated as a result of reengineering.
3. Development of new processes. Based on the analysis of current processes, it is necessary to develop new processes that will be more efficient and optimized.
4. Implementation planning. It is necessary to determine how new processes will be introduced into the company's work. It is important to provide employee training and support during the implementation period.
5. Monitoring and optimization. After the introduction of new processes, it is necessary to monitor their work and optimize them if necessary.
6. Communication and change management. Reengineering may cause resistance from employees and other stakeholders. Therefore, it is important to organize effective communication and change management in order to minimize the negative impact of reengineering on the work of the enterprise.

Reengineering from the project to its full completion goes through a series of successive stages of development. The full set of development stages forms the life cycle of...
The concept of the reengineering life cycle is one of the most important for the project participants, since it is the current stage that determines the tasks and activities of the performers, the methods and tools used. An important task is to identify the stages of the reengineering life cycle at the enterprise. In the opinion of the authors, the reengineering of production facilities consistently goes through four stages: the preparatory stage, the design stage, the implementation stage and the maintenance stage.

The stages of reengineering are a structural element of the life cycle of reengineering in the enterprise. The completion of each stage marks the achievement of one or more reengineering results. The content of each stage of the reengineering life cycle is shown in Figure 1.

It is important that the reengineering strategy be developed taking into account the specific characteristics of the company and its business processes. It is also necessary to provide sufficient support from management and employees for the reengineering to be successfully implemented.

Digital reengineering is aimed at automating and simplifying business processes, reducing task execution time and improving the quality of work. The basic principles of digital reengineering include:

1. Automation of processes. Digital reengineering is aimed at automating processes, which reduces task execution time and improves the quality of work.

Fig. 1. The content of the stages of the life cycle of reengineering of production processes.
3. The use of new technologies. Digital reengineering is aimed at using new technologies, such as artificial intelligence, data analytics, the Internet of Things and others, to improve business processes.

4. Focus on the customer. Digital reengineering is aimed at improving the customer experience, speeding up processes and improving the quality of service.

Examples of digital reengineering can be:
- implementation of a customer contact management system (CRM), which allows you to automate sales and customer service processes;
- using a project management system (PM), which allows you to manage projects using digital tools;
- automation of the procurement process using electronic trading platforms, which reduces the time and cost of procurement.

Digital reengineering can lead to a significant improvement in business processes, increase productivity and increase the competitiveness of the enterprise.

Digital reengineering of an enterprise is the revision and optimization of business processes using new technologies and digital tools. Digitalization makes it possible to automate and simplify many processes, reduce task execution time and improve the quality of work.

The practice of reengineering at enterprises can be different and depends on the specific conditions and goals of the company. However, it is possible to identify some common steps that are often used when reengineering processes:

1. Business process analysis. It is necessary to understand what processes exist in the company, how they interact with each other and what problems exist in their work.

2. Definition of reengineering goals. It is necessary to determine what specific goals the company wants to achieve as a result of reengineering: increasing productivity, reducing costs, improving the quality of products or services, etc.

3. Development of new processes. Based on the analysis of current processes and reengineering goals, it is necessary to develop new processes that will be more efficient and optimized.

4. Testing new processes. New processes need to be tested in practice to ensure their effectiveness and correct operation.

5. Introduction of new processes. After successful testing, new processes need to be implemented in the company's work. At the same time, it is important to train employees and provide the necessary support.

6. Monitoring and optimization. After the introduction of new processes, it is necessary to monitor their work and optimize them if necessary.

3 Results

The organization of reengineering in an enterprise can be a complex process that requires careful preparation and planning. Below are the main steps that will help to organize reengineering in the enterprise:

1. Definition of goals and expected results. It is necessary to determine what specific goals the company wants to achieve as a result of reengineering: increasing productivity, reducing costs, improving the quality of products or services, etc.

2. Team formation. It is necessary to create a team that will be engaged in reengineering. The team should consist of employees from different departments who have experience in designing business processes and have knowledge in the field of digital technologies.
3. Analysis of current processes. It is necessary to analyze all business processes in the company, identify bottlenecks and problems that can be eliminated as a result of reengineering.

4. Development of new processes. Based on the analysis of current processes, it is necessary to develop new processes that will be more efficient and optimized. The development of new processes should be carried out taking into account the goals and expected results of reengineering.

5. Implementation planning. It is necessary to determine how new processes will be introduced into the company's work. It is important to provide employee training and support during the implementation period.

6. Monitoring and optimization. After the introduction of new processes, it is necessary to monitor their work and optimize them if necessary.

7. Communication and change management. It is important to organize effective communication and change management in order to minimize the negative impact of reengineering on the company's work.

The organization of reengineering at the enterprise requires significant resources and efforts. However, with the right approach, reengineering can lead to a significant improvement in the productivity and competitiveness of the company.

The problems of the organization of reengineering of production processes are presented to the author as inherent in the main functional subsystems of the enterprise: production, financial, technical, personnel. Let's consider the key problems of reengineering [4, 11]:

1. High costs. Reengineering can be an expensive process that requires large investments in technology, personnel and training.

2. Risk of quality loss. When restructuring business processes, there may be a risk of deterioration in the quality of a product or service, which may negatively affect customer satisfaction.

3. The risk of staff reduction. As a result of the introduction of new technologies and changes in business processes, there may be a reduction in the number of staff, which may be negative for employees and cause protests.

4. Lack of experienced specialists. Reengineering requires experienced and qualified specialists in the field of technology, processes and management, their lack can make it difficult to implement the project.

5. Lack of leadership support. If management does not support reengineering, the process may stop or be performed imperfectly, which can lead to failures and losses.

6. The complexity of changing corporate culture. Reengineering may require significant changes in the corporate culture, which may cause resistance from employees and complicate the process.

7. Uncertainty of results. The success of reengineering may be uncertain and not guaranteed, which may cause fears and reluctance to implement the project.

Among the problems, one can distinguish not only those inherent in one functional subsystem, but also cross-functional problems. The set of problems of the organization of reengineering identified by the authors when analyzing the practice of reengineering is shown in Figure 2 [5, 7, 11].
4 Discussion

The practice of reengineering in enterprises can be complex and require significant resources and efforts. However, with the right approach, reengineering can lead to a significant improvement in the productivity and competitiveness of the company. Digital reengineering can lead to a significant improvement in the productivity and competitiveness of a company, but it requires significant resources and efforts to introduce new technologies and processes.

The objects of digital reengineering can be different and depend on the specific conditions and goals of the company. Below are some examples of digital reengineering objects that can be optimized using new technologies and digital tools:


2. Control systems. Management systems, such as customer contact management systems (CRM), project management systems (PM), document management systems and others, can be optimized using digital reengineering.

3. Limited access to high technology

4. High degree of uncertainty and risks

5. Low level of organizational culture

6. Weak motivation of the company's personnel

7. Aging, worn-out production and technical base of enterprises

8. Lack of investment sources and resources for reengineering
3. Information technology. Information technologies such as cloud technologies, data analytics, artificial intelligence and the Internet of Things can be used to optimize processes and improve business results.

4. Products and services. Digital reengineering can be used to improve the company's products and services, for example, by introducing new technologies and automating production processes.

5. Modeling of business processes. Digital reengineering can include business process modeling, which allows you to optimize processes and improve work results.

6. Communication and change management. Digital reengineering can be used to improve enterprise communication and change management, which will help minimize the negative impact of reengineering on the company's work.

The objects of digital reengineering can be different and depend on the specific conditions of the company and its needs. However, in general, digital reengineering can be applied in any field where there is potential to optimize processes and improve performance.

5 Conclusion

The key advantages of reengineering are:

1. Cost reduction. Reengineering can help a company optimize workflows, get rid of inefficient methods and simplify procedures. This allows you to reduce production costs and increase profitability.

2. Increase productivity. Reengineering allows you to optimize workflows and use resources more efficiently. This can lead to increased productivity and labor productivity.

3. Improving the quality of products and services. Reengineering can help improve the quality of products and services by simplifying processes and introducing new technologies.

4. Management improvement. Reengineering can improve the management of the company, allowing better control of processes, manage resources and respond to changes in a timely manner.

5. Increased flexibility. Reengineering can help a company become more flexible and adaptive, which allows it to better cope with changes in the market and adapt to new conditions.

6. Strengthening competitiveness. Reengineering can help a company improve its competitiveness by improving the quality of products and services, increasing productivity and reducing costs.

With all its advantages, digital reengineering is fraught with a number of threats:

1. Cybersecurity vulnerability: whenever there is a change in the information system, there is a risk.

2. Loss of jobs: automation of processes can lead to a decrease in the number of jobs.

3. Lack of knowledge and skills: Employees may have difficulties with new digital processes and tools.

4. Unwillingness of employees to accept changes: employees may resist changes and do not want to change their current working environment.

5. Technical difficulties: The introduction of new technologies can lead to technical difficulties or malfunctions, which can negatively affect business processes.

6. Inability to adapt: Companies may not have sufficient skills and resources to adapt to rapid changes in the technological environment.

7. Negative impact on customers: Changes in business processes and technologies can negatively affect customers, which can lead to loss of business.

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Thus, the functioning of enterprises in the conditions of digital transformation objectively caused the need to reorganize the economic activities of enterprises. Currently, there are many unresolved problems at many Russian enterprises, which have been the subject of discussions in recent years, including on the pages of special publications. At the same time, domestic enterprises need not so much theoretical reasoning as a guide to action. The problems of Russian enterprises need to be solved, first of all, from within, at the level of each individual enterprise, and enterprises should do this independently, relying only on their own strength. In this regard, the importance of developing a scientifically based methodology for the reorganization of enterprises based on the use of instrumental and mathematical methods of process reorganization increases.

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E3S Web of Conferences 431, 07010 (2023)
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https://doi.org/10.1051/e3sconf/202343107010