

**FETDE 2020**  
**International Conference on Finance, Entrepreneurship and Technologies in**  
**Digital Economy**

**METHODOLOGY OF IMPROVEMENT OF COMPANY BUSINESS**  
**PROCESSES**

Mariya Volik (a)\*, Maria Kovaleva (b), Rita Btemirova (c), Indira Gagloeva (d)

\*Corresponding author

(a) FSBEI HE «Financial University under the Government of the Russian Federation», Russia, Vladikavkaz,  
volikmv@mail.ru

(b) FSBEI HE «Financial University under the Government of the Russian Federation», Russia, Vladikavkaz,  
makovaleva@fa.ru

(c) FSBEI HE «Financial University under the Government of the Russian Federation», Russia, Vladikavkaz,  
ribtemirova@fa.ru

(d) FSBEI HE «Financial University under the Government of the Russian Federation», Russia, Vladikavkaz,  
gagloeva.indira@yandex.ru

**Abstract**

Currently, improving the quality of enterprise management is possible only with the direct use of modern information technologies that help to achieve goals by automating the necessary business processes. The introduction of IT in enterprises provides various implementation options and strategic opportunities. Automation of business processes implies a set of actions to analyze the current state, develop an optimization plan, select and implement modern information technologies, and train end users. As a result of automation, the company's management will solve the problems of reducing the amount of routine work and the number of errors, increasing labor productivity, adding new capabilities for processing information, increasing competitiveness and increasing the market value of a business. The paper discusses the theoretical and methodological features of a process-oriented approach to company management, the essence of business processes and the features of their reengineering, methodology for modeling business processes, the essence of project management in an organization.

2357-1330 © 2021 Published by European Publisher.

*Keywords:* Information technology, business process, company management, process management, business process modeling, project management



## 1. Introduction

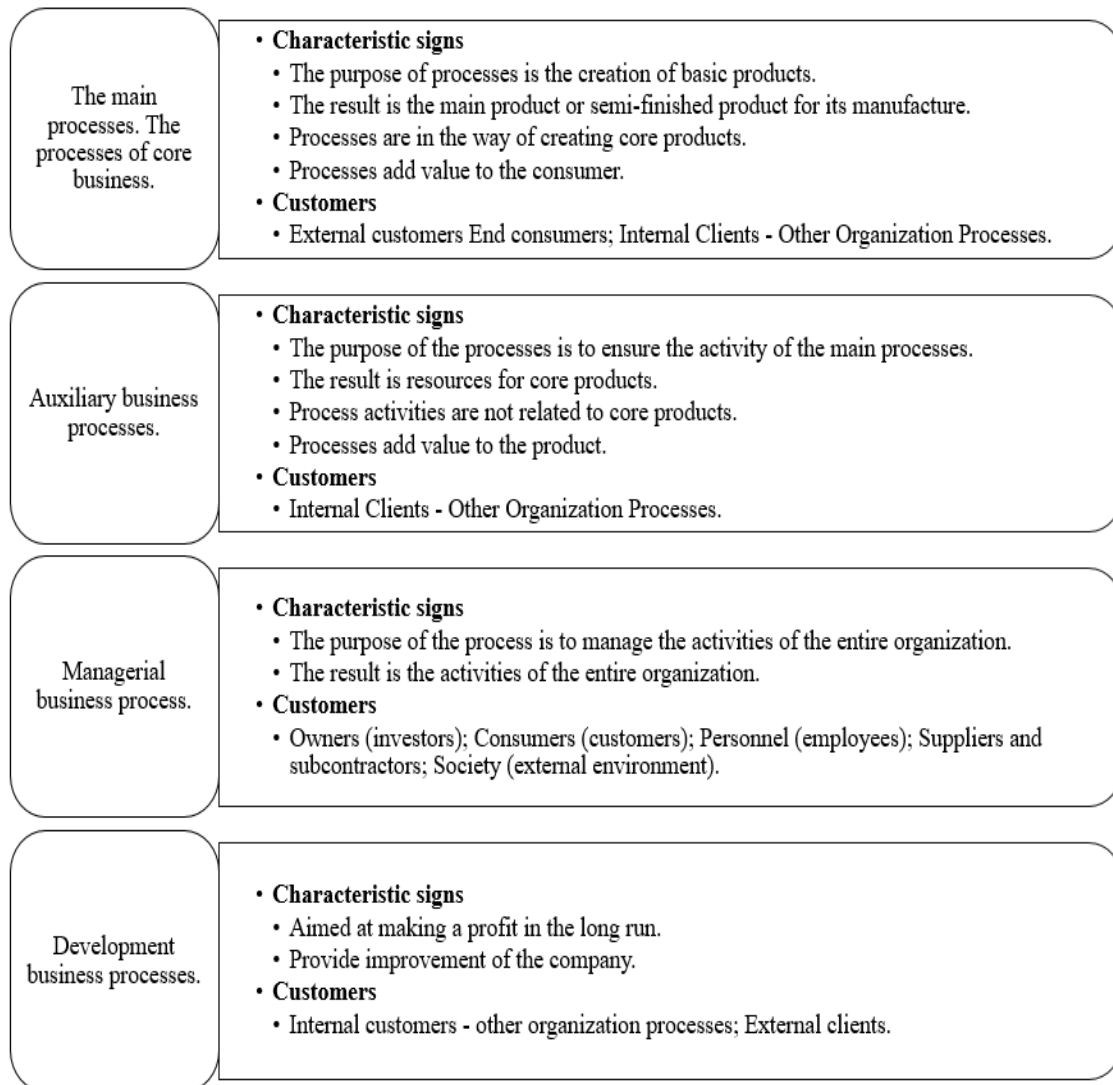
Currently, all organizations (commercial and non-profit) can be considered production - they produce products (goods) and / or services. However, manufacturing enterprises are a complex of independent components that interact in the framework of the goal. Such components are considered to be processes. So the production system is a group of interconnected processes aimed at achieving the goals of the company in accordance with certain rules. The processes that add quality to production are called core business processes (sales, supply, product development, customer service). The processes that form the company's infrastructure are auxiliary business processes (personnel, documentation, equipment maintenance). Each company seeks to independently develop a list of its own business processes. Therefore, the introduction of a process approach management approach is intended to increase work efficiency and provide products (services), reduce staff and associated costs. A feature of the process-oriented approach is the provision of business processes through the participation of each employee. For employees, certain roles are established in relation to specific business processes. Responsibility for the result of the business process as a whole pushes responsibility to colleagues. In this regard, the study of the methodology for improving business processes in the digital economy is relevant. The purpose of this work is to generalize the theoretical and methodological aspects for the formation of a mechanism (algorithm) for improving the company's business processes (Haggège & Vernay, 2019; Mitrofanova & Kopysheva, 2015).

Process-oriented management of business processes is effectively used in large and constantly developing companies with a large number of interactions with customers or other similar operations. The identification of business processes, their description, research and improvement improves the competitiveness of such companies. The advantage of using this approach in management is the simplicity of optimization of the processes themselves, in terms of their organization, synchronization, mutual coordination, and the resources consumed by the processes (including human). In addition, it becomes apparent the need for management aimed at the final result, which is evaluated by the consumer - the client of the process (Bulysheva et al., 2018; Kovaleva et al., 2015; Zaitova & Gagloeva, 2017).

## 2. Methods

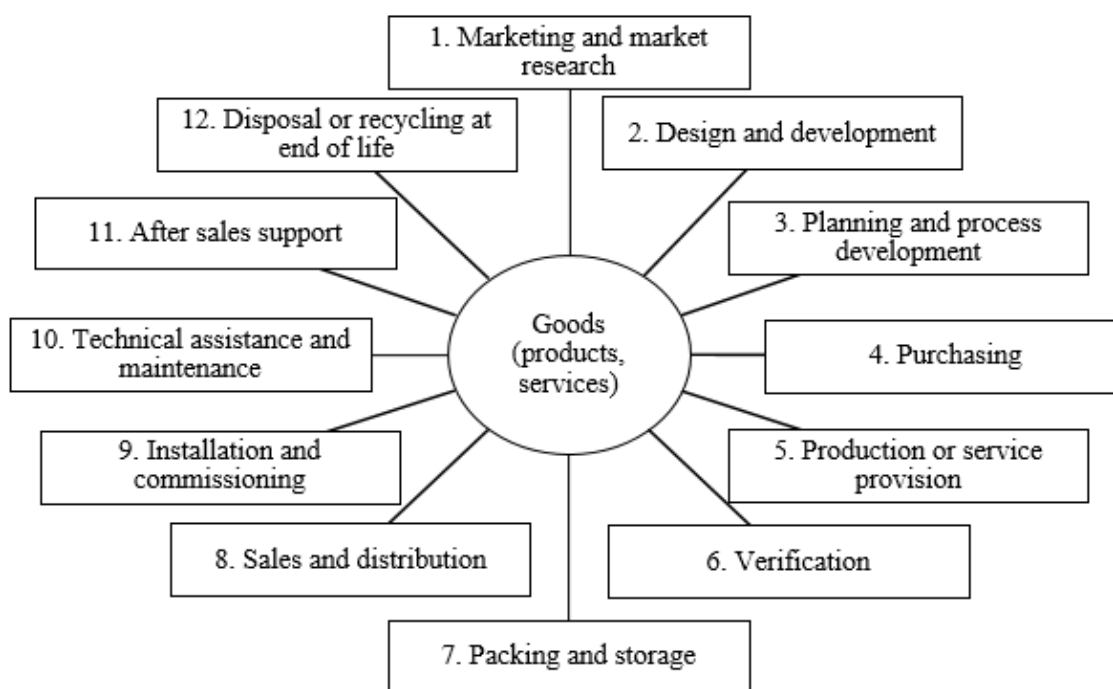
Currently, company management is associated with the management of business processes in general, and not with the management of individual resources and units of each company. Modern companies are developing dynamically. And therefore, their organizational structure is developing, which is due to a large number of areas of activity, territorial distribution, and an abundance of business partnerships. Of course, the diversity of business processes is increasing, which is associated with changing consumer requirements, technology development, and increasing competition. Depending on the tasks set, special attention is paid to only a few properties of business processes. In the framework of this work, a business process is understood to mean many processes of activities to create a product and / or service that customers need. Each business process is designed to provide customers with those goods and services that satisfy it in terms of cost, durability, service, quality (Btemirova, 2016; Sanhueza & Nikulin, 2019; Szelagowski & Berniak-Woźny, 2019; Volodina et al., 2020).

When analyzing the activities of the company and to describe its business processes, the need arises for their classification. Depending on the nature of business processes, the main business processes, auxiliary business processes, managerial business process, development business processes, the characteristics of which are shown in Figure 1, are identified (Dave, 2017; Haggège & Vernay, 2019; Slanova & Volik, 2019; Volik, 2019).



**Figure 1.** Description of business processes

Figure 2 shows a schematic representation of the list of company business processes based on the product (service) life cycle.



**Figure 2.** The list of the main business processes of the company based on the life cycle of products (services)

An analysis of the company's activities and a description of business processes are necessary to make a decision on the reengineering of existing business processes, the purpose of which is a systematic restructuring of flows (information, material, financial). It is aimed at simplifying the structure of the organization, improving the wise use of resources, reducing the deadlines for fulfilling customer needs and improving the level of service.

For some companies it is advisable to reengineer business processes with a certain frequency, for example, once every 5-7 years, which is aimed at constantly adapting business processes to a changing external environment. Business process reengineering is most effective at enterprises that are characterized by the following features: diversification of goods and services; work on individual orders; introduction of new technologies (innovative projects) affecting all the main business processes of the enterprise; variety of relationships with counterparties; irrationality of the organizational structure, complexity of workflow (Altukhova et al., 2016; Kovaleva et al., 2015; Volik & Dzodzaev, 2016).

In general, the reengineering of the companies business processes is divided into several stages: pre-planned preparation of the company (selection of a specific change strategy to determine the degree of necessity and timeliness of change), strategic planning (determination of the main goals of reengineering and the appointment of a working group), redesign (process modeling, consumer assessment and intermediary, foresight of processes), conversion (transfer of authority by the management and reengineering team to the working group on implementation to include all activities in the implementation plan), realization (implementation of new and/or improvement of existing business processes, technology, and evaluation) (Balocco et al., 2019; Bulysheva et al., 2018).

Of course, before moving on to reengineering planning, it is necessary to describe the existing business processes in terms of «as is» and «to be» notations.

The methodology for describing business processes is usually called the set of symbols or designations by which a business process is described. The most common methodologies used in modeling are: a description of business processes, a description of workflows, and a description of data flows. Modeling business processes is necessary to improve the efficiency and quality of the company. The modeling methodology is based on the description of business processes using various elements (event, materials, actions, data). In addition, the modeling of business processes shows the relationship of the logical elements of the whole process: the identification of existing business processes and the construction of the source model «as is»; analysis and refinement of the source model; development of the «to be» model; testing and application of the «to be» model; improvement of the «to be» model. (Balocco et al., 2019; Haggège & Vernay, 2019; Volik, 2019; Volik & Dzodzhaev, 2016; Volodina et al., 2020)

### 3. Results and discussion

The creation of adequate models of business processes has a different orientation and is due to the observance of a number of principles: the principle of decomposition, the principle of focus, the principle of documentation, the principle of consistency, the principle of completeness and sufficiency. Description of all elements of the process will lead to clutter of the model and excessive piling (Balocco et al., 2019). In this regard, are emit the types of modeling depending on the analyzed characteristics of the business process:

- functional modeling consists in representing the business process as a complex of interconnected and structured operations (functions) with an optional strict time sequence;
- object modeling is based on the choice of production objects - objects that are transformed as a result of the processes;
- simulation modeling allows you to imagine the behavior of objects (processes) depending on internal and external conditions and analyze the dynamic characteristics and distribution of resources (Bulysheva et al., 2018).

At present, various methods of modeling business processes are being intensively developed and their use allows us to pay close attention to various aspects of the studied business processes. Modern methods are graphical and/or textual means of an accurate and visual description of the basic operations of processes (Volik, 2019). The most popular are:

- Flow Chart Diagram is a graphical method for representing a business process in which operations, data, process equipment, etc. are represented by special symbols. The method is used to display the logical sequence of actions of the process (Bulysheva et al., 2018).

- Data Flow Diagram (DFD) is used to display the transfer of information (data) from one process operation to another. DFD describes the relationship of operations through information and data. This method is the basis of the structural analysis of processes, because allows you to decompose the process into logical levels (Bulysheva et al., 2018).

- Role Activity Diagram it is used to model the process in terms of individual roles, role groups, and the interaction of roles in the process (Volodina et al., 2020).

- 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). These

methods are based on the SADT (Structured Analysis and Design Technique) methodology. The most commonly used methods for modeling business processes are IDEF0 and IDEF3 (Haggège & Vernay, 2019).

- Petri nets (colored) - a dynamic model of a business process that describes the behavior of the process in the form of a connected graph, on which the process actions are represented by vertices, and events - by arcs (Altukhova et al., 2016).

- Unified Modeling Language (UML) is an object-oriented method for modeling processes. It consists of 9 different diagrams, each of which allows you to simulate individual static or dynamic aspects of the process (Szlagowski & Berniak-Woźny, 2019).

A significant part of the presented methodologies is currently implemented in the form of applied software tools, which facilitates the development and management of business process models. Also, the time for analysis and development of improvement projects (reengineering, automation) of business processes is reduced by automating the tracking of changes in the developed models (Volodina et al., 2020).

Based on the prepared business process models, the companies management decides to improve or reengineer the business processes studied. After this, it is necessary to develop a project that indicates the main stages and elements of the work performed. Currently, project management is of great importance as a method to effectively plan and manage the improvement of business processes. In all areas of project-oriented and focused activities, modern methodologies and project management tools are widely used. Studies by the International Project Management Association (IPMA) show that the use of modern project management tools and methodologies can reduce time costs by more than 20-30% and reduce financial spending by 15-20% (Altukhova et al., 2016; Balocco et al., 2019; Volik & Dzodzaev, 2016).

The essence of the projects is to carry out a set of interrelated actions to achieve the goal. Professional project management involves the implementation of a number of modern principles: clarity of the formulation of goals, stages and expected results, taking into account permissible risks; timeliness of appointment of responsible executors of the whole project and its parts; preparation and planning of stages, works, project parameters; development of an algorithm for project implementation, its regulation and control; selection of the project working group and coordination of actions of all project performers and participants (Balocco et al., 2019; Mitrofanova & Kopysheva, 2015).

For investors, project development is necessary to increase the transparency of the stages and work performed; timely control and risk reduction; expanding investment opportunities; increase the efficiency of spending investment resources; increase in return on investment (Volodina et al., 2020).

For an enterprise, the benefits are increased control over the expenditure of resources, funds and budgets; increasing the effectiveness of project planning and implementation; reduction of the terms of the project; risk reduction; reduction of resource costs (time, labor, material, financial, etc.); improving management efficiency (including state) etc. (Volik & Dzodzaev, 2016).

When managing a project, it is necessary to take into account a significant number of various factors: technology and the sequence of stages (work); timeliness of provision with required and additional resources (material and labor); accounting of the operating modes of performers (managers, specialists, workers, etc.); regulation of overtime work and related costs; ensuring the timely presence at the workplace

of performers, equipment, machinery and the supply of materials; timely financing; the occurrence of uncertainties and risks, etc. (Volik, 2019; Volodina et al., 2020).

Currently, integrated software has been developed and widely used to automate project management:

- Primavera P6 Enterprise Project Portfolio Management (EPPM) - scheduling and network planning, managing projects, programs and project portfolios;

- MS Project - calendar and network planning, the most convenient for students and start-up companies who do not plan to conquer the highest peaks of the business;

- Asta Powerproject - project management of various scale and complexity;

- Spider Project - project management of any complexity within the allocated budget and selected strategy;

- Rubius Project Manager - a project management system with the functions of scheduling and network planning, monitoring the progress of work (Altukhova et al., 2016).

The development of a reengineering or improvement project will allow the company's management to obtain the following results: create solutions for the implementation of IT that best meets the requirements; maximize the use of project resources; minimize the time and cost of implementation; reduce project risks. The developers of the project to improve the company's business processes need to focus primarily on its compliance with the strategic goals of the company.

Thus, a study of the main aspects of the process approach in company management showed that this methodology is successfully used in large companies with a large number of ongoing processes. Most of these processes are classified as the companies core business processes. Often, precisely, the core business processes require improvement or reengineering. Reengineering is carried out only when significant changes are required in the activities of the entire company or in individual business processes. However, the success of reengineering or improving business processes depends on a professional description of the activities company and its business processes, the analysis of which will reveal the strengths and weaknesses. Based on the analysis, a reengineering project is compiled, which reflects in detail the stages, implementers, resources of the project. It is advisable for the company management to pay attention to the use of modern information technologies and applied software tools in modeling business processes, developing reengineering projects, and also as a tool for automating updated business processes.

## References

- Altukhova, N. F., Vasileva, E. V., & Slavin, B. B. (2016). Concept for a new approach to project management in the activities of public servants. *Business Informatics*, 4, 60-69.
- Balocco, R., Cavallo, A., Ghezzi, A., & Berbegal-Mirabent, J. (2019). Lean business models change process in digital entrepreneurship. *Business Process Management Journal*, 25(7), 1520-1542. <https://doi.org/10.1108/BPMJ-07-2018-0194>
- Btemirova, R. I. (2016). The project method in modern higher education. *Modern problems of science and education*, 3, 217.
- Bulysheva, L., Kataev, M., & Loseva, N. (2018). Modeling of service time in public organization based on business processes. *Lecture Notes in Business Information Processing*, 310, 3-11. [https://doi.org/10.1007/978-3-319-94845-4\\_1](https://doi.org/10.1007/978-3-319-94845-4_1)
- Dave, B. (2017). Business process management - a construction case study. *Construction Innovation*, 17(1), 50-67. <https://doi.org/10.1108/CI-10-2015-0055>

- Haggège, M., & Vernay, A. (2019). Story-making as a method for business modelling. *Business Process Management Journal*, 26(1), 59-79. <https://doi.org/10.1108/BPMJ-12-2017-0363>
- Kovaleva, M. A., Korovkina, A. Yu., Voloshin, S. B., Syrtsev, G. A., & Farniev, S. R. (2015). The system of automated monitoring and forecasting in the management of educational systems. *Proceedings of young scientists of the Vladikavkaz Scientific Center of the Russian Academy of Sciences*, 15(1), 21-30.
- Mitrofanova, T. V., & Kopysheva, T. N. (2015). On a technology for designing 3d objects for geographic information systems. *Information and telecommunication systems and technologies All-Russian scientific and practical conference*, 208.
- Sanhueza, K., & Nikulin, C. (2019). A framework for design methods, models and techniques for product and process development: A novel classification to increase their applicability in practices. *Business Process Management Journal*, 25(7), 1759-1782. <https://doi.org/10.1108/BPMJ-08-2018-0216>
- Slanova, A. V., & Volik, M. V. (2019). Features of the analysis of business processes of the company to increase the efficiency of customer service. *Economics and Management: Problems, Solutions*, 6(1), 84-89.
- Szelagowski, M., & Berniak-Woźny, J. (2019). The adaptation of business process management maturity models to the context of the knowledge economy. *Business Process Management Journal*, 26(1), 212-238. <https://doi.org/10.1108/BPMJ-11-2018-0328>
- Volik, M. V., & Dzodzaev, I. V. (2016). Problems of ERP-systems implementation at the enterprise. *Modern information and educational technologies in the interests of socio-economic development of Russia*, 27-34.
- Volik, M. V. (2019). Description of the business process of interacting with customers to improve the efficiency of company management (for example, a trading company). *Economics and Management: Problems, Solutions*, 2(2), 51-57.
- Volodina, E. V., Kudryashova, P. A., & Studentova, E. A. (2020). Optimization of logistics business processes based on the implementation of cognitive information technology. *Smart Innovation, Systems and Technologies*, 138, 455-464. [https://doi.org/10.1007/978-3-030-15577-3\\_44](https://doi.org/10.1007/978-3-030-15577-3_44)
- Zaitova, E. Z., & Gagloeva, I. E. (2017). Organization and management of development projects in a commercial bank. In Ed. *Youth and Science: Actual Problems of the Socio-Economic Development of Russian Regions*, (pp. 89-94). Materials of the V All-Russian Scientific and Practical Conference.