



# Management in the Field of Cleaning Services Using the Information System

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## Abstract

The cleaning service sector is one of the most promising and fast-growing sectors of the economy. The main goal of the companies is to satisfy the public need for cleaning services for citizens and businesses. The subject of the study is the reengineering of the company's business processes, and in particular the business process "Rendering of cleaning services." As a control system in the enterprise, the MRPII standard is used. MRP are methods of managing an industrial enterprise in a market economy. It provides formation of plans for the provision of services on the basis of a portfolio of orders and forecasting by periods. A preliminary assessment of the service delivery plan for consumers in key needs is in progress. The project aims to design the subsystem "Managing the provision of paid cleaning services" and the development of the task "Accounting for actual volumes of services". The work assesses the managerial and economic effectiveness of the implementation of this task. The presented project can be used for making effective management decisions. The value of reducing the cost of a one-time solution to the business problem "Accounting for actual volumes of services" when implementing and using software is 11,336.55 rub. When solving the problem at the enterprise 12 times a year using the developed software will amount to 136038,6 rub.

**Keywords:** Information system; subsystem; system; cleaning services, information.

## 1. Introduction

The relevance of this study lies in the fact that the cleaning service is one of the developing spheres of the state, since cleanliness and health represent an independent value and at the same time it is an important component of the overall social and economic potential of the country. The active invasion of market relations in the cleaning sector, its orientation to the interests of customers, giving cleaning companies greater independence, the emergence of a private sector of cleaning put the management system in front of the management system new tasks that yesterday seemed to be uncharacteristic of it.

Practice shows that the management of cleaning in a transition to a market economy is much more difficult than with a command-administrative system. This is due both to the expansion of the rights and responsibilities of institutions, field-based cleaning management bodies, and the need for more flexible adaptation to changes in society. Radical changes affect all levels of the management system of cleaning: federal, regional, municipal.

Cleaning is a fairly new and not the most usual kind of business for us. But cleanliness is an indispensable attribute of any modern administrative building or shop, an integral part of the image of any company.

Cleaning is the cleaning of rooms according to the highest European standards by specially trained specialists on professional equipment, providing the customer with the highest level of service with the maximum professionalism.

The main goal of the companies is to satisfy the need for cleaning services for citizens and enterprises. The main consumers of the services of limited liability company «Fasco Engineering» are the population of the city of Naberezhnye Chelny and the Nizh-

nekamsk district. The planned capacity of the company is 43 visits per shift.

Problems, the solution of which is relevant for the enterprise:

1. The company experiences difficulties in specialized personnel.
2. Insufficient staffing by individuals;
3. Lack of information-based paid services.

## 2. Methods

The main goal of business process reengineering is qualitative improvement of certain areas of the company's activities. Based on the established business processes of the enterprise and their understanding, the enterprise management system is being designed (adjusted) - the enterprise management standard is created. Every business task has its owner (owner).

To optimize the organizational structure, "a structural approach is used - aligning the organizational structure and a complete list of tasks or work of business processes. Thus, the goal of such optimization is to align the hierarchical structure of the enterprise with the hierarchical structure of business processes, and the structure of the enterprise is viewed not only as a hierarchy of structural elements, but also as a hierarchy of executors of business process tasks. When optimizing, the following properties must be met:

- property of completeness - completeness of all organizational units of the enterprise and all solved tasks, works performed;
- property of normalization - any task or work should have one performer. This property allows you to determine the performance indicators of performers in accordance with the performance indicators of the task itself or the tasks to be performed, the work performed;

- property of determinism - the obligatory existence of work or tasks for the performer and performer for work or task.

Thus, the process of structural optimization is reduced to accounting for a large number of tasks of business processes, which, in turn, interacting with each other, connect all business processes of the enterprise. The realization of these tasks in such interaction leads to the emergence of a synergistic effect.

The methods and directions of improving the company's activities include:

1. Improving the efficiency of the implementation of key business processes, ensuring continuous monitoring of performance indicators and reliability of management information - today it is impossible to provide a qualitative solution to these problems without using modern corporate business applications.
2. Organizational activity is a part of management activity, the task of which is to ensure the achievement of goals. This is the process of creating an organization structure that enables people to work effectively together, and also allows them to provide all the necessary work (personnel, materials, equipment, premises, money, etc.).
3. Improving the evaluation of the effectiveness of the management accounting system should help solve problems in the functioning of the management accounting system, which, in turn, hinders the increase in the efficiency of the enterprise as a whole.
4. Cost reduction can occur when creating automated control systems, using a PC, improving and modernizing existing technology and technology. Costs are also reduced as a result of the integrated use of raw materials, the use of cost-effective substitutes, the full use of waste in production. A large reserve conceals in itself the improvement of production, the reduction of its material intensity and labor intensity, the reduction of the weight of machinery and equipment, the reduction of overall dimensions and other.

### 3. Results and Discussion

In the process of reengineering, the following business processes were identified:

1. Management;
2. Finance;
3. The main accounting;
4. Provision of labor resources;
5. Rendering of cleaning services;
6. MTO;
7. Power supply;
8. Social security;
9. Repair provision;
10. Information support;
11. Provision of core business.

Business tasks were allocated for all business processes. All tasks of business processes are interrelated among themselves on a time scale and on object streams. In order to show this connection, organizational and logical schemes were constructed.

The process-task technology for managing business processes is based on the product model of the organization of business processes. The main element of management in this case is the business task and the products of its solution.

The main goal of the enterprise management standard is the development of business process management technology.

Calculation of the economic efficiency of software development for solving a business problem is based on the "Cash Flow" method using a difference approach.

To assess the economic efficiency, we will determine net cash flow for 1 year after deducting the cost of one-time investments and taking into account alternative missed opportunities. To assess the missed opportunities, we will take as the discount rate the value of the refinancing rate of the Central Bank of the Russian Federation.

We calculate the main indicators that characterize the economic efficiency and effect of this project:

- 1) the net present value of the project;

2) the internal rate of return of the project;

3) index of return on investment;

4) payback period of investments (simple and discounted).

Designing of the enterprise information system is carried out on the basis of the process-task approach to enterprise management, this implies the allocation of subsystems, the tasks of the information system subsystems, respectively, based on the tasks of the business processes of the enterprise. The internal and external interrelationships of all the tasks of the information system subsystems are determined and the interconnection of IP problems is constructed. The means and methods for ensuring information security are indicated, as well as the basic sanitary rules and norms for working with computer equipment, for organizing and equipping workplaces.

When designing the subsystem "Provision of cleaning services", first the organizational and logical essence of the solution of the tasks of this subsystem is revealed, internal and external information communications of the tasks of the subsystem are determined, information and technological schemes for solving each task and a scheme for interrelating the tasks of the subsystem "Rendering of cleaning services" are constructed.

The development of the task "Accounting of actual volumes of rendering services" of the subsystem "Rendering of cleaning services" has been carried out. In the course of its development, the organizational and logical essence of the solution of this problem is revealed, information arrays of the problem are identified and their structure (structures of input and output information arrays) is presented, an object database model is constructed and the program implementation of the problem is performed using 1C: Enterprise 8.2.

The estimation of managerial and economic efficiency of using the program development of the task "Accounting for actual volumes of service provision" was carried out. After calculating the costs for the design, development and implementation of the task, a capital investment of rub 101,371 is required. The savings amount to 11,336.5 rubles. The results of the implementation can be characterized as effective, as the integrated indicators of the project's economic efficiency in the horizon of 1 year (12 months) calculation are equal: the net present value of the project is 11604,4 rub; payback period (discounted) – 9,8 months; payback period (idle time) – 9,5 months.

### 4. Summary

The authors carried out a pre-project analysis of the activities of OOO Fasco Engineering, which reflects the characteristics of the enterprise, activities, characteristics of labor and other resources used. The main goals and new projects for achieving the strategic goals are described.

The analysis of business processes of LLC Fasco Engineering was carried out. The main business processes are defined.

Each business process is a set of interrelated tasks. For Fasco Engineering LLC, the main tasks of all business processes are identified, which are classified according to management functions. Since each task of the business process has an input stream and an output, and the results of solving one problem can be used to solve other problems, then information arrays are defined and structured, through which all business processes interrelate and five interaction schemes for the main business processes of LLC Fasco Engineering.

After analyzing the company's activities, it was revealed that the company needs technological modernization. Namely, in the introduction of new automated equipment, to increase labor productivity.

Designing of the enterprise information system is carried out on the basis of the process-task approach to enterprise management, this implies the allocation of subsystems, the tasks of the information system subsystems, respectively, based on the tasks of the enterprise's business processes. The internal and external interrelationships of all the tasks of the information system subsystems are

determined and the interconnection of IP problems is constructed. The means and methods for ensuring information security are indicated, as well as the basic sanitary rules and norms for working with computer equipment, for organizing and equipping workplaces.

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The estimation of managerial and economic efficiency of the use of the software development of the task "Accounting for the actual volumes of the provision of services" was conducted. After calculating the costs of designing, developing and implementing the task, investments of 101,371 rubles are required. The savings amount to 11,336.5 rubles. The results of the implementation can be characterized as effective, as the integrated indicators of the project's economic efficiency in the horizon of 1 year (12 months) calculation are equal: the net present value of the project is 11604.4 rubles; payback period (discounted) - 9.8 months; payback period (idle time) - 9.5 months.

## 5. Conclusions

The information system is a means for accounting and developing managerial decisions on all aspects of the activities of a modern trade, production or budget enterprise. The system provides developed and flexible means of recording facts of economic life in the operational mode with simultaneous reflection in accounting, tax and management accounting.

One of the problems of the company's functioning is the lack of information systems. At the moment are the automated accounting of client activity, accounting. In turn, the main business process of the enterprise - "Rendering of services" is completely not automated. This applies to the information department and the deputy for staffing. The result of the research is the development of the task "Accounting for actual volumes of services", an object database model was constructed and the program implementation of the task was carried out with the help of 1C: Enterprise 8.2. , an assessment of managerial and economic efficiency was carried out.

The information system solves the following problems:

- The information system solves the problem of organizing, setting up and keeping records of the main business processes of the enterprise;
- The information system fully automates and virtually eliminates the possibility of error in the operation of any business process;
- The information system increases the speed of work with various documents.

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