

REENGINEERING AS A METHOD OF IMPROVING THE EFFICIENCY OF LOGISTICS PROCESSES IN THE PUBLIC ADMINISTRATION ORGANIZATIONS

Katarzyna Rostek* and Michał Wiśniewski*

* Faculty of Management, Warsaw University of Technology, Warsaw, ul. Narbutta 85,
02-524, Poland,

Email: k.rostek@wz.pw.edu.pl

Email: m.wisniewski@wz.pw.edu.pl

Abstract The paper attempts to demonstrate the role and importance of process modeling and reengineering logistics processes in the selected public administration organization. First, it presents the characteristics and selected rules of operation in the organization of public administration organizations in Poland. Next, it describes the concept of a systemic approach in management and reengineering idea, seen as structural, organizational and technical reconstruction of processes, which serves the achievement of improving their efficiency. Practical principles of modelling, analysis and reengineering processes are presented for example of selected logistic process in public administration organizations.

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1. INTRODUCTION

Economic reality, in which organizations operate today, is constantly changing economic, social and legal. This situation forces the efficiency of the flexible matching to the new realities of the environment. It is therefore necessary process management approach, that enables organizations look at through the prism of the operation carried out in the process, instead of tasks limited to a specific element of organizational structure. A measure of the efficiency of the organization processes is its competitiveness and occupied market position. Public administration organizations are not subject to market forces and not have to deal with threats from the competition, because they are government funded. They limited of extensive number of administrative and legal constraints, that are changing as fast as the market situation. Their organizational structure and management model remain has unchanged since the time before the transformation process in 1989. Therefore, as in the case of enterprises market, necessary is analysis and uses its results in the reorganization process, which leading to higher efficiency of management.

The second chapter presents the characteristics, selected rules of operation and organization of public administration organizations in Poland. The third chapter presents the concept of a systemic approach in management, in which the organization is viewed as a whole of the processes occurring in it, and necessary in the effective management. The fourth chapter presents the reengineering idea, seen as structural, organizational and technical reconstruction of processes, which serves the achievement of improving their efficiency. In chapter five, for example of selected logistic process, presents the principles of modelling and analysis processes. The sixth chapter contains a presentation reengineering of selected logistics process and an assessment of anticipated effects of implementing the proposed changes. Completion of work is the seventh chapter, where are summary the results of the research.

2. DEFINITION AND FUNCTIONING CHARACTERISTICS OF THE PUBLIC ADMINISTRATION ORGANIZATION

J. Boć writes that „*public administration is taken over by the state and implemented by its pending bodies and bodies of local government satisfying the collective needs of citizens, resulting from the coexistence of people in communities*” (Boć, 2007, p. 15). The accepted definition shows, that the public administration remains to its own nationals in a subordinate relationship. The nature of the public administration activities can be likened to the auxiliary processes in the enterprise. These processes do not create added value for the customer, but the creation of that value as a result of the main processes, it is not possible without an auxiliary processes. For this reason the public administration, despite not producing the goods for citizens, it is essential to the functioning of whole society. In the current eco-

conomic crisis is becoming a necessity to seek a solutions, when efficient and effective functioning of public administration will be possible even with limited financial resources.

Assuming cost way of looking at public administration organizations, the essential principle of their functioning is „ *rule of bound the administration by law, i.e. public authorities operate under the laws and limits set by law*” (Encyclopaedia of management, 2011). It should be noted, that the law in the Polish is changing relatively often, which in turn forces the public administration organizations to make deep changes in the way of functioning. This creates serious problems in adapting to constantly changing realities and often entail significant costs associated with the reorganization of the functioning.

Another important factor influencing of the public administration management is the cost of their functioning and the fact that they are dispersed organizations. The functioning of nation-wide public administration organization can compare to a company with a dispersed structure. Efficient management of such organization requires from executives the development long-term action plan, covering the goals to be achieved and the measures of these goals. Implementation of such a plan must take into account the need for frequent changes, imposed by customers needs and new legislations. It is essential, that these changes were possible to implement quickly and relatively cheaply.

Thus analysis of the public administration organization functioning should focus precisely at the reorganization of its processes, in terms of increasing their reliability and realization efficiency. Therefore, it will be discussed the concept of system approach in the management and reengineering processes, leading to adapt the organization to changes in its internal and external environment.

3. IMPORTANCE OF SYSTEM APPROACH IN THE ORGANIZATION MANAGEMENT

System management is an approach geared to the effective management of a set of interrelated elements that together form an organizational whole. Set of elements are processes of the organization and linkages, that occur between them, affect the quality of the organization functioning. It follows, that if any of the processes is functioning inefficiently or its effectiveness is undervalued relative to other processes, it has a negative reflection on their quality of functioning the entire organization. Reduce the quality of the functioning a single process has different consequences, that depend on the type and strength of linkages ineffective item with the rest of them. Examples here include: the decline in the value of economic indicators, reduction in the ability to receive signals coming from the external environment, or even loss of reputation in the eyes of customers. For the public admin-

istration organization a particularly important is the possibility of loss of reputation and public confidence to the institution.

The use of the system management approach forces people to go beyond the structure of individual units, so that they gain the ability to check the effectiveness of related processes and to make joint decisions about the need for their improvement. Improving processes takes into account the interactions occurring between them and anticipates changes, which will be activated in related processes through the reengineering of one of them. The aim of improvement is creating a such system of linkages between the processes taking place in the company, which will increase the efficiency of the objectives of the entire organization and achieve synergies, but not just the goals of separate organization units.

The primary signal for modification of the process is to decrease the effectiveness of its implementation in relation to expectations. In order to determine whether the effectiveness of the implementation of the process is lower than expected, it is necessary to define the implementation goals and a set of metrics that allow for measurement of implementation results.

In summary, a system management approach in the organization becomes a requirement for its proper functioning. System management approach results identification of areas, where it is necessary to reorganize processes and adapt them to a specific reality in which the institution operates. It is this element involves the need for such changes that will improve the functioning of the public administration organization. For the public administration organization, where still dominates the task management approach, these changes may be extensive. Given the extensive nature of the changes recommended method of their implementation is a process reengineering.

4. DEFINITION AND NATURE OF PROCESS REENGINEERING

Reengineering is a philosophy of business efficiency, achieved through a detailed analysis of the processes realized in the enterprise, and their interrelationships. Reengineering method assumes that the organization operates inefficiently, it is necessary to identify the problems in the organization and to develop measures of success of implementing changes. Classic reengineering assumes *„radical redesign of the entire organization, where traditional structures have to be replaced by newly designed processes. Different jobs and tasks are grouped together, and then combined into one unit”* (Bugdol, 2011, p.127).

Radicalism of this approach makes, that use a typical reengineering in the organization is not simple and is burdened with considerable risk of failure. However, the achievement of improving the functioning of the public administration organization is also possible using only the same principles and assumptions reengineering. According to M. Bugdol fundamental assumptions of reengineering in

public administration units include (Bugdol, 2011, p. 128), (Kisielnicki, 2008, pp. 182-183):

- the introduction of a system management approach, which will allow better control and allow the reduction of numerous errors in the implementation of processes,
- change the method of decision-making, namely that many decisions no longer take managers, but the staff responsible for individual processes; these workers must be trained, and adequately predisposed to their assigned tasks.

The validation of reengineering task requires the possibility of measuring the effectiveness of its implementation, understood as saving use of resources (information, human, financial, time, other) or productivity growth (measured increase profit, increase the volume of production or sales). In the case of public administration organizations profits increase, production volume increase and sales growth may not be an objective of analysis. Thus, the objectives of the analysis and reengineering in these organizations will be primarily the optimize utilization of resources, necessary to support processes. In subsequent chapters will be presented modelling and analysis of the selected logistic process on the example of the public administration organization, thereafter will be proposed reorganization of this process with using the reengineering principles.

5. MODELING AND ANALYSIS OF SELECTED LOGISTIC PROCESS

Business process modelling focuses on developing models of processes, realized in the enterprise. Created process models are used to arrangement the description of the process activities, establish the necessary resources for its implementation, determine the duration of each activity and determine its cost and the expected results. The analysis always begins of goals formulation, which the analysis should lead, and then reengineering the process. The purpose of the analysis may be verification of the correctness of the process, for possibility of achieving the intended results of its implementation. If the intended results of the process limited by defining a time in which this result is to be achieved and the amount of resources, that may be involved in this process, then become the task, which the solution may require to change or an process reengineering.

As it was already noticed, increased sales or profits cannot be an analysis goal of the public administration organization. Therefore, the analysis goal was adopted the optimization of resources utilization, necessary to support the implementation of the movable properties purchase in the public administration units. The main problems of the current status of this process are: too high commitment of human resources in its implementation, long implementation time and high costs of carry-

ing out the process. Given also the low efficiency of measures taken, clearly indicates an undesirable situation. Consider this issue on the selected logistic process (for example on the planning purchases process), conducted in the logistic department of public administration organization (research funded under the MNiSW development project No 0R00004011).

As is clear from Fig. 1 the planning purchases process begins with the demand for movable goods in the basic units of public administration organizations. Variable, specifying how the purchases will be made, is the amount of the contract. If the amount exceeds 14 000 EUR, the purchase can be done centrally by the logistics department or jointly by the basic units. If the amount of the contract is less than 14 000 EUR, representatives of the basic units may decide to make of individual or joint the purchase method. In carrying out the standalone purchase individually must secure: resources for its implementation, choose a supplier, place an order and carry out the tendering procedure.

In carrying out the common purchase remaining to be solved the question of financing the purchase. If purchases are financed by the *European Union* (EU), organization units choose a representative, who makes a purchase, receive purchased goods from the supplier and sends the information to other units about the possibility of take the goods. If the basic units pay for purchases of its own resources, they must inform the director of logistics department in the form of a proposal and wait for its favourable consideration. If the director of logistics department agrees to purchase, then the procedure is the same as for the financing of purchases by the EU. If the director does not consent, the procedure is stopped and the purchases are not implemented in this form.

Central purchases are carried out once a year. They are initiated by two factors: the demands of the movable goods purchases send from base units and the allocation of financial resources from the public budget in the current year. After collecting all the demands of basic units, employees of logistics department check whether the resources allocated are sufficient to carry them out. If it not, the demands are corrected and this correction is based on the volume of employment in every units. Then the material and financial plan is being prepared, taking into account the categories of movable property to be purchased in a given year and the amount of money allocated to each of these categories. Preparation of the material and financial plan, ends the financial planning process, is the basis for purchase and to start the bidding process, which is the subject of a separate process. Tab. 1 describes the resources used during the process of planning purchases.

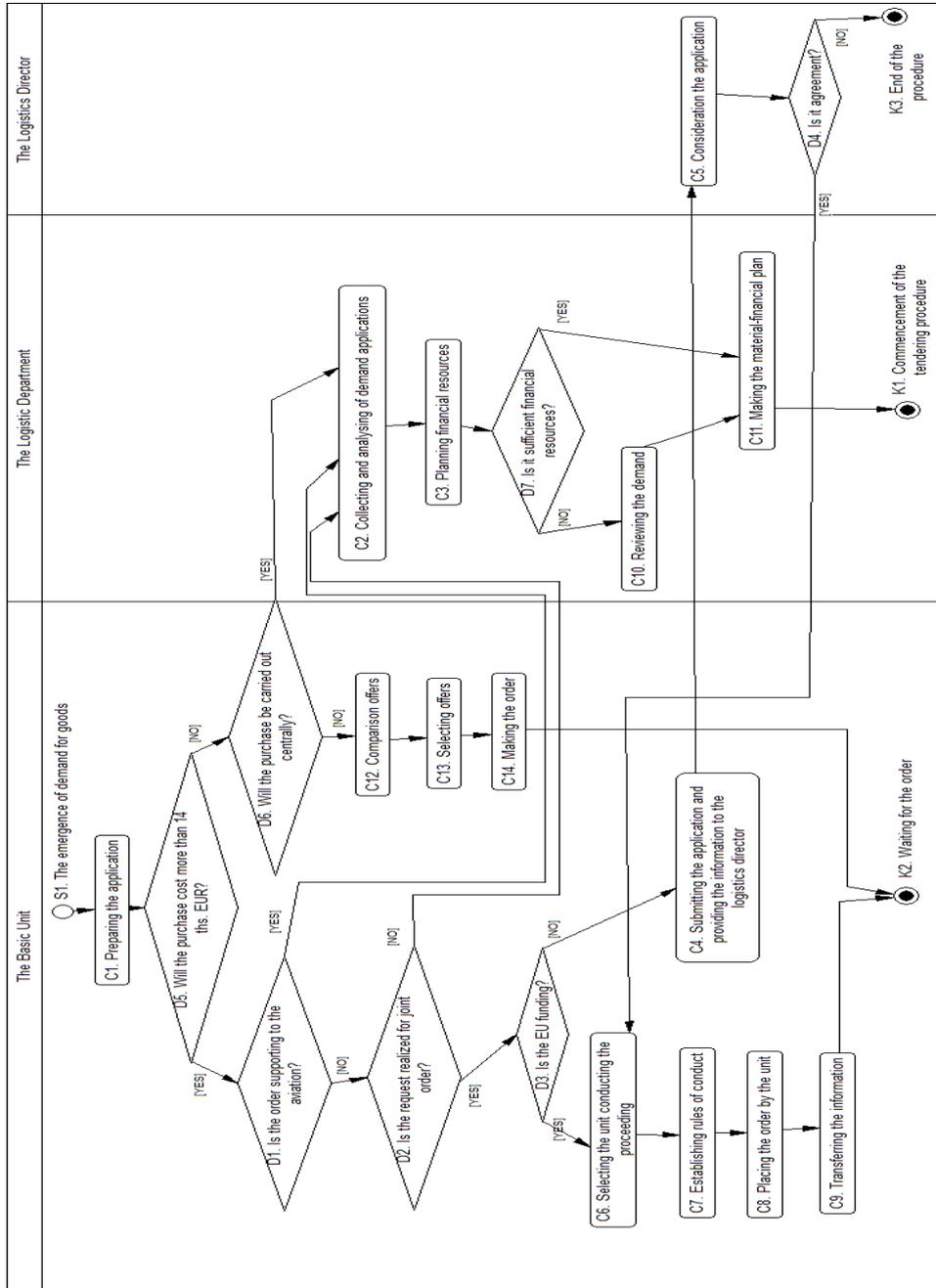


Fig. 1 Model of the purchases planning process, own research

Tab. 1 Summary of resource utilization in planning purchases process, own research

Symbol of activity	Workers [count]	Execution time [h]	Estimated costs [PLN]
C1	22	66	990
C2	1	8	120
C3	1	8	120
C4	22	24	10
C5	1	0.25	5
C6	22	24	300
C7	22	24	100
C8	1	2	30
C9	1	24	200
C10	1	8	120
C11	2	24	720
C12	1	8	120
C13	2	1	30
C14	1	2	30
Total:	100	223.25	2895

As is clear from Fig. 2 and Tab. 1, the planning purchase process requires now the involvement and coordination of the 100 workers in basic units and the logistics department. Delays in implementing the activities of any subcontractors, effect of delayed implementation of the entire process, which now occupies more than 223h, what is almost 28 working days. The cost of each planning purchases process is of nearly 3 000 PLN, which is a large amount in relation to the scope of their operations. The main reason of this is lack of the computer system in the logistic department with the access to current information about the inventory in the individual basic units, and the exchange of information during the process rather electronic than paper.

No computer system enforces the need for manual preparation of demand documents based on paper archives, stored in the warehouses of basic units. This is a time consuming operation, requiring the involvement of employees of stores and unfortunately often leads to the formation of errors and delays, which has a negative impact on the quality and effectiveness of the implementation of the process. No the computer system, and consequently lack of information about details of the basic units demand in the logistic department, causes that each contractor must determine the contract's details individually with the manager of each base unit. This is burdensome for the contractor and for the managers, so often they on their own simplifies the procedure, thereby generating many of mistakes in orders. In emergency situations, when are needed selected items of movable properties, and not have the financial resources or the time to make a purchase, lack IT system

makes much harder and longer the operation of searching such goods in the warehouses of basic units, scattered throughout Poland.

Consequently the planned reorganization of the planning purchases process is proposed:

- ensuring the implementation of the computer system to collect, share and analyze data on purchases, distribution and inventory in the basic units,
- in-depth analysis the effectiveness of the processes, based on collected and analyzed data in the computer system,
- continuous improvement process based on the results of efficiency analysis.

Therefore, in the next chapter will be proposed solution that significantly improve effectiveness of process by shorten the period of its implementation and reduce its costs.

6. REENGINEERING OF SELECTED LOGISTIC PROCESS AND ASSESS ITS EFFECTIVENESS

Model of planning purchases process, after the implementation the proposed changes, will be simplified to the scheme presented in Fig. 2.

The following is planning purchases process after reengineering and introduction to the use of the computer system, that collects and stores data from the warehouses of basic units. The initiates factor of this process is to give from the ministry funds for the purchase of movable properties. Then the logistics department workers check in the computer system the data of inventory in base units warehouses and simultaneously receive data on current employment in these units. When the logistics department workers have had already the data about the current state of magazines and current staffing data, they proceed to prepare material and financial plan. It takes into account these categories of movable properties, which must be purchased in a current year and the amount of money allocated to each assortment group. Preparation of material and financial plan ends of the planning purchases process and it is the basis of beginning the tendering procedure, which is the subject of a separate process.

As it seen the planning purchases scheme has far-reaching changes. First of all from the proceedings have been eliminated all tasks of basic units. After the reengineering process all activities are implemented in the logistic department. This type of situation should eliminate objections to the changes, due to relieve in the preparation of reports and demands for movable properties. Because of the limitations of planning steps may seem that the objections to the new situation may arise among employees of the logistic department. However, it should be noted that in this area activities related to the purchase of movable properties planning also are limited. Access to current data at any time, without waiting for an answer

from basic units, greatly simplifies and facilitates the work. In addition, employees of the logistic department through the use of actual data eliminate errors during submitting individual demands by basic units. Summarizing these elements it should be noted, that although all the activities related to the planning purchases process after the reengineering belong to the employees of the logistic department, they have easier task to accomplish. Taking this into account the implementation of changes should not be met with protests also in this group of workers.

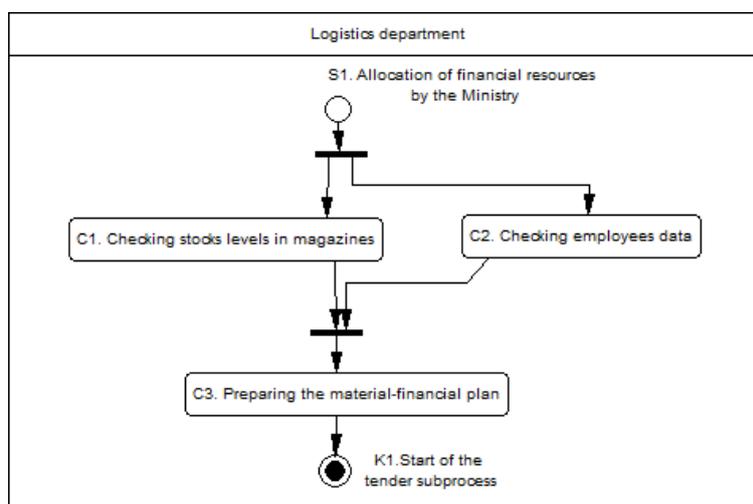


Fig. 2 Model of planning purchases process after reengineering, own research

Assuming that a person employed in the logistics department receives the gross wage at the level of 2 500 PLN and generates 160 working hours a month, analysis of the resources, involved in the process implementation, presents the Tab. 2.

Comparing the data presented in the Tab. 1 and Tab. 2, it can be concluded, that at present planning purchases process requires the involvement of 100 people employed in the basic units and the logistics department.

Tab. 2 Summary of resource utilization in planning purchases process after the reengineering, own research

Symbol of activity	Workers [count]	Execution time [h]	Estimated costs [PLN]
C1	1	0.5	5
C2	1	0.5	5
C3	1	2	30
Total:	3	3	40

Every execution of the process requires over 224 hours of work and costs almost 3 000 PLN. The use of a IT system, allowing for the collection, processing and sharing of data, significantly alter the quantity of resources involved in the implementation of the process. This is confirmed by data collected in Tab. 2, which shows, that the implementation of the process requires 3 people, 3 workers and 40 PLN. The analysis fully verifies the legitimacy of the implementation of an appropriate IT tool and the proposed reorganization of the planning purchases process.

7. CONCLUSION

The developed material shows a typical situation for the organization of public administration, which lack a process approach and expanded system of administrative and legal constraints make impossible the efficient management. On example of the logistics process has been demonstrated that the use of a computer system, which will collect and process data, and then will make available the resulting information necessary during realization of the process, induce significant savings and above all enable faster and more efficient implementation of the necessary actions to comply. Proposed changes to the purchase planning process led to a reduction in: the number of involved people from 100 to 3, the process time from 224 hours to 3 hours and costs incurred to 3 thousand. PLN to 40 PLN. Therefore the management decision is should be make to purchase the chosen solution, preceding them with the implementation of a process approach to managing the logistics in the area of purchasing and distribution of movable goods.

Obtained research results indicate the necessity for a global reengineering of processes implemented in the organization, or at least its key logistics processes, which largely determine the effectiveness of management and spending of budgetary resources in public administration organizations.

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BIOGRAPHICAL NOTES

Katarzyna Rostek (Ph.D. eng.) teaches at Faculty of Management in Warsaw Technical University. Her research interests are business intelligence systems, decision support systems, business analysis and knowledge management. She is the manager or the team member of several projects related to business analysis and processes efficiency. Her papers appear in numerous journals including *Zarządzanie Przedsiębiorstwem*, *Foundations of Management* or *Acta Scientiarum Polonorum Oeconomia*.

Michał Wiśniewski (Msc.) teaches at Faculty of Management in Warsaw Technical University. His research interests are databases management, data warehousing and business process modelling. He is the team member of several projects related to business analysis and processes efficiency.