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## APPROACHES TO BUSINESS PROCESSES IDENTIFICATION AND ANALYSIS

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*В статье выяснен механизм проектирования процессов. Обосновывается два научных подхода к выполнению анализа. Проанализированы стадии, которые используются в этих подходах. Обнаружены преимущества и недостатки каждого подхода, а также отличия, между ними.*

**Ключевые слова:** анализ, макро-проект, микро-проект, процесс, разработка проекта.

**Abstract:** *In the present article, the first phase of processes design – identification and analysis, is presented. The two main approaches to its performance are reviewed. Described in detail are the varieties and stages used in each of them. The advantages and shortcomings of each approach are presented, as well as the existing differences between them.*

**Key words:** process, processes design, analysis and identification, macro design, micro design.

**Literature analysis.** The present study of the approaches to business process analysis and identification was performed on the grounds of the available literature on this issue. Gaitanides defines the basic steps to be passed by the first phase of processes design. Also, he is a principal representative of the so-called “situational” presentation of the processes and he deduces one of the approaches for micro processes design – “Situational Analysis and Identification”. It is characteristic for the method presented by Gaitanides to divide the processes into main and supporting ones. Angelov describes the steps through which the identification and analysis of business processes pass. Sommerlatte is the other author, who analyzes the approaches and the peculiarities of the macro process design. He is suggesting the processes analysis and identification to be done on the grounds of “ideal” (typical) processes existing in any organization. Harrington present “mixed forms of process analysis and identification” as combining the characteristics presented by Gaitanides and Sommerlatte, supplemented by the value chain of Porter. Krüger adds the clarification when the “situational” and when the “typical analysis and identification” of the processes to be used. Büchi reveals and describes the steps necessary upon the micro process design.

**Research objective.** The objective of the present paper is to analyze the approaches to identification and analysis of the business processes.

**Exposition.** Business organizations perform a transformation of the inputs (raw materials and supplies), through the production factors (buildings, machines, workforce), into a product/service designated to satisfy the customers’ needs. The production cycle is related to the flow of various processes, activities and operations, which carry out the transformation. Each organization should design and optimize those processes in such a way that continuous maintaining a possible high level of competitiveness. This is vital in the contemporary conditions of globalization and growing competition. The processes design in an organization could be divided into three main meaningful phases (stages): identification and analysis; improvement and implementation.

There exist two approaches according to the scope of design, namely “macro” and “micro” design. “Macro design” is encompassing all production processes in the organization. Its application leads to a change in the enterprise organizational structure. “Micro design” is directed towards improvement of individual processes within the entire business processes. Thereby, a separate sector or subsystem of the organization is modeled or improved. The principle, “the micro process design” is performed after “the macro design”. In some cases “micro design” is allowed without preliminary “macro design”, but the practice shows that the achieved effect is temporary. In order to achieve efficiency of the entire design, it is necessary to clearly distinguish the application of both principles. It is most easily done in the first phase – “identification and analysis”, where “the micro design” follows “the macro design”. In the other two phases they are applied in parallel.

Processes identification and analysis pass through several main steps: description of the main processes; identification of the limits of the processes; identification of the essence of the problem and the need of improvement; identification of the influence of the process on the company policy and culture [4]. The design starts with identification and analysis of the given process, sub-process or activity, which is subject of design. The purpose of the identification is to delimit and separate the studied process from the other processes in the organization. It is done through a graphical representation as block diagrams based on mathematical tools [1]. Inaccurate definition of the process to be improved leads to problems in the next design phases. In its essence, the analysis is fragmenting an entity or a part thereof under a given method. By doing this, the separate components are identified and delimited (sub-processes, activities, operations), different in kind and form causal connections between them and the various connections and interactions of the studied object with other processes are determined. For the performance of that phase two approaches are used to design the processes – on micro and macro level.

**Peculiarities of macro processes design.** In the phase “identification and analysis” of the processes, the critical business processes, which are subject to design, are identified. After the performed analysis of the literary sources, two main approaches to macro design have been derived: “Situational process analysis and identification” suggested by Gaitanides and “Typical process analysis and identification” elaborated by Sommerlatte. There exist also mixed forms of analysis and identification of the processes. They combine the advantages and avoid the shortcomings of the “situational analysis and identification” and the “typical process analysis and identification”.

*Situational process analysis and identification*

Situational processes analysis and identification are performed under this approach. Its underlying idea is that any organization possesses individual characteristics, distinguishing it from the others. They are unique and build the company identity [4]. Upon the performance of a detailed situational analysis, it is necessary to use a subjective and creative approach to the problems [3]. Its essence is based on the existence of unique processes in the organization, which are directed towards the creation of the “customer-supplier” relationship. The processes are divided into two groups: main – focused on the customers’ needs, and supporting – processes supporting the flow of the main one (Figure 1).

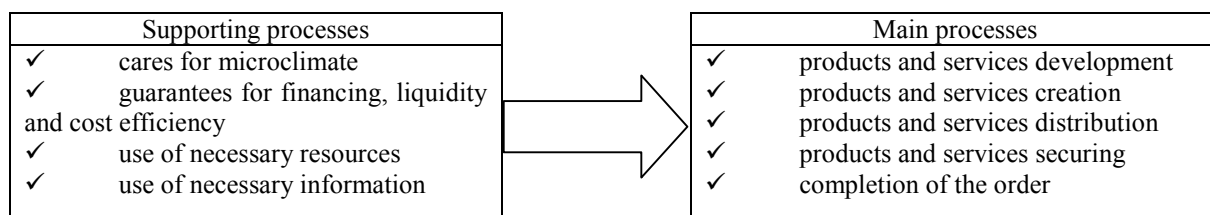


Figure 1. Main and supporting processes [4]

With the situational approach, inductive methods are used for processes analysis and identification. The design starts from the smallest unit (sub-process or activity) in the chain and ends with a description of the entire business process. The defining of the main business processes is based on the origination of customer’s need [4]. They, in turn, are the basis to design the auxiliary processes. In practice, there exist no general rules and instructions for identification and analysis of the business processes in the organization. The defining of the critical processes in a unit is done on the grounds of specific characteristics and peculiarities existing by the moment of analysis performance. It is carried out in two steps. In the first step, the scope and the task of the studied process are established. This is done in view of detaching the activities and sub-processes not related thereto. They are decomposed until reaching the desired rate of detail. Thus, the initial sub-processes and activities (Figure 2), which do not build the object of research, are visualized. In the second step the links between the individual stages of the process are revealed. Their defining allows for the establishment of the units (activities, sub-processes) taking part in the creation of the product. The processes redesign and improvement are focused exactly on them [5].

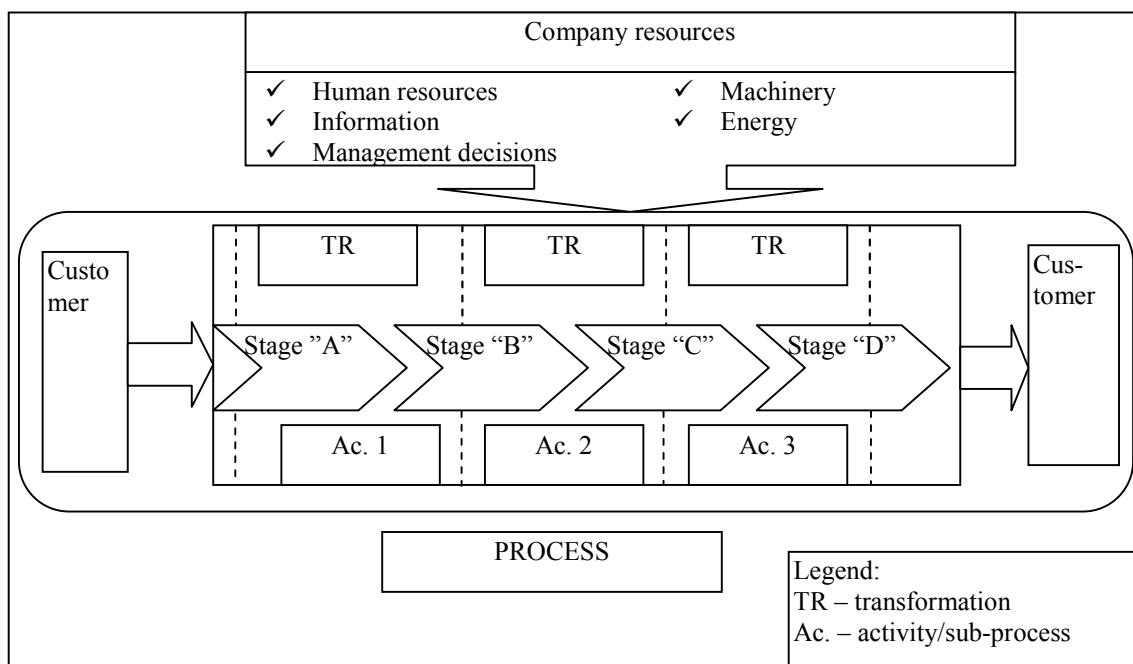


Figure 2. Process and activity

*Typical process analysis and identification*

With this approach, analysis and identification of typical (frame) processes are carried out. It is accepted that in each organization a certain number of general (typical) processes exist. They could be presented as a kind of “shell” or “frame” of the business processes in the organization. The typical processes depend on the critical factors of success, as well as on the specific characteristics of the activities and the branch needs of business. Upon the general processes analysis and identification, nine typical business processes (TBP) divided in three main groups are used [9]. The first one is related to the distribution of resources; the second – to the creation of results and the third group is evaluating the resources usage (Table 1).

Table 1

Typical business processes (TBP) [9]		
Group 1	Group 2	Group 3
Capacity planning process	Customers needs optimization process	Service and maintenance process
Strategic planning and performance process		
Securing cost efficiency and liquidity process	Providing products and services process	Orders handling process
Personality development and motivation process		Market development process

With this approach, deductive techniques of process identification and evaluation are used. The design starts from the general (typical) business process and runs “down” the chain. The complete analysis of TBP is performed through the portfolio-analysis methods. The customers are studied; the strategic factors of success and the market position are defined, as well as an internal audit is performed. It is important to mention that the TBP weaknesses and strengths could substantially affect the strengths and the weaknesses of the organization’s market position. The efficiency of each frame process is of a vital significance for the long-term development of the organization. Another peculiarity is that considerable attention is paid to the links between the independent TBP. Each TBP’s efficient work is as important, as the functioning of the TBP chain [9].

*Mixed forms of process analysis and identification*

The mixed forms combine the characteristics of the above reviewed two approaches to analysis and identification of the processes [6]. They integrate the two traditional approaches together with the value chain of Porter. In his view, the processes in the enterprise are divided into primary and secondary. The primary ones are: input logistics, operations, output logistics, marketing and sales. They are related to the main activity of the enterprise – production, sales and delivery of a product/service to the client. The secondary processes help the performance of the main (primary) ones through purchase of raw materials and supplies, as well as securing “know-how” and human resources for the production [8, p.65].

The advantage of the mixed forms is that TBP’s are used in the analysis and design on macro level, for defining the main priorities of the company – market concept and product strategy. And at micro level the situational approach of analysis and identification of the actual sub-processes or activities is used [7].

**Peculiarities of micro process design.** A reason for starting the re-design or improvement of the processes is the occurrence of a problem, which is expressed in discrepancies between the achieved and the expected values of the target parameters concerning a workshop, a department or a work station. It generates the necessity of improvement. With micro design, the adjustment of the deviations is done without serious organizational-structural changes, in contrast to the macro design. The main task of the improvement is the achievement of a relative optimum through the available resources. This is the best option of improvement in compliance with the target criteria. The object of design is the production process at a certain spot of the process chain. It is identified and visualized by using models of the processes and activities.

The micro design passes through the following steps: on the first place, the connections between the studied process and its resources are revealed. This is done through focusing the monitoring on the units that take part in the production process. They can reveal the interaction between processes and resources used. A checkup whether the necessary resources are provided for the relevant process is done at the second step. At the third step, the preceding and the consequent processes in vertical and horizontal direction are differentiated, using for that purpose the synthesis methods. Those steps are followed upon the initial design and upon the follow up re-design and improvement [2].

The full description of the processes requires their examination in the following aspects:

Spatial aspect	At which point of the process does the problem occur?
	To which point of the process does the problem extend?
Subjective	Who is taking part in the process?
	How does the problem in the process appear?
Technological aspect	Where does the problem in the process appear from?
Time aspect	How long does the problem in the process last?
	What is the effect of the problem in the process?
Resource aspect	Which process resources are affected by the problem?

The main peculiarity of the micro design is that there one does not apply an integrated concept of improvement in the organization. The improvement objectives are defined partially and specifically, according to the actually occurring necessity. The efforts are directed towards the prompt solution of a problem that has occurred in a given process. The effect of the measures undertaken is short lasting and not sufficiently stable, because the improvement itself ends upon achievement of the objectives. In Table 2, a comparison between the approaches to macro and micro design of processes under different criteria is made.

Table 2

**Comparison between the approaches to macro and micro process design**

Criteria of differentiation	Typical macro process design	Situational macro process design	Micro process design
Focus of improvement	Overall improvement through organizational changes		Solving an actual problem
Designation	To secure achievement of the organization's objectives		Adjustment of deviations from the plan
Reasons of improvement	Initial design, re-design		Deviation from the objective
Approach	Deductive	Inductive	Ensuing from the problem
Methods used	TBP, portfolio-techniques	Situational, identification specific for the organization	Synthesis methods
Process identification	Established (TBP)	From customer's point of view	Problem specific
Research level	From a separate part to the entire organization (after assignment of tasks)		Field, unit, equipment, machine
Duration of improvement	Average to high		Low

**Conclusion.** The studied approaches and methods of processes design refer to the first phase of the overall design. The two main principles of process design possess their positive and negative characteristics. Macro process design is distinguished on the stability of the achieved improvement, since the entire organizational structure is changed. It is suitable for the design of new ones or re-design (improvement) of existing processes. The shortcomings are related to the high costs, relatively large volume of work and longer time for design. Micro design is directed towards solving problems leading to passing deviations from the objectives. The advantages of that principle are: relatively low costs, small volume of work, as well as shorter time needed for design. At the same time, the main flaw is the low stability level of the undertaken improvement measures. The knowledge of the methods and approaches of process analysis and identification is of vital significance upon starting the re-design and improvement processes. The achievement of stable parameters as a result of the undertaken measures shall increase the production efficiency and effectiveness. This, in turn, shall increase the competitiveness of the organization's activity.

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