
ASSESSMENT OF THE ECONOMIC EFFECTS OF REENGINEERING IN SMALL AND MEDIUM-SIZED COMPANIES

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Summary: As in any business, application reengineering quality primarily depends on the knowledge held by people who carried out activity reengineering, their skills and the ability to anticipate possible problems and devise steps. Evaluation of economic performance reengineering, particularly in small and medium-sized companies, is based on several well-known methodologies are widely used in practice. In this paper we will make an attempt to assess the effectiveness methodology improve to the extent that is reasonably used and applicable in daily practice. proposed methodology is particularly interesting in terms of small and medium-sized enterprises, which today form the basis of economic development of almost all national economic system.

Keywords: *economic effect, reengineering, SMS companies.*

1. Introduction

The design of SMS (small and medium-sized companies) enterprises by re-engineering must be comprehensive (systemic approach) and that there is an effective methodology that depends on specific companies. The specific needs of companies dictate the levels of its complexity, the degree of detail and implementation timetable reengineering in its implementation.

2. Assessment of economic effects of reengineering

Reengineering methodology in SMEs will be displayed in six main stages:

- 1) create a vision, planning and initiation of reengineering of these types of companies,
- 2) research and define the success of these enterprises,
- 3) production innovation process in these companies,
- 4) transformation of these companies under the new concept of using the basics of reengineering,
- 5) implementation of these processes reengineering companies,
- 6) monitoring and process control applications reengineering of these companies.

For the implementation of each stage in the methodology of application re-engineering is necessary preparation and application of reliable methodologies. Management of these companies has far-reaching reflect, openly and boldly, to challenge the traditional doctrine of the organization of enterprises and to create new applications in the spirit of reengineering. Only in this way will increase the productivity of a company directly will increase the income tax.

Reengineering methodology in SMEs should include a systematic approach that is based on that each organizational unit must be considered individually and that each of them to form a functional teams (Reengineering Team) which must be composed of people with appropriate levels of knowledge and the appropriate skills in the work.

1) Creating the vision, planning and initiating re-engineering in small and medium enterprises - It includes the following four objectives as follows:

- ❖ form a vision of the company (to create and communicate a vision),
- ❖ establish and run a re-engineering methodology,
- ❖ develop appropriate goals, measure performance and success of application reengineering,
- ❖ establish and communicate expectations by applying the results of reengineering.

The main processes of this phase of re-engineering are the following:

- ❖ creating a vision and goals of the change in the company that brings the application re-engineering processes,
- ❖ recognition capabilities of the production process of enterprises,
- ❖ building teams for implementation of reengineering (Reengineering Team),
- ❖ communication of the vision of the company and gain confidence in the market,
- ❖ creation infrastructure that process. providing support for top managers, who represent the highest part of the project management application reengineering,
- ❖ planning the project through to its dimensioning and through his financial needs.

2) Research and define the success of small and medium enterprises - Through this process should be formulated where small or medium company needs to be developed and where such way to arrive. Activities to identify these processes include:

- a) analyze the ability of small and medium enterprises and the competition circuit,

- b) identification of the external environment, ie. environment in which business is small or medium enterprise,
- c) assessment of needs, abilities and limitations in which business is small or medium enterprise,
- d) estimates that use of others' experiences. Knowledge of competitive enterprises in the production of the same product,
- e) assessing the level of risk the introduction of re-engineering processes in the organization of small and medium enterprises,
- f) determining the precise and convincing presentation of the vision of top management of this enterprise.

3) and 4.) Innovations in manufacturing processes of these enterprises by introducing projects that include re-engineering and transformation of these companies under the new concept of using the basics of reengineering - This process involves the following stages of introducing and re-engineering to:

- a) evaluation of business and organizational risk of certain production processes by introducing the re-engineering,
- b) the creation of the concept of the whole project with its methods and procedures using reengineering,
- c) determining priorities and the crucial link between the different manufacturing processes of a small or medium-sized enterprises,
- d) ensuring the effectiveness and cohesion of the team for reengineering.

5) and 6) The implementation of these processes re-engineering and enterprise monitoring and process control applications reengineering – Basic operations reengineering in these phases are reflected in recognizing the opportunities of small and medium enterprise market, the formation and training of teams for the reengineering and creating infrastructure for reengineering.

Identifying opportunities ie. opportunities for market success – This includes the need to identify all the tasks that make up the core processes of a small or medium size company and shape them so that they become feasible to implement re-engineering. In this process should be implemented:

1. prioritize the introduction of re-engineering (this refers to the beginning start re-engineering of the company and prior to forming a team for the reengineering, because it significantly and directly affect the planning staff),
2. process re-engineering also does not need to apply too much process,

3. make use of selection criteria that include: the levels of business risks, advantages over the competition, resources, assessment of failure, time duration application process reengineering, etc.),
4. necessary continuous and developing knowledge and continuous learning for all participants in the process re-engineering applications (these are the skills, competencies and responsibility team for reengineering).

The formation and training teams for reengineering – Reengineering teams are formed depending on the size of the company, the team members must be carefully selected and tested business. They are expected to have all of its energy business focus on the success of reengineering projects and be able to be continually refined and beginning to undergo intensive training in the field of innovation implementation process reengineering.

Communicating the company vision and dedication to work – This section applies to all those who are directly or indirectly involved in project implementation in the production process re-engineering companies. These actors must keep their expectations, that not spread rumors or give inaccurate information as to eliminate his concern that may arise on the introduction of reengineering the company.

Creation of infrastructure – This refers to the development and implementation:

1. standards and procedures for project management related to reengineering,
2. reporting on the status of the project related to reengineering,
3. integration methods that are related to quality assurance procedures in the application reengineering.

3. Holders of economic effects reengineering process

The subject of the research carrier of the economic effects of reengineering should relate primarily to the manner of conducting the reengineering in small and medium enterprises, and include the following costs and savings to:

1. Economic parameters generated by completing and documenting a detailed re-engineering project that includes: a new organizational model in the company as well as the characters in the role of new jobs in the new organization; / parameter, $NEE_{NO} = NEE_{NP}$, NEE_{NO} - the holder of the economic effect of the parameter related to the new organizational model, and it depends solely on the NEE_{NP} - the holder of the economic effect of the parameter related to the character of the new jobs in the new organization of small and medium enterprises application reengineering.

2. Economic parameters that arise in the implementation of the system support the new organization of small and medium enterprises; / parameter NEE_{SP} - parameter holder of the economic effects related to the implementation system support.
3. Economic parameters that arise implementing "pilot solutions" to the system support the new organization of small and medium enterprise companies using reengineering testing on a small scale of production; / parameter NEE_{PR} - parameter holder economic effects related to the implementation of "pilot solutions."
4. Economic parameters which are general and apply to its employees on the planned changes and implementation of reengineering plan for the implementation of each phase; / parameter NEE_{PP} - parameter holder economic effects related to the invested time needed to implement the planned changes and implementation of reengineering plan for the implementation in stages in the company.
5. Economic parameters which are general and apply to the training of personnel for the new process and new systems of work with the planned changes and implementation of reengineering plan for the implementation of each phase; / parameter NEE_{NSR} - parameter holder economic effects related to the costs incurred in training employees on new system of work. In this way the total cost: (1) $\sum_{i=1}^5 UKN_{pred.troskovi}$ incurred and are defined as carriers of economic parameters in the implementation of reengineering can be expressed by summing up all the listed parameters:

6.

$$(1) \sum_{i=1}^5 UKN_{pred.troskovi} = (NEE_{NO} = NEE_{NP}) + NEE_{NP} + NEE_{SP} + NEE_{PR} + NEE_{PP} + NEE_{NSR}$$

4. Cost analysis of the parameters

In addition to the basic cost of application re-engineering in small and medium enterprises, it is necessary to analyze the parameters and costs resulting from the implementation of business process reengineering activities and personnel that revitalization. adaptation of organizational structures in terms of ownership restructuring that includes four auxiliary hypotheses as follows:

1. **The economic parameters of the financial recovery of a small or medium enterprises NEE_{FS} , the introduction of reengineering,**

which includes the introduction of integrated logical system in a small or medium size company - The process of procurement, manufacturing and physical distribution are essential elements of integrated logical system a small or medium enterprises. Logically integrated system includes a logical domain in which the manifest activity and impact of integrated system that is logical limits on the totality of logical functions.

The logical system of small and medium enterprise re-engineering techniques can be applied to the whole logic of the system or some of its selected processes.

Reengineering the logical systems of small or medium-sized enterprises is based on a system analysis that encourages interaction between the logical structure of systems and internal and external integration processes.

The initial framework for implementing the procedures are logical systems reengineering:

PHASE I: Determine the initial values of the logical performance

$NEE_{FSI\text{PHASE}}$

PHASE II: Measuring the performance of logical systems $NEE_{FSII\text{PHASE}}$.

The first stage involves determining the initial value of logistics performance. It analyzes the results compared to the values within a small or medium-sized enterprises (internal analysis) and by comparing them with the reengineering results successful competitive companies. The first form involves the use of logical data obtained on the basis of activities and publications of researchers and consultants (these are costs that occur during their engagement). Another form involves companies belonging to the associations and organizations (costs incurred paying membership in these organizations) that mediate between the cooperative members in the exchange of data used for the purpose of reengineering. The third form of the initiative includes companies that do the necessary data comes in contact with companies with which they are not in a direct competitive relationship (the cost of arrivals, departures and receiving delegation of companies).

The second phase includes the performance of the logistics enterprise system that includes a rough picture of the quality of the logistics system in the company as follows:

1. Inventory management strategy,
2. Responsiveness to customer needs
3. Number of adverse events.

The level of inventories indicates the efficiency of the logistics system and its ability to respond to the needs of the costs that should weigh

a minimum (the cost of causing unnecessary stocks of spare parts, materials, semi-finished products).

Response times indicates an intention and ability of small and medium enterprises to meet market demand (a decrease in profit due to the untimely production ie. Placing sufficient quantities of products on the market).

The number of adverse events in a logical system (failures of technical systems, poor quality products, damage to the goods - products during handling and transport activities that are unnecessarily repeated) cause additional costs and also based on them are made from quality management policy, ie. evaluating the overall position on the quality of logical support.

Directly monitoring the effectiveness of logical systems before, during and after implementation of design solutions reengineering is done by introducing a system for continuous measurement and monitoring of logistics performance. On the basis of it can be followed:

1. Delivery time on order (which is less time and less cost),
2. Delivery time on products (which is less time and less cost),
3. Time of delivery per customer (which is less time and less cost),
4. During the registration order (which was a faster time to prepare for delivery, so the lower the costs),
5. Mean time between failures in the operation of technical systems (which is a long time productivity is higher and costs are reduced),
6. All other costs of the company (of them will be discussed later in this chapter).

2. Economic parameters that ensure the functioning of the enterprise for the implementation of reengineering NEE_{KP} - To provide entrepreneurship necessary is that there are responsible carriers or entities that move, carried out in implementing the results of reengineering.

Although there are some disparities in the division, they may find appropriate matches. These similarities arise core group of holders and process reengineering to:

1. **Business Board of Executive Directors or higher** (Steering Committee) or Board of Directors,
2. **Reengineering team** (working or process reengineering teams),
3. **Leader process** (transformational leaders).

Economic parameters that ensure the functioning of the enterprise to implement reengineering influence on the income of small and medium enterprises in terms of providing basic salary carrier group process reengineering.

3. The economic parameters that ensure the functioning of all the structures of processes and quality systems in small and medium-sized enterprises by introducing reengineering - Each team manager for the implementation of reengineering in SMEs must actively participate in managing the process re-engineering: a quality system in company, production system, system maintenance, system organization and management companies and others. In order to have success it is necessary to constantly monitor and improve the quality system in a company that includes a number of subsystems that have their own economic parameters and actively participate in the formation of prices of products such as:

1. Economic parameters resulting from the formation of the internal metrology with a network of accredited laboratories NEE_{IM} ,
2. Economic parameters resulting from the formation of internal standardization NEE_{IS} ,
3. Economic parameters resulting from the formation of the system reliability of technical systems and energy facilities and infrastructure (technology implementation and maintenance) NEE_{TO} ,
4. Economic parameters resulting from the formation of the system design NEE_D ,
5. Economic parameters resulting system of deposit formation, destruction and recycling of products obtained poor NEE_{DUR} ,
6. Economic parameters resulting from the establishment of quality systems support after sale NEE_{PPP} ,
7. Economic parameters resulting from the establishment of quality systems support after sale NEE_{DI} .

The above overall economic setting that provides the processes of functioning of all structures and quality systems in small and medium enterprises by introducing re-engineering can be expressed:

$$(3) NEE_{SK} = NEE_{IM} + NEE_{IS} + NEE_{TO} + NEE_D + NEE_{DUR} + NEE_{PPP} + NEE_{DI}.$$

3. Economic parameters that provide the competitive prices of products on the market NEE_C generated in the production environment using the reengineering - They include objectives and measures of financial prospects of companies. In Table 1. will be made to display them.

In Table 1. can be presented which may lead to economic parameters that provide the competitive prices of products on the market NEE_C generated in the production environment using the re-engineering (Figure 1).

Table 1. The objectives and measures of financial companies perspective

PERSPECTIVE	OBJECTIVES	STANDARDS
Consumers in company	New Products	Percentage of sales of new products NEE_{CP_1}
	Peripheral suppliers	Participation in procurement of key customer
	Responsible supply customers	Timely delivery of products NEE_{CP_2}
	Partnership with customers	Number of joint projects with customers
Internal processes in the enterprise	Production perfection	Cycle time - The unit costs NEE_{CP_3}
	Design productivity	-
	The introduction of new products	Actual and planned course of introducing new products NEE_{CP_4}
	Technological leadership	During the development of a new generation NEE_{CP_5}
Innovation and learning in the enterprise	Production learning	Time of the capture of the production process NEE_{CP_6}
	Production focus that provides 80% of sales	The percentage of products
	Time is now introducing a new product	According to the time of competition
Finance Company	Survival	Cash limit
	Success	Quarterly sales (quarterly net profit) NEE_{CP_7}
	Development	Market Share

Conclusion

During the execution process reengineering, particularly in small and medium-sized enterprises, in which the process is specific, it is necessary to bear in mind that as far as possible meet the specifics of their own chosen methodology in order to achieve the objectives of small and medium-sized enterprises. These goals are measurable and relate to:

- Increased productivity
- Optimization of value (for owners)
- The achievement of a sudden - abrupt results

Consolidation of business functions eliminate unnecessary levels and jobs. It is important to note also that small and medium-sized enterprises that have a chance to respond to the challenges of the environment by applying the chosen methodology of reengineering business processes, they must have appropriate, specific characteristics, some of them are:

- Operating in an environment that is rapidly changing (changing environment)

- Balance of long- and short-term goals of the organization,
- Quick response to the introduction of new technologies, shims and innovation,
- The organizational structure is seen as a process and a means to improve business success.

In applying reengineering, should always bear in mind that it is necessary, can even be said that the critical moment the organizational culture of companies, which in itself cumulated responsibility for increasing effects.

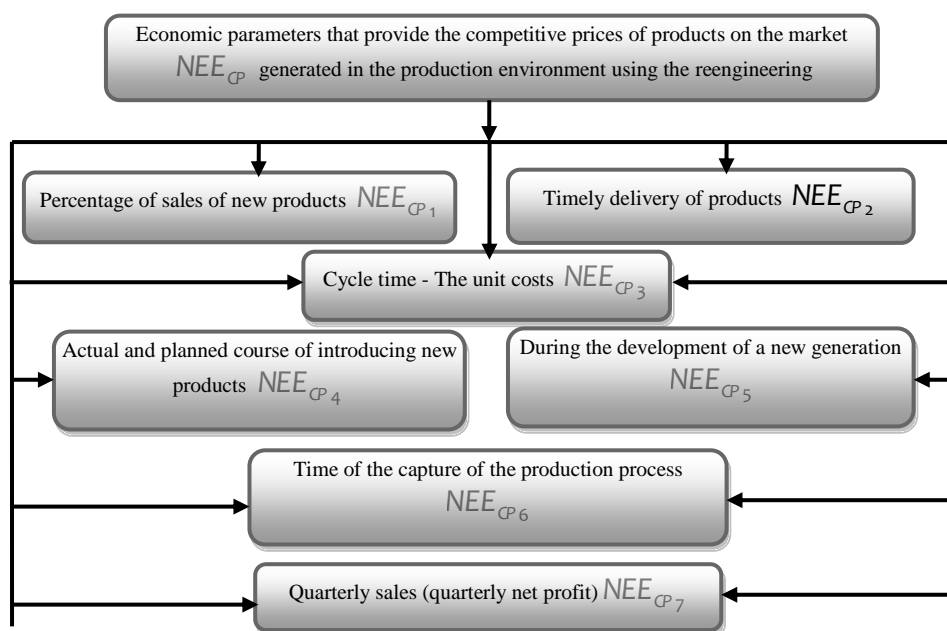


Fig. 1. Economic parameters that provide the competitive prices of products on the market resulting in a production environment using the re-engineering.

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