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# Reengineering as an Efficient Solution to Redesign Activities and Processes of an Enterprise

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**Key words:** *business reengineering process, reengineering enterprise, models and methods for reengineering project*

## **Abstract:**

*The paper shows a series of opportunities linked to the technological, human and economical reengineering of activities and technological processes developed in a modern enterprise, adding new dimensions in the efficient development, on the market principles, in argument with the desiderate of the durable development of the society. Starting with these considerations we designed aspects linked to: business reengineering implementation, stages of this process, accentuating the management methods, delimitation on areas of activity of the effects on reengineering action.*

## **1 Introduction**

The globalisation of the economy, the accelerated the dynamism of the contemporary world, the passing from an informational society, the increase of the role of the human factor, had as follow up the appearance of some new branches in the area of science, unknown till nowadays, which progress thanks to the attracting of accomplishments from different areas of the contemporary science, especially in the domains of: mathematics, information technology, sociology, psychology, ethics.

A new direction in the contemporary management, studied in the strategically management area is known under the name of reengineering, representing a solution to encompass the difficulties and to the growth of the efficiency of enterprises activities.

The reengineering is included in the arsenal of the top companies in the world, thing that is demonstrated by the statistic data of American company “Ernst and Young”, that has done research in this area. The most important banks from North America, lately, have allocated 3 billion dollars to implement the reengineering in their branches and subdivisions, between 2004-2005. The USA government has conceived more than 200 reengineering projects [2].

The reengineering is quick a large and complex notion. Presently, in the scientific literature, there is a quite a large number of definitions of the reengineering.

Our attention is focused on [1] which defines this concept in this way: “... a complex of measures done by an organisation to transform its internal processes and the control system from a vertical (hierarchical) structure traditional one, to a horizontal structure, interfunctional, built on the basis of the project teams and which has as its purpose to satisfy the customers’ demands.”

At the same time, a series of researches prefer the term *business reengineering*, while other researchers are willing to discuss about this phenomenon only strictly connect to *business-processes*, that is, they use the term *Business Process Reengineering* (BPR).

## 2 Models and methods of management used for the reengineering project

The enterprise reengineering describes a new conceptual model for the business activity, which is enabled with a unit of informational techniques and technologies, which the directors and the managers will have to use in order to redesign the processes and the activities to face the competition on a dynamic market.

To do that thing, the managers must give up to the old notion of how business must be organised and run. They must give up the principles and the operational and organisational principles and procedures that they use currently, and create new ones.

The traditional organisation's approach identifies within itself five interconnected variables: the *targets*, the *structure*, the *tasks*, the *technology* and *human resources*. More, a reengineering project will introduce the sixth element for the model of endogenous variable: the organisational culture.

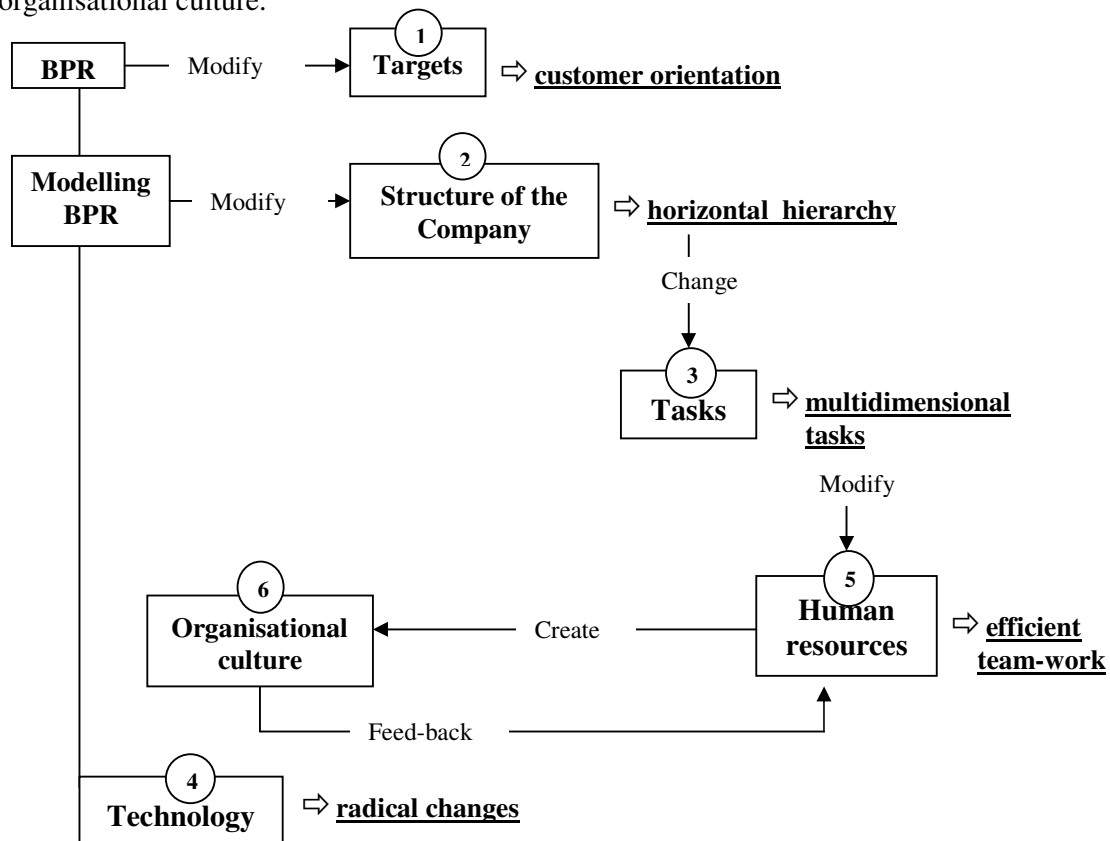


Figure 1 – Chain changes for the processes and the activities produced by the endogenous variables

As we have shown in the Figure 1, the produce chain changes for the processes and the activities undergoing in the enterprise's organisational structure:

- Business Process Reengineering modifies the main endogenous variable, more precisely - the targets, orienting them towards the customer;
- the Business Process modelling modifies the structure of the company, transforming it from hierarchical into horizontal;
- on its turn, the flat structures changes the organisation's tasks and, in this way, the evolution of tasks is being produced from narrow – specialised ones to the multidimensional one;

- the team-work personnel more efficient due to the own organisational culture, here we can clearly see a feedback, because the collaboration and the team interaction create a certain organisational culture. At the same time, an organisational culture, well-defined, favours the efficient functioning of processes and activities;
- the technology ensures the implement of the radical changes from the enterprise. The continuous development of this endogenous variable crates the premise of the accomplishment of future transformations.

On the basis of the conceptual aspects of the reengineering, exposed in the first part of the paper, we analyse a set of methods and models of management necessary to implement a reengineering project. This step has as its basis a vast study which dealt with the problems with which the Romanian enterprises are being confronted: the majority of the enterprises are not ready for radical changes, a great part of the staff doesn't like the team work, the tendency of the leading personnel to concentrate the efforts on different positions.

The study tracked a number of 18 enterprises having objects of activity and different area of action, grouped in 3 categories, depending on the turnover's level.

Table 1 presents, systematically, the management's models and methods recommended in the accomplishing of the reengineering projects.

**Table 1**

Management Method or Model	Description
Decision Tree	It determines the prime purpose of actions, chosen from the all possible variances
Analysis upon Pareto principle	It considers the relation 80:20, that is, in the activity process with the first 20% from the time and the resources consumed, they are accomplished 80% from the results quantum.
Gantt's Graphic	It shows the critical line of the project, expressed through the succession of actions, which determines its duration.
Payment Matrix	It chooses the most advantageous variance in the case of multiple ways of alternatives accomplishments.
Method of chained substitutions	It calculates the influences of certain factors upon the turnover through the successive substitution of the effective value of the analysed factor by maintaining the others on the previous level.
The efficient team's profile	It determines the most creative component of the team through the attributive criteria joining, as well as of the team members' number.
Five competition forces	Model of competition pressure on which concerns the five forces: - The rivalry between the sellers from the same branch; - The market flooding with substituent - merchandise; - The appearance of the possible competition in the same branch; - The imposition of own conditions by the raw materials suppliers; - The buyers' capacity to exercise competition pressure upon the seller.
Cause – effect analyses	The problem's causes identification through the factors chaining
Values chain	Method to create competition priority through the optimisation and co-ordination of exogenous relations.
Outsourcing	The reduction of personnel processes' costs, increasing, at the same time, its value, through the transferring of some subdivisions or internal sections of the enterprise, and of all afferent assets in the organisation of a service provider, who proposes to carry out a certain service in a certain amount of time on a recommended price.
Couching	The evaluation of the personnel quality that contributes to the efficient forming of the teams and to the development through self-instruction.

Applying the methods and management model being to accomplish reengineering projects are being done in reciprocal correlation by applying the situational approach and keeping in mind the characteristics that built in every enterprise.

Depending on the specificity of the analysed enterprise to implement a reengineering project, viable solutions will be obtained, which can determine correct decisions to face, successfully, the competition struggle, the changes dynamism and the economy globalisation.

In this way the reengineering objective is attained, organisational as efficient solution to redesign the activities and processes of an enterprise.

Further, we present in Table2, the conclusions of using three of the methods present in Table1, to three different enterprises, subjected to the reengineering process. The Table2 provides informations relevant to the results obtained after applying the management's methods and models, showing the activities or the processes which can be transformed by the reengineering project.

**Table 2**

<b>Firm</b>	<b>Management Method</b>	<b>Results: activities and/or processes transformed</b>	<b>Decisions</b>
<b>SC Alfa</b> - commercializes building materials	<b>Decisional Tree</b>	<ul style="list-style-type: none"> <li>▪ the modification of the selling system;</li> <li>▪ increasing the markets;</li> <li>▪ the modification of the execution times of services: the reduction of delivery periods, paper concluding time, etc</li> </ul>	<ul style="list-style-type: none"> <li>▪ rehash the types of the commercialized merchandise;</li> <li>▪ reviewing some contracts with the merchandise suppliers;</li> <li>▪ automatization of the accounting system;</li> <li>▪ participation in commercial exhibitions and fairs.</li> </ul>
<b>SC Beta</b> – ready-made clothes and textiles production	<b>Paretto's Diagram</b>	<ul style="list-style-type: none"> <li>▪ the modification of the technological process to reduce the rejects to the minimum;</li> <li>▪ the improvement of the qualitative parameters;</li> <li>▪ the modifications in the productive personnel configuration;</li> </ul>	<ul style="list-style-type: none"> <li>▪ modernization of the technological process;</li> <li>▪ superior instruction of the workers;</li> <li>▪ detailed checking of the technological flux.</li> </ul>
<b>SC Gamma</b> – executes building work and assembly	<b>The five Competitional Forces</b>	<ul style="list-style-type: none"> <li>▪ the maintaining under control of the rate: quality/price;</li> <li>▪ the modification of the customer structure extension on the external market.</li> </ul>	<ul style="list-style-type: none"> <li>▪ the broadening of the assortment of provided services;</li> <li>▪ the execution on services on types of clients (reliable, less reliable).</li> </ul>

Not even a firm can submit all its processes to reengineering, on a high level and simultaneously. Once the management has identified the processes and the activities subject to the reengineering, through specific ways, these are being represented on a process map. The next step is represented by the decision upon those which require reengineering and the order in which these must be approached. Generally, the firms use three criteria which should help them in the foundation of the reengineering decision:

- The disfunctionality criteria: *Which processes are in the most difficulty?*
- The importance criteria: *Which processes have the greatest impact upon the firm's clients?*
- The feasibility criteria: *Which of the enterprise's project are ready for a successful redesign?*

### **3 Information Technologies – basis of the reengineering**

Without the basic changes in the work practice brought by the concept of the enterprise's redesign, the investments will have a relatively small impact. The reengineering means the fundamental rethinking and radical re-projection of business processes, to obtain spectacular improvements of the indexes, today being considered critical in the performances evaluation, such as the cost, the quality, the service and the speed.

The new organisations will be completely different from the present ones, and the way in which they'll buy, produce, sell and deliver products and services will be influenced by the use of informational and communicational technologies. An enterprise which cannot assimilate the new technologies of the processes and activities done on the inside, cannot pass to reengineering.

For instance, the most significant informational technology from enterprise, from the last decade, it's the ERP System (Enterprise Resources Planning), an integrated software which can analyse complete processes or distinctive activities business applied. Depending on the reengineering project stages and on purpose, a wide range of informational technologies can be used [see Table3].

**Table3**

Reengineering Stages	Objectives of the Reengineering Stages	Recommended Informational Technologies
1. Identification of the problems	-diagnosis of problems through the statistics analysis method of the data bases; -reflection upon the enterprise's economical - financial situation.	Oracle E-Business Suite, Enterprise Resource Planning, Executive Support Systems, Customer Relationship Management, Total Quality Management
2. Reverse Reengineering	- studying the processes and the activities that function in an enterprise	Functional-oriented modelling methods: ARIS Toolset, Business Engineer (SAP), Dynamic Enterprise Modeler (BAAN).
3. Direct Reengineering	-making the models of modern organisation of processes and activities	Business Process Outsourcing, Extended +BPR, BPSimulator, ProcessModel
4. Accomplishing the reengineering project	-establishing the processes and/or the activities which need to be redesigned according to the criteria of disfunctionality, importance and feasibility; -establishing the order of modification.	CASE, RAD, Oracle Designer, ARENA (Process Analyser), Supply Chain Builder, Planning Workbench, programming languages: Visual C++, SIMAN, Visual Basic, LISP, etc.
5. Project Implementation	-stage-project implementation of the project depending on the priorities established; -analysis of accomplishing the pre-established criteria.	Instrumental modalities for monitoring: FileNet systems (for e-documents, imagines and workflow), Performance Process Management

To apply the informal technologies in reengineering requires inductive thinking, that is, the manager's ability to realise, firstly, that there is a solution which a radical impact and then, to look for the problems which could be solved. The real power of the technology isn't given by the fact that it can make the old processes work better, but by the fact that, it allows the enterprise to surpass the old rules and create new working ways – that is passing to reengineering.

## 4 Conclusions

The necessity of the reengineering is conditioned by the advanced dynamism of the contemporary world, by the endless and essential modification done in the exterior and interior environment belonging to enterprises.

As a title conclusion detached from the ideas expressed in this paper, we consider the reengineering be an efficient solution of redesigned the enterprise's processes and activities. This solution is adopted not only by the prosperous companies but by all the enterprises that want to maintain their competitively. After the reengineering implementation, the enterprise becomes the object of permanent transformations, there are essential differences between reengineering and improvement, in this way we have in Table 4:

**Table 4**

Parameters	Reengineering	Improvement
▪ Degree of changes	Radical	Increased
▪ Frequency of changes	Once	Continuously or once
▪ Necessary term of Accomplishment	Long Time	Short Time

▪ Direction	Up/Down	Down/Up
▪ Amplitude	Vast, inter-functional	Narrow, function level
▪ Risk	Big	Moderate
▪ Main Method	Information Technologies	Strategic Management
▪ Type of change	Cultural and Structural	Cultural

The research done by the authors delimitates the reengineering as an original type of management, which demands new intellectual resources, but financial too, and it imposes the use of information technologies to create new organisational structures and the conduct of modern methods of administration.

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