

CURRENT CONTEXT OF PRODUCTION MANAGEMENT IN PRINTING INDUSTRY WITHIN ROMANIAN ORGANIZATIONS

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ABSTRACT

The main objective of the present paper is to highlight the importance and impact of the concept of reengineering, both by identifying certain opportunities to improve the performance of Romanian printing companies and some strategies of total redesign of the production process based on highlighting some of their effective combinations as well as the integration of some proper information technologies. Research methodology included techniques and research tools, such as analysis, comparison, application software, case study as well as selective market research methods. In order to identify opportunities for applying the concept of reengineering in the Romania printing organizations, all three types of research were used: exploratory, descriptive and causal.

KEYWORDS: *re-engineering, process management, production process, printing industry, integrated system.*

JEL CLASSIFICATION: *M110*

1. INTRODUCTION

First of all, this study will focus on achieving results that are based on identifying some specific problems that companies have faced at a certain point and on concrete problem solving solutions. Second, there should be emphasized that reengineering works in almost any situation related to a big or small company or the production area or NGOs. Well-defined processes are regarded as the key for any organization that intends to adjust to the current business environment which is governed by an increasingly strong competition.

Specific objectives:

- setting a new approach to the role of managers within the business and the tools required to implement the methodology specific to the concept of reengineering in their work;
- setting multiple development directions of fundamental research stages of the reengineering concept by using modern methods of investigations and applying state-of-the art methods, techniques and procedures;
- presenting concrete methods as a result of a thorough knowledge of the printing process and making suggestions for rational organization and efficient running of organizations in this particular sector;
- presenting the specific characteristics of Romanian printing market and identifying opportunities to increase the performance of organizations in this sector;

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- identifying based on a selective market research the current state of the printing industry and making concrete suggestions to increase the competitiveness of organizations in the printing industry.

Exploratory research was used to identify the specificity of Romanian printing organizations. Thus we determined the methods used by managers of the analysed printing organizations can adapt organizational components in order to increase performance.

Due to the causal research we could identify the cause-effect relationships between the independent variables associated with quality and diversity increase of products and dependent variables associated with organizational performance increase. In order to highlight the evolutionary aspects within this field, we considered necessary to tackle the role that organizations play in the economy (Davenport & Stoddard, 1994).

2. CURRENT CONTEXT OF PRODUCTION MANAGEMENT IN PRINTING INDUSTRY WITHIN ROMANIAN ORGANIZATIONS

Choice of research topic derives from the motivation to extend the limits imposed in the printing industry through elements, concepts and management models that can contribute positively to organizational development and evolution of a business in this field. The present paper aims at bringing forth a brief presentation of tendencies that have been displayed over the years in the printing industry, the evolution of management concepts and methods used in this rather restricted field and last but not least the approach to a mathematical model for implementation of reengineering solutions for production process in the printing house through a thorough analysis of the particular strategy. The topic of this research paper shows that it has a widespread applicability in the integrated system field of process re-engineering in printing organizations. The novelty of the research topic can be demonstrated both by widening the knowledge base in dealing with the approach to organization re-engineering in the printing industry and by adapting the scientific research to the demands of new technologies of information and communication in printing-related specific activities.

Currently, the interdisciplinary character of management research is amplified by the following tendencies:

- practical application in a systemic and interdisciplinary view of the basic principles of management research;
- defining management at microeconomic and micro-social level as a social and human science, which aims at expanding and enhancing research in this area in terms of cultural, managerial, social and economic organization tradition values;
- defining the scientific approach system to management organization, emphasizing at the same time the general theory of management;
- need to involve the scientific creation in learning the factors of real impact upon the concrete management actions;
- dynamic developing of managerial field by expanding its factual base.

The applied scientific research in re-engineering is required by the current market economy. Applied economic research should be conducted continuously to be applied in practice and to determine the successful implementation of the re-engineering process models within organizations in the printing industry (Hammer, 1990).

Applied economic research on re-engineering can be achieved and applied so that the strict specialization of each component ensures an accurate long-term coverage of all fields of interest for the management of successful companies. Currently the research in this field is based on management functions of the micro- and macro-processes (Kern & Schumann, 1984). The macro-process management functions are the following: identifying the process, structuring the process

(e.g. in a process map) and defining the process' manager whereas the micro-process management functions are the description and control of individual processes.

The current research level in the field reveals a number of factors such as:

- design, implementation and continuous improvement of the quality management system within the organization;
- the necessity to make employees aware on the importance and need for applying the company's policy on quality;
- continuous improvement of products, technologies and processes within the organization to meet the customer's requirements at reasonable manufacturing costs;
- use of state-of-the-art methods and equipment required by the monitoring, measurement and inspection process within the quality management system;
- ensuring priority for preventive actions as opposed to corrective ones within activities that aim at providing the quality of products and processes;
- avoidance of non-compliance cases caused by manpower misconduct in promoting through manufacturing only comprehensive training products;
- promoting a pro-quality strategy within the organization as well as in its relationships with suppliers, customers and third parties, that ensures continuous and sustainable development.

3. THE SWOT ANALYSIS OF THE ROMANIAN PRINTING INDUSTRY

For an organization, the S.W.O.T analysis is one of the most used methods applied to identify the needs (Manganelli, 1993), based on two dimensions:

a) **the internal environment** – essential in the choosing and implementing of a development strategy – by identifying the strong and weak points, referring to the human, financial and material resources, the motivation of the staff, the expertise; the staff's experience.

b) **the external environment**, by identifying the opportunities and the threats regarding: the relationships with the local administration and other institutions in the area or community; the economical conditions; the financial resources; the risk factors existing in the community which can affect the activity of the organization.

On the other hand, the strengths and opportunities represent the strategic advantages/resources that support the organization, while the weaknesses (the needs that have to be met by overcoming/removing as much as possible the threats by using the opportunities and strengths) and threats – the strategic disadvantages/targets that can create risks or drawbacks in the functioning of the organization and which need to be eliminated or avoided in the actions taken by the organization by adopting some protection measures (Gherguț, 2007). Some opportunities and threats come from the strengths and weaknesses, but, most of the times, they results from an analysis of the external environment. Mostly, defining the strategic objectives depends on the correctness of the SWOT analysis (table 1).

Table 1. The SWOT analysis of the Romanian printing industry during the 2007 – 2011 period

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • The existence of agencies, consultancy companies or commercial centers private or under the control of the Industry and Resources Ministry, having specialized services for informing, analysis, consultancy and drawing the regional studies, useful examples for the organizations in the field to implement this information into their own system and to adapt 	<ul style="list-style-type: none"> • The dependence of the employed staff, who requires a superior qualified training; • A reduced number of employees corresponding from the point of view of the knowledge necessary for the job; • Difficulty in attracting qualified work force; • High costs of the working force; • The migration of the qualified work force to

<p>their management strategies ;</p> <ul style="list-style-type: none"> • The tradition of the printing industry in Romania; • The outburst of the number of organizations that activate in the printing industry; • The recognition of the effects that the management of the production activity had as the central element in increasing the economical and financial performances ; • Manifesting a real interest for research – development in the field; • Increasing the budgets allotted to the management of the production activity; • Increasing the quality of the products and of the services, determined by the continuous demand from the clients; • Developing the printing industry with beneficial effects for the consumer regarding the diversity of the products and services, reducing the execution time, the quality and the availability ; • Going from producing what can be done to what is demanded, from quantity to quality; • Going from the production in stockpiling to making products and services on order; • Using superior raw materials accepted on the external market, using special inks; • Orienting the production toward the production using non-polluting materials; • The geographic location of the organizations and their specializing depending on the needs of the customers in the area; • The increase of the demand in advertising due to the development of supermarket chains; • The increase of the interest manifested for fairs and national and international exhibitions; • The annual organization of some fairs and internal exhibitions dedicated to this industry (Print Show, Print Show&Flexo Show, Advertising Show, Print Transylvania); • The introduction of new production lines, much more efficient, both from the productivity point of view, as well as from the environment protection one ; • Low conflict rate compared to the average number of employees in the industry; • The materialization in annual plans of the proposed strategic objectives; • The specialization and orientation of the 	<p>other countries;</p> <ul style="list-style-type: none"> • The lack of investments in qualified training of the employees; • The lack of superior or high school institutions dedicated to specializing the employees needed in this field; • The reduced number of specialists in the field in management strategies; • Not understanding the importance of the management of the production activity; • Management strategies that are applied at random, without there being a rule or habit; • Relatively limited budgets allotted to management; • The decrease of the budgets allotted to the production activity in difficult periods; • The lack of research regarding the management of the production activity, at the organization level; • Reticence in collaborating with organization specialized in consultancy; • The major preoccupation of the management in many companies to increase profit immediately, to increase the quantity of the production and lastly to make a quality product, demanded on the market which should satisfy the consumer; • Low level of investments; • The conservation, in most cases, of the technological capacities, as a result of not adapting to the variety of the products and to the qualities of the similar imported products from the competition; • Shortage of raw materials and the dependence on imports; • Not being competitive in exports; • The orientation only to the internal market without finding strategies oriented to the neighboring countries; • Financial blockage which prevents a good progress of the contracts with the business partners; • Flawed management related to the production activity and to the marketing; • The substantial decrease in production in the main groups of products and services; • A high production cost level due to the use of old used equipment; • Not checking old debts due to the
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<p>organizations only to certain specific market segments which allow them to obtain excellent competence and specialization ;</p> <ul style="list-style-type: none"> • The existence of employers' associations and professional associations meant to support, promote and develop this industry (The Association of the Typographers in Transylvania, the Employers' Association for the Printing Industry in Romania, the Employers' Association of the Local Editors APEL, The Association of the Literary Print and Publishing houses in Romania, the Employers' Association of the Printing Shops in Romania, the Employers' Association of the Press in Romania, the Association of the Romanian Journalists), 	<p>insolvency of some clients;</p> <ul style="list-style-type: none"> • The inappropriate state of the production warehouses and of the storage rooms; • Reduced capacity of self financing; • Contracting non-performing credits and leasing contracts in crisis periods; • Not using of European structural funds; • Difficult access to credits, high costs of financing, high level of interests; • Frequent law changes; • A reduced number of Employers' Associations and professional associations dedicated exclusively to the printing industry.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • the increase in the number of universities that have introduced specializations and MA's focused on management strategies ; • The use of vast market research methods; • The revitalization of the processing industries that need prints, packaging and labels; • The collaboration with the companies from the processing industry, experimenting short term activities with reduced investments; • The increase in the demand for flexible printing as a result of the development of the food industry and its adopting the EU imposed standards; • Offering supplementary services that might increase the value of the print products (consultancy, models, drop-mail); • The MINIMIS program initiated by the Romanian Government; • Certain changes in the tax and levies system; • The use of duty-free for certain equipment; • Facilities for the organizations that hire young graduates; • Competitive salaries to attract in the company the best specialists; • Some barriers to enter the market have been lifted due to the high costs for investments and work force; • Creating associations with the companies from the food industry in order to reduce season contracts; • The possibility to collaborate with EU countries as a result of Romania's integration; 	<ul style="list-style-type: none"> • The lack of an effective management of the production activity will upset the good functioning of the organization, endangering its very existence; • Not understanding by the companies in the field that without having a viable product, requested on the market, there cannot be obtained important results; • The managers' reticence towards studies and market research; • The dynamics of the market which imposes a constant adaptation of the product and services to the market; • The inexistence of strategies for critical situations; • The tendency to reduce the expenses allotted to the management of the production activity when the financial results are not the ones expected by the managers; • The decrease in demand on the internal market; • The temporary activities of the companies in this field; • The precarious state of the machine building industry, that cannot supply viable machines for a quality - price ratio accessible to the processing organizations in the printing industry; • The environment pollution; • The drastic cut down of the execution time in order based products;

<ul style="list-style-type: none"> • The possibility to enter new markets from outside the country; • Working with famous specialists from abroad to implement the effective management in the printing business; • Implementing the color management system; • Introducing standards specific to this industry ISO 9001, ISO 14001, ISO 12647, ISO 13656, ISO 12641; • Increasing the number of Employers' Associations and of the professional associations with the role in supporting and developing this industry; • Accessing EU grants for the development and new technology in this industry. 	<ul style="list-style-type: none"> • Not meeting the deadlines and parameters specific to the order based products and services; • The cut down on the publicity budget; • The insolvency of some partner companies that determine great unbalance in the organizations; • Not adapting the management to the business environment in continuous change; • A dramatic development of the Internet and the shift from the written press to the on-line one; • The increase of the competition due to the entrance on the internal market of the multinational trusts; • The poor organization of the market; • The lack of information; • The lack of a marketing department; • The economical crisis; • Neglecting the export.
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Initially, the present paper refers to the first part of the SWOT analysis - the internal environment, identifying the strengths and weaknesses by using some criteria carefully selected from the perspective of the economical growth. The analyzed period 2006 - 2011 has been chosen taking into account the fact that the year 2006 was marked by a remarkable development of the companies in the Romanian printing industry. During this period there has increased considerably the demand for printed products with a decisive influence on the economical results for the companies in the printing industry. The model that we use proposes, having in view the target of the project, a dynamic SWOT analysis, based on the following criteria:

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|--|-------------------------------------|
| 1. the structure of the added value | [VA _i /VA] |
| 2. productivity | [VA _i /NS _i] |
| 3. the gross exploitation glut | [EBE/CA] |
| 4. general profit | [Rb/CA] |
| 5. the export structure | [Ex _i /Ex] |
| 6. the coverage degree of imports by exports | [GA] |

In choosing the 6 criteria there had been had in view: the contribution of these sectors to the added value and to the exports (criteria 1, 5), the internal economical efficiency (criteria 2, 3 and 4), the external economical efficiency (criterion 6).

In this paper we use information related to some diagnosis-variables of the companies' situation and these are: variables that evaluate the contribution of this sector to the creation of added value for the processing industry (added value) and the efficiency of the sectors (productivity, gross exploitation glut and the general profit). In order to have a unified research, it is essential to compare the data from the Romanian statistics to the statistics of the EU countries. The hypothesis behind the SWOT analysis approach is to report the value of the criteria for each of the two sectors of the processing industry to the national average in order to have what we call the systemic personality of the Romanian printing industry. Although the integration on a unique market imposes modifications and adjustments, the analyzed industries have kept and will keep a systemic personality structured on the background of a long historical process, presenting numerous particularities from one

country to another. The SWOT analysis outlines a layout of the analyzed industries, as a cumulated result of all influence factors such as: the research-development potential, investments, qualification level, inflation, business legislation, the financial-banking system, the situation of the global market, etc. regarding the reference values of the 6 economical measurements at the level of the companies from the processing industry in the national system, each sub-system is characterized by:

- relatively strong points – measurements with favorable values in relation to the reference system noted with + 1;
- relatively weak points – measurements with unfavorable values in relation to the reference system noted with – 1;
- indifference points - measurements with values in the limit $\pm 5\%$ in relation to the reference system, noted with 0.

The values of all criteria superior to the national average are favorable. The used scale allows us to make a hierarchy of each sub-system of the companies from the process in industries in 5 classes according to table 2.

Table 2. Evaluation classes

No. crt.	Class	Significance	Number of points
1	A+	Significantly favorable state	4 ÷ 6
2	A	Favorable state	1 ÷ 3
3	B	Neutral state	0
4	C	Unfavorable state	-1 ÷ -3
5	C-	Significantly unfavorable state	-4 ÷ -6

Source: authors

The dynamic evaluation of the economical situation of the analyzed domain is done by using “the dynamic state diagram”, which positions the frame class for every year in the period 2006-2011. The average of the dynamic evaluation is calculated by using a scale from 1 (class C) to 5 (class a+), according to the relation:

$$E_d = \frac{\sum N_i}{6} \quad (1)$$

where E_d – the dynamic evaluation of the economical situation;

N_i - the economical measurements referring to the analyzed sectors;

i -the number of the analyzed economical measurements ($i=6$).

And it defines the five classes with the significance in table 3.

The global evaluation E_g of the economical situation of the analyzed company subsystem is defined by placing it in the 5 classes dynamically and statically. The static evaluation E_s takes into consideration the state class in 2011 for the analyzed sector. The obtained results are synthesized in a matrix representation structured in 5 areas presented also in drawing no. 1.

From the perspective of the model interpretation the areas of maximum interest are I and III because they definitely differentiate “the relatively critical companies” and “the relatively excellent companies” of the printing industry. The areas II and IV show significant tendencies “of drawing attention” appeared during the last year of the period, characterized through differences bigger than a class between the dynamic and static states. The area II brings attention onto a significant improvement, while the area IV underlines a significant depreciation of the global economical performances during the last year of the analysis. The sectors situated in these areas need detailed analyses.

Table 3. The significances of the evaluation classes

Class	Ed	Significance in 2006 - 2011
A _d	4.5 < Ed < 5.0	Significantly favorable state
A _d	3.5 < Ed < 4.5	Favorable state
B _d	2.5 < Ed < 3.5	Neutral state
C _d	1.5 < Ed < 2.5	Unfavorable state
C _d	1.0 < Ed < 1.5	Significantly unfavorable state

Source: authors

The area V may signal, as well as in the case of the areas II and IV, significant improvements and depreciations of the global economical performances through differences larger than a class between the static and dynamic evaluations. For each of the two fields of activity, the model outlines the assembly of the companies from the point of view of the degree of coverage of the imports by exports in 5 categories (table 4).

Table 4. The percentage of the value of the coverage degree of the imports by exports

The percentage of the value of the coverage degree of the imports by exports	Significance
> 165	Significantly Excessive
110 - 165	Excessive
90 - 110	Balanced
35 - 90	Short
0 - 35	Significantly Short

Source: authors

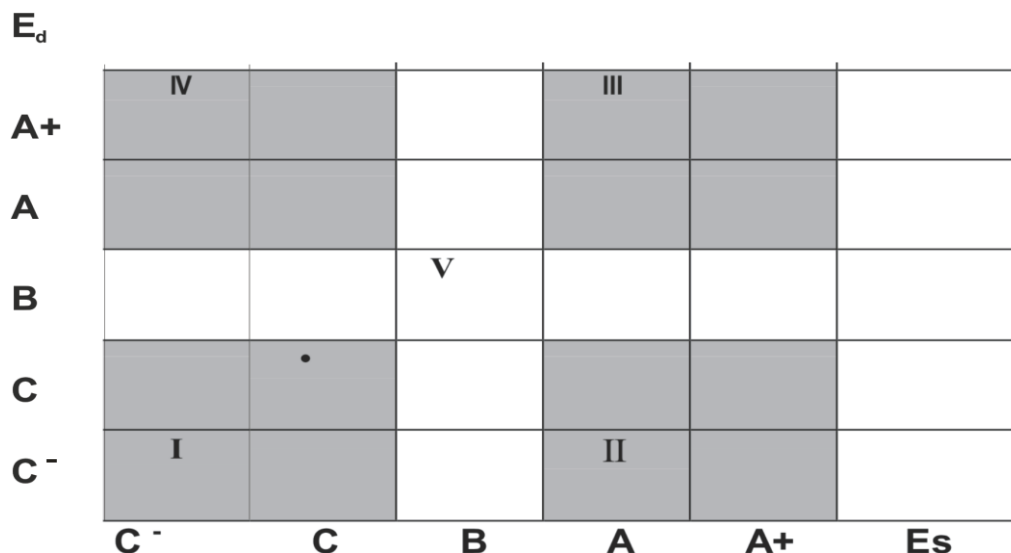


Figure 1. The global evaluation of the economical situation

Source: authors

Legend:

Area I – a significantly unfavorable dynamic and static economical situation

Area II – a favorable static economical situation compared to the dynamic economical situation

Area III – a significantly favorable dynamic and static economical situation

Area IV - a significantly favorable dynamic economical situation compared to the static economical situation

Area V – a neutral static and/or dynamic economical situation

The reference values of the economical measurements referring to the analyzed sectors during the period 2006-2011 are presented in table 5.

The reference values of the economical measurements have been calculated as follows:

- the average share of the added value has been determined for 2 sectors of the processing industry (1/2);
- the productivity, the general profit and the gross exploitation excess represent the consolidated values, for the overall of the 2 sectors of the processing industry;
- the average share of the exports from the exports of the processing industry has been determined for the 2 sectors of the processing industry (1/2);
- the degree of coverage of imports by exports of the processing industry refers to FOB exports and CIF imports (tables 6 and 7).

Table 5. The reference values of the economical measurements referring to the sectors analyzed during the period 2006-2011

Criteria	2006	2007	2008	2009	2010	2011
the average share of the added value (VA)	0.0435	0.0435	0.0435	0.0435	0.0435	0.0435
the productivity (P). mil. lei/salariat	189.64	43.80	65.80	88.83	119.32	150.52
the general profit RB/CA (Pg). %	5.16	-4.89	-2.42	-2.04	-0.87	0.87
gross exploitation excess EBE/CA. %	10.07	10.17	10.05	8.58	9.56	9.91
the average share of the exports from the exports of the processing industry (Ex)	0.0455	0.0455	0.0455	0.0455	0.0455	0.0455
the degree of coverage of imports by exports of the processing industry (GA)	0.8088	0.8691	0.9020	0.8242	0.8637	0.8222

The sources for the SWOT analysis are: The results and performances of the organizations issues 2006-2011. The directories of the External Commerce of Romania and the author' adaptation.

Table 6. The values of the economical measurements

	2006	2007	2008	2009	2010	2011
VA	0.146	0.112	0.119	0.122	0.139	0.133
P	33.0	39.8	64.8	95.4	147.3	174.6
Pg	0.91	-7.39	-0.57	-5.46	-15.15	-2.28
EBE	9.1	5.1	6.5	6.7	10.0	9.4
Ex	0.025	0.019	0.0147	0.016	0.0120	0.0132
	4	6		5		
Ga	0.271	0.303	0.2464	0.242	0.2021	0.2296
	9	7		7		

Source: authors

Table 7. Strong points, indifference points and weak points

	VA	P	Pg	EBE	Ex	Ga	Total	Class
2006	+1	+1	+1	0	-1	-1	+1	A
2007	+1	-1	-1	-1	-1	-1	-4	C-
2008	+1	0	+1	-1	-1	-1	-1	C
2009	+1	+1	-1	-1	-1	-1	-2	C
2010	+1	+1	-1	0	-1	-1	-1	C
2011	+1	+1	-1	-1	-1	-1	-2	C

Source: authors

The standard chart for the identification of the strong and weak points, of the positioning in the matrix representation of the cellulose, paper and cardboard industry, code nace 21 (drawing no.2).

	A ⁺	A	B	C	C ⁻
2006					
2007					
2008					
2009					
2010					
2011					

Figure 2. The dynamic state diagram

Source: authors

The dynamic evaluation $E_d = 2.143 \rightarrow C_d$

The static evaluation $E_s \rightarrow C_s$

The global evaluation situates the organization in area I: significantly unfavorable static and dynamic economical situation.

The conclusion of the SWOT analysis referring to the 2 industries.

From the perspective of the contribution to the economical growth, the SWOT analysis has identified for the period of 2006-2011 the following:

- none of the two analyzed sectors have obtained a favorable position, relatively “excellent” in the area III of the matrix representation: significantly favorable static and dynamic economical situation;
- **one of the analyzed sectors** – The cellulose, paper and cardboard industry, code NACE 21 – has been positioned as being relatively “critical” situated in area I of the matrix representation : significantly unfavorable static and dynamic economical situation. In the year 2011, this sector had: a productivity superior to the national average and degrees of coverage of imports by exports significantly short;
- the sector **Publishing houses, printing and reproduction of recordings on digital support**, code NACE 22, was situated in area V: neutral static and/or dynamic economical situation. An important particularity of this sector consists in the fact that in 2011, it has registered a productivity superior to the national average and a degree of coverage of imports by experts significantly short. Also, this sector presents a special interest and an analysis from the perspective of the economical growth on medium and long term. This sector is characterized by a constant of exceptional results referring to productivity, general profit and gross exploitation excess. The opportunity to develop this sector is clear, it also comprises important elements of advanced technology (recording on digital support). This sector may have an important contribution as a vector for the development of the informational society in Romania.

4. CONCLUSIONS

The research we conducted in this paper on printing organizations in Romania reveals the impact of implementing management processes, state-of-the-art information and communication technologies upon the achieved performance. Moreover we should mention that the organizations included in the current research, approached in a strategic manner the process organization of the company, thus being aware of the fact that a customer-oriented organizational culture and meeting their requirements and needs is an unbeatable competitive advantage in a dynamic and competitive business environment. Re-engineering can bring in significant benefits to companies in the printing industry, despite the fact that it is a strategy of complex, thorough and difficult change. Thus, it can be concluded that re-engineering deals with the phenomenon of redesigning the production process in the printing house to achieve an optimal quality level in its entire complexity, aspect which determined us to tackle certain issues related to the organizational management efficiency and to approach topics such as the management of change and of the business process (Susanu, Cristache, & Susanu, 2009).

Currently we have started the process of gathering information concerning the process-based approach of printing organizations in Romania in order to identify the trend models on their dynamics. The study of organizations management and the methodological approach of organizations in the printing industry allowed the setting of the management features, which in turn enabled the study of the causes that hinder the improvement of organization of these companies. This approach enables management to substantiate new solutions to the issues occurring in the production process management, based on management experience in other fields. Thus a first direction of future research lies in the possibility of setting targets for improvement and continuous reform of all activities involved in the management, the continuous approach being essential to the success of the steps undertaken.

Another direction of is focused on the quantitative assessment of the performance recorded in the supply chain of organizations in the printing industry as a result of reengineering implementation. Approaching this direction of research will materialize in an empirical study that reveals the business features of the printing industry and achieves a quantitative analysis of costs and benefits through RFID applications in various logistics activities. The operational requirements and RFID applications of distinct role acceptance in organizations supply chain in the printing industry will be analyzed through interviews and questionnaires, whereas the decision-making factors will enable the analysis of costs and efficiency in order to quickly assess the feasibility by using tables of RFID implementation. Printing organizations in Romania should implement an efficient system of internal organization, thus providing increasingly better products and services. A successful organization of the printing market should adopt process management which provides products or services that meet the customers' requirements, a relationship based on consistent quality, meeting delivery terms, a motivated and well-organized team, which permanently takes into account its customer requirements.

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