Ioan Abrudan
- Coordinator -

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of the
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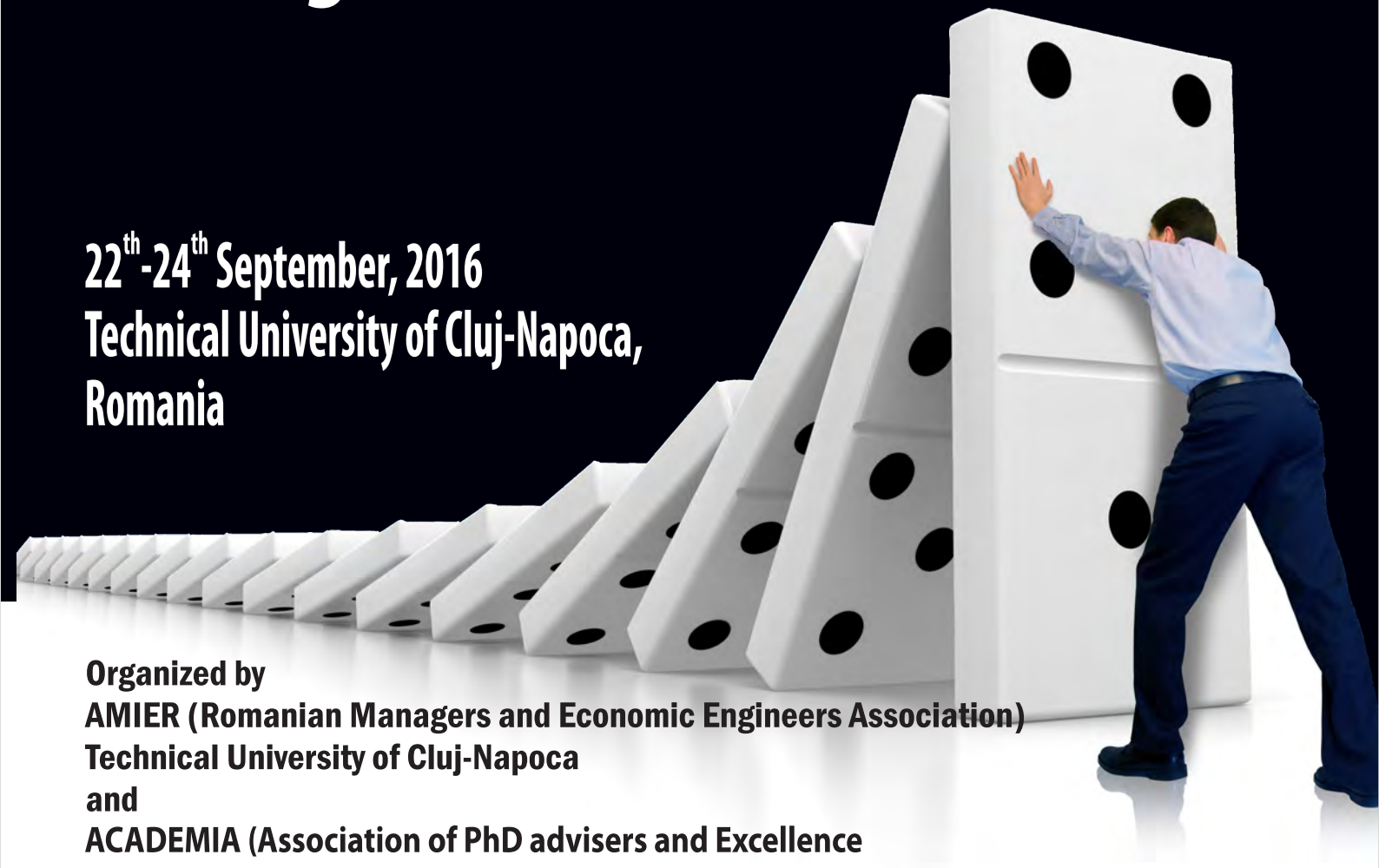
From Management of Crisis to Management in a Time of Crisis



22th-24th September, 2016
Technical University of Cluj-Napoca,
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Organized by
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A FRAMEWORK FOR INFORMATION SECURITY MANAGEMENT

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Abstract

Purpose *– The bibliographic research of the possibilities of designing a model for Information Security Management(ISM) in organizations, which is not to be limited to technological infrastructure level, but should also include human resource. At the same time, it aims to increase the efficiency of organizations through Information Security (IS) and intelligence activities.*
Methodology/approach *– The research methodology shows a gradual approach from the generality of the theme to its particularities, through the conceptualization of research models in each separate direction. The methodological model structure includes the following items:*
Findings *– The very high vulnerability of organizations regarding IS and the possibility of increasing their efficiency by securing the information and intelligence activities. The importance and the role of human resources in ISM.*
Research limitations/implications *– The relatively low number of practical studies*
Practical implications *– Schematizing a framework which is not to be limited only to IS, but should also include increasing the organization's efficiency through securing its information and intelligence activities.*
Originality/value *– Having structured the investigation on the identified research directions has allowed a methodologically organized approach in the IS context and the construction of a number of methodological modules that determine clearly the approach lines of research within organizations.*
Key words: *Information, security, intelligence.*

1. Introduction

Information and communication technology has an essential present-day role in any organization and has brought many benefits to our society; however, the attacks that come through these structures has made us vulnerable and thereof their threats have intensified (Tondel, Line, Jaatun, 2014).

Information security is a very important issue for any organization, regardless of the type, size or area in which it operates (Pirounias, Mermigas, Patsakis, 2014); security is an important aspect of everyday life and is no longer just a local or national issue, but a global one (Colin Braziel, 2016).

Shing-Han Li et al, (2015) state that a business might be exposed to threats subsequently to the compromise of its security measures. Moreover, the fact that issues related to information security are recently increasing has led to further research in this area. Similarly, the impact of information security attacks can have a devastating effect on organizations because, besides the material damage, especially when it comes to litigation, there are other factors that can affect significantly the operating capability of an organization or that can prejudice its reputation (Albert Caballero, 2009).

Furnell and Clarke (2012) say that the information security field focuses especially on technological solutions. However, it has also begun to focus increasingly more on human

resources, which are to be recognized as an important part of the information security. A conclusion of their studie is that human aspects may play an essential part in ensuring the overall security of systems and data.

Taking decisions regarding the security risk management must be consistent with the core objectives of the organization and the strategic and organizational context must be considered (Smith and Brooks, 2013).

2. Research problem

The main research problem is: Information Security Management in organizations.
The study is based on four key research directions and consists both in bibliographic research and in the design of specific models for each of them.

The research directions are:
1.Research on the need of information security within organizations.
The purpose of this research direction is to highlight the role and importance of information security management in both present-day and future contexts.

2.Research on designing a model of evaluation of the organization, in terms of information security
This step aims at developing a model for assessing an organization in terms of information security, which is not limited only to the technological infrastructure, but also includes human resources, given the damage that they may generate. It is to be used by managers of organizations as an assessment and analysis tool of the organizational development in terms of information security.

3.Research on the design of an Information Security Management System that takes into account all the criteria and internal and external factors, to improve the Information Security Management
This direction has arisen from the need to develop an ISMS that is up-to-date, adaptable to internal and external factors, to their continuous change and to technical and technological progress. The aim is to improve the implementation, integration and operation of ISM. It also aims to integrate ISM with other business processes of the organization.

4.Research on enhancing the efficiency of the organization through information security
This research direction has been set up because in this century information means power, and the one who has information regarding both the organizational environment and the competitors has a very big advantage. It actually aims at increasing the organization intelligence in terms of Informational Resources Management through securing information and intelligence activities, resulting in a noticeable advantage over competitors and in an increase of the organization efficiency.

3. Methodology

Proposed methodological plan (Fig. 1)

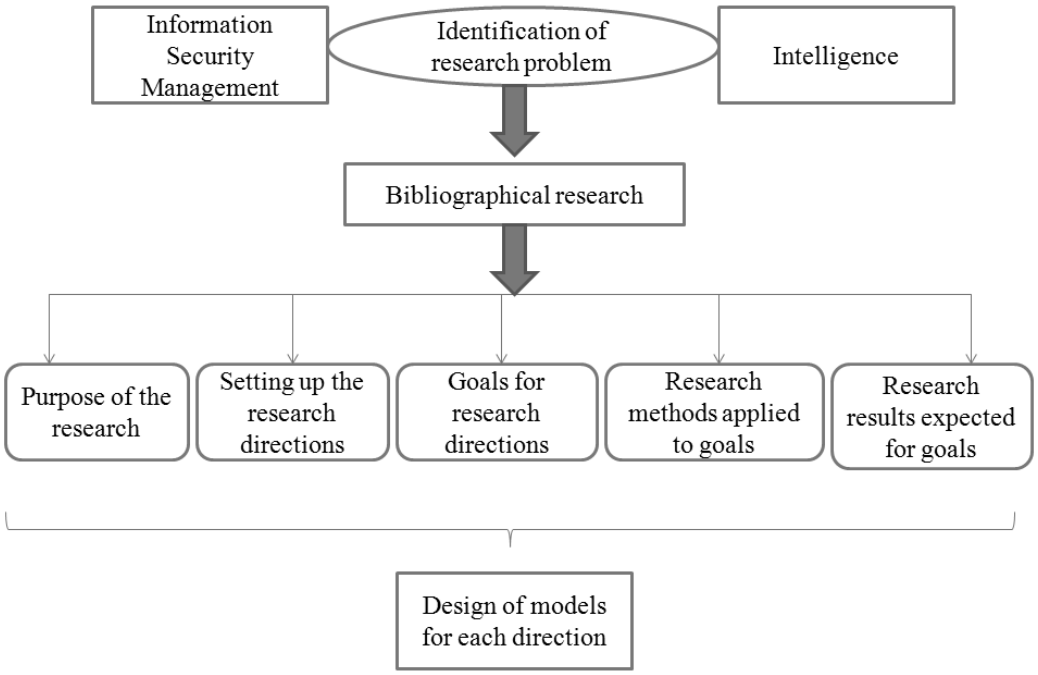

Fig. 1. Suggested Methodological plan

The bibliographical study was achieved based on the modules of the following models:

1. Research on the need of information security within organizations

To achieve the objective of the first investigation direction, the following research is proposed:

- Determining the need of information security

This section considers the identification of the role and importance of IS in organizations. Table no.1 includes the opinions of several authors on this matter.

Table 1

Authors	What the authors say
Nazareth and Jae Choi (2015)	Managing security for information assets is an important and challenging task, since the frequency of threats and the complexity related to security is growing. Therefore, for an effective information security management, it must cover more sectors, such as preventing attacks, reducing vulnerabilities and deterring attacks.
M. M. Silva et al. (2014)	The potential risks on informatics systems have increased as a result of the progress and the widespread use of the Internet, making organizations increasingly vulnerable. For that reason, the authors say, investment in security services has become a priory. Nevertheless numerous methodologies for the information security risk management have been created.
Palacios and Peterson (2015)	Il types of risks are present in modern life and no person, community, organization or place is immune to them.

- Research of the risks in the context of information security

This section aims at defining the risks in the IS context: which are these, how many types and what form they may manifest. It also aims at defining Information Security Risk Management (ISRM) and its importance.

Table no.2 presents a number of relevant studies applicable to this issue.

Table 2

Authors	What the authors say
Albert Caballero (2009)	Defines risk as the probability of something that might go wrong and have negative effects on the organization or on the information assets.
J. Webb et al. (2014)	The main dangers for organizations are leaks of important information, their modification, disruption or destruction of critical IT services.
Bojank, Rok and Borka (2013)	In the information system of an organization, the presence of risks related to information security are caused by technical failures, system vulnerabilities, human error, fraud or external events.
J.Webb et al. (2014)	The information security risk management (ISRM) is the most important means by which confidentiality, integrity and availability of information resources is assured. According to them, ISRM objectives are to identify security risks, to evaluate risks and to prioritize them, to choose the most effective means of controlling risks in the context of security and to monitor changes of the risk management system.

- Research of losses and damages in the context of information security

This subsection treats the consequences of the manifestation of IS risks, and Table no.3 presents an outlook identified in the literature.

Table 3

Authors	What the authors say
Silic and Back (2014)	Cite a study belonging to the **Computer Crime and Security Survey**, **2010/2011**, where it is found that 45.6 percent of respondents were subject of at least one attack during the previous year, but that there is also a gap between the seriousness of threats and the extent to which their control is effective.

- Research on protection against risks in the information security context

This subsection treats the protection against security risks, ways on how these can be assessed and tackled appropriately, and the response to security incidents. Table no.4 shows the opinion of several authors and examples of protection models from IS risks.

Table 4

Authors	What the authors say
Nazareth and Jae Choi (2015)	In order to tackle one of the many security threats, managers can choose a strategy, including detection, deterrence, vulnerability reduction, education and training. They also say that any strategy involves costs, benefits, or possible benefits, but these are difficult to be quantified because of several factors.
Ahmad, Hadgkiss, and Ruighaver (2012)	One of the important functions in an organization is the response to security incidents, which aims to manage them in a timely and efficient manner. The response to security incidents consists of the preparation for the incident, its identification, containment, eradication and recovery. The incident response teams are like firefighters for modern organizations. They respond to security incidents and solve them.
Adele da Veiga and Nico Martins (2015)	Information security controls have an impact on organizational processes, technologies and on how employees process the information.
Eirik Albrechtsen (2015)	Both technical safety and the safe and security use of information systems should be considered in order to ensure safe behaviors to organize and carry out work based on information resources and their manipulation.
Albrechtsen and Hovden (2010)	Appropriate trainings on information security are necessary in order to create and enhance the awareness and behavior of the information users.
Obreja and Rusu (2009)	In order to reduce and even eliminate the risks caused by the human resource, various measures can be imposed. These include technical measures (surveillance, recording and filtering the computer activity, the internet or network access), verification before employment (characterization request, behavioral interviews, study of the candidate's morality and past), fear (fear of unemployment, suing, possibility of not finding another job), mutual trust between employer-employee, security policies.
Werlinger, Hawkey, and Beznosov (2009)	They have created an integrated framework of security challenges, which classifies them according to human, organizational and technological factors, and presents the interaction between them.

The study of the literature regarding "Research on the need of information security within organizations", has directed our research to a model which is not only limited to determining the role and the importance of the need of information security, but also includes research on risks, threats and vulnerabilities in the IS context, on losses and damages that can occur in an

organization and means of protection from risks related to IS. The outcome model is presented in Fig. 2.

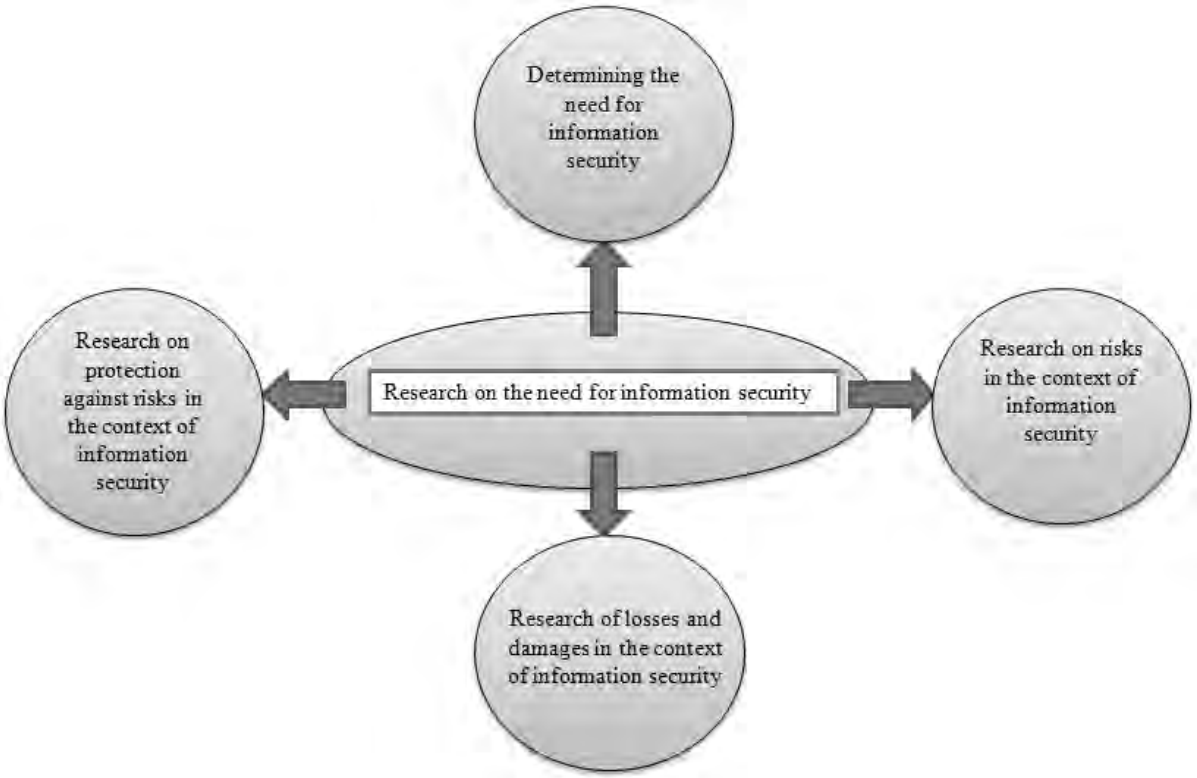

Fig. 2. The Need for information security research (own model)

2. Research on designing a model of evaluation of the organization in terms of information security

For designing the assessment and analysis model of the organization in terms of information security, the following stages are proposed:

- Assessing the current situation of information security

This stage aims to find the existing situation regarding IS at the management level and take into account the criteria set in Fig.3. The literature study has concluded that for both the IS Culture (Table no.5) and the Security Policy (Table no.6), HR has a pole position and depend on their behavior. Table no.7 and Table no.8 show the researchers' opinion in this field, concerning ISM and ISMS.

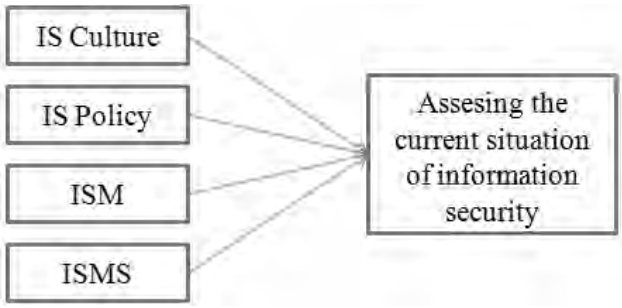

Fig. 3. The criteria underlying the current state of information security evaluation (own model)

Table 5

Authors	What the authors say
Adele da Veiga and Nico Martins (2015)	An information security culture must be ensured in organizations where employees comply with all regulations and always protect information in accordance with policies and regulations. They also add that it is very important to understand the perceptions, attitudes and behavior of human resources in order to create a culture of information security where information background, confidentiality and sensitivity are understood and where the information is handled properly.
Areej AlHogail (2015)	The information security culture provides a guide and a structure of human behavior when computers and information technology are used, in order to avoid risks related to information assets.
Metalidou et al. (2014)	Organizations must implement and maintain a culture in which an appropriate safety behavior is appreciated and in which it is induced the fact that security depends entirely on each person who interacts with the infrastructure, businesses and their services.
Thomson, Solms, and Louw (2006)	Understanding information security and the resulted behavior and actions should become the second nature and part of the daily activities for employees.

Table 6

Authors	What the authors say
Metalidou et al. (2014)	Security policies should be easily accessible and available to employees, understandable and easy to be located.
Furnell and Rajendran (2012)	Even the best designed and implemented information security system still depends on people's behavior and that the success of security policies and security controls depends on the level of acceptance and respect among staff.
Albert Caballero (2009)	Defines security policy as a plan that influences the actions of employees who are bound by a security policy regarding the informatics systems. The security policy includes practices, procedures and guidelines that describe in detail the actions to be taken by the human resource in any given situation. In order to be effective, the security policy must be disseminated properly, understood and accepted by all staff and supported by senior management.

Table 7

Authors	What the authors say
Ma Qingxiong, Schmidt, and Pearson (2009)	Define information security management as a continuous improvement process, which is designed to ensure business continuity, customer confidence, protection of information assets and reduction of damages on the organization, by preventing and minimizing the impact of security incidents.
Eirik Albrechtsen (2015)	Define information security management systems as more or less coordinated activities that aim to control threats and vulnerabilities and that are designed to ensure: the protection of information resources and of the technological infrastructure; the manual or automatic safe processing of information; organizing and carrying out work based on information resources and the resources safe handling.

Table 8

Authors	What the authors say
Colin Braziel (2016)	Defines information security management system (ISMS) as a systematic approach of managing all information important to a company, which aims at their safety. It is composed of people, processes and information technology systems, all involved in a risk management program. The fact that a company establishes, maintains and continually updates its ISMS proves that the company uses a systematic approach to the identification, evaluation and management of information security risks.

- Assessing the need of information security increase or decrease

This section (Fig.4) focuses on finding the effects of IS events, establishing security risks, information assets that must be secured and advantages of the Information Security adaptation to the needs of the organization. This component of the evaluation model of the organization in terms of IS is owed to intelligence activities as well, considering that both establishing existing and particularly potential risks, recognising possible advantages, especially the competitive ones, are possible due the collection of data, performing analyses, ultimately leading to a conclusion that can be considered as a product of intelligence. Also, the setting up of information assets that are to be protected can be considered an activity of intelligence, given that they will be established based on the analysis, monitoring, and the estimation of their extent. Furthermore, the pursuit that might go beyond the mere finding of losses and damages (the ones behind the attack, their purpose, etc.) can also be considered an intelligence activity.

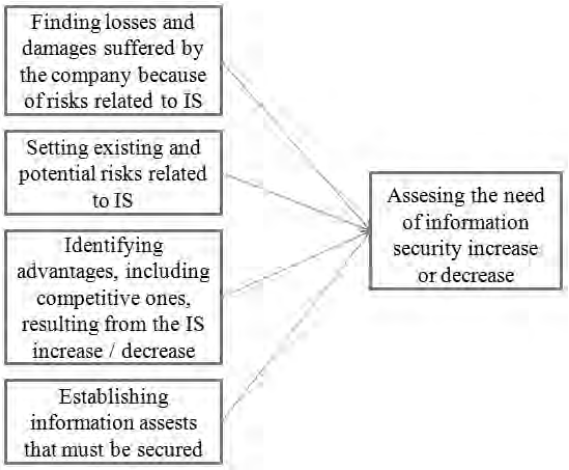

Fig. 4. The criteria underlying the evaluation of the need for increase/decrease of information security (own model)

It follows therefore that assessing the need for increase or decrease in information security is in itself an intelligence activity.

The setting up of the information assets that are to be secured will be addressed according to the organization, department, group, individual.

- Assessing the training of the organization in order to implement the information security management system

In this section it is envisaged the MSI awareness both in terms of understanding its role by the organization's staff, and of its implementation effects by the management. Regarding SMSI, the infrastructure is very important for any organization in order to be implemented and to function, exactly as in the case of the HR qualification, training and potential, the mere MSI awareness not being enough; therefore these must be evaluated in order to determine the degree to which ISMS can be implemented. Last but not least, in order to implement the ISMS, the financial potential of the organization is also considered. The criteria that underlie this assessment are presented in Fig.5.

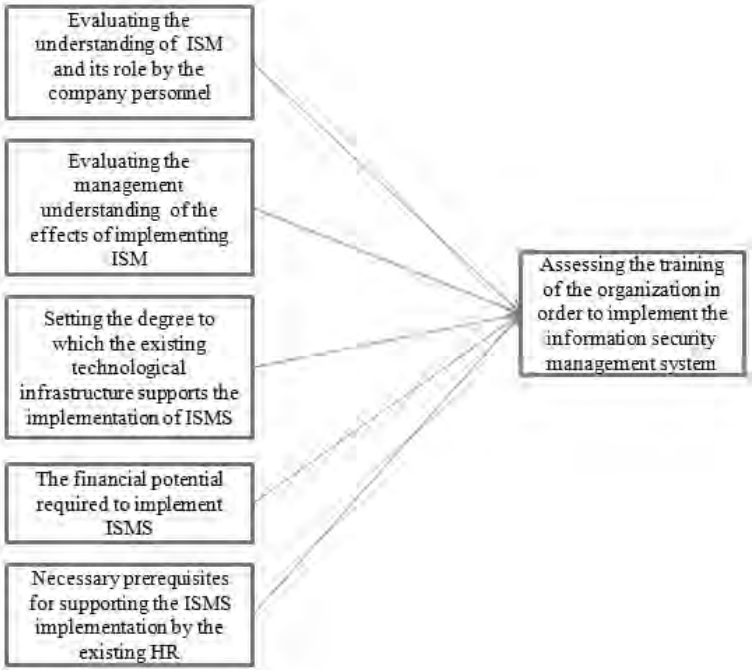

Fig. 5. The criteria underlying the evaluation of the organization training in the implementation of the information security management system (own model)

Based on an insightful study of the literature on this research direction and of the development results of the three sections, an overall model of assessment of the organization in terms of IS (Fig.6) has been set out. This model combines the assessment at the management level with the practical evaluation (through intelligence activities), and with the IS awareness and the organization potential (considering the infrastructure, HR, financial aspects) needed for implementing ISMS.

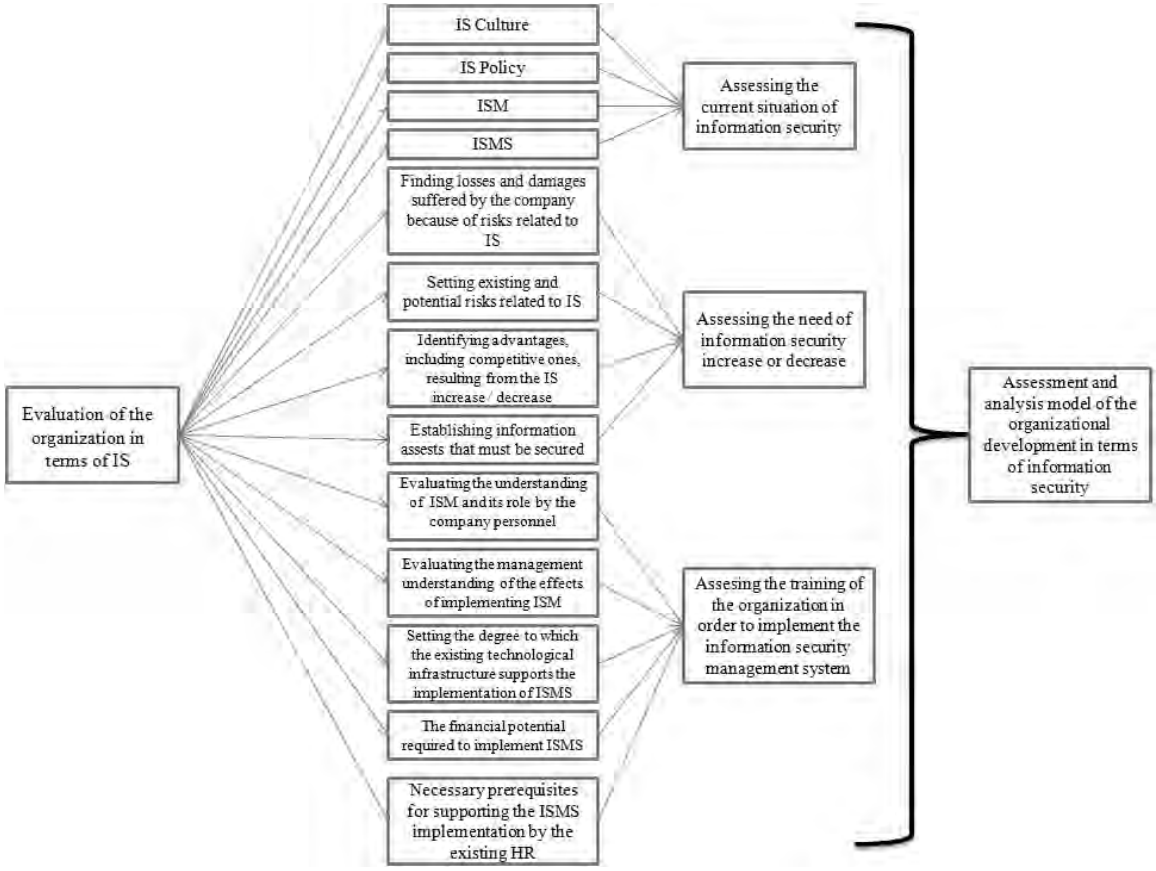

Fig. 6. Model for evaluating the organization in terms of information security (own model)

3. Research on designing an Information Security Management System that should consider all the criteria, internal and external factors, to improve Information Security Management

Internal and external factors will be considered in order to design the Information Security Management System, aiming at improving the ISM implementation, integration and operation processes (Fig.7).

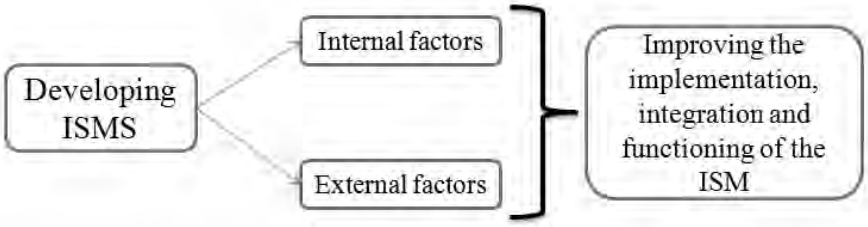

Fig. 7. Purpose of developing ISMS (own model)

Internal factors (Fig.8) actually include the result of the assessment set out in the second research direction, given that the need of IS (Fig.9) includes the evaluation of the IS up-to-date state and the need of IS increase or decrease. The organization preparation level for the ISMS implementation is to be found among these factors. The company size and organizational structure are also important when designing the ISMS, based on the number of employees, departments, on the procedures and efficiency of the organization.

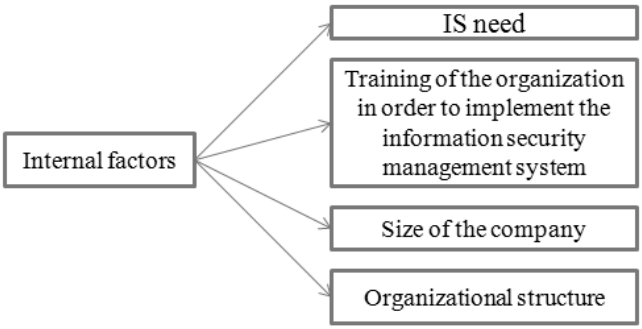

Fig. 8. Internal factors (own model)

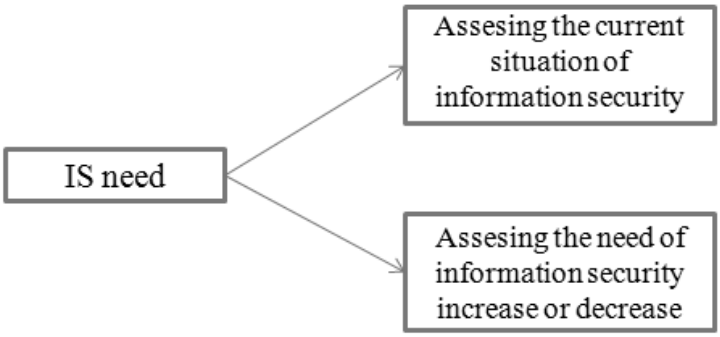

Fig. 9. IS need (own model)

External factors (Fig.10) are customers, suppliers, partners, competition, business environment (market, sector, field of activity, political stability, corruption, objectivity of the authorized institutions), legislation (rules, laws, standards), institutions and bodies (at local, national, European and global levels).

Fig. 10. External factors (own model)

The study of the literature has stated both internal and external factors. These factors lead to the development of an ISMS that would improve the implementation, integration and operation of ISM (Fig.11).

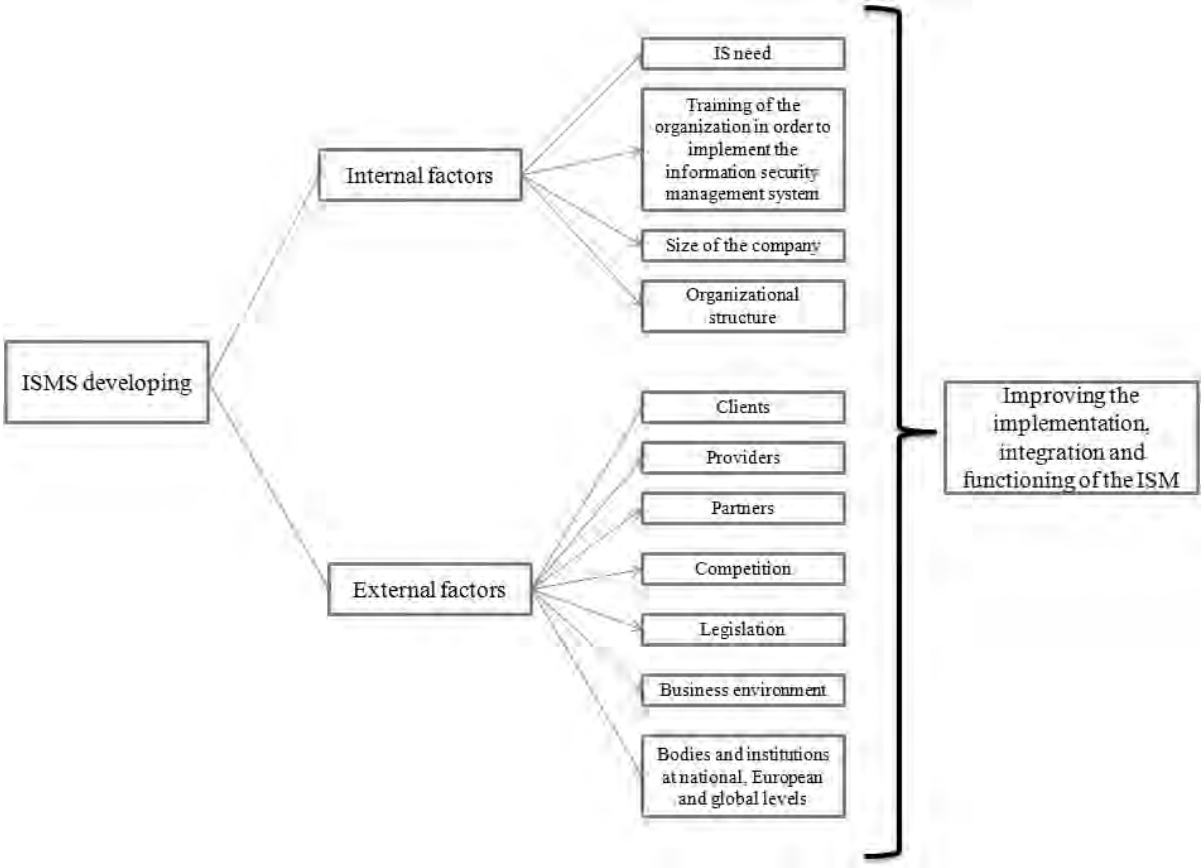

Fig. 11. Information security management system model (own model)

4. Research on enhancing the efficiency of the organization through information security

After studying the literature in the field of Intelligence, both on Competitive Intelligence and on Intelligence in context of special services (intelligence sevices), we found that the activities of intelligence can be successfully combined with ISM so that the organization become more intelligent in terms of the Information Resources Management (IRM).

Once the organization has a smart IRM, after having secured its information and after intelligence activities, it can enhance its efficiency according to the gained information, to their protection, to the use of opportunities or crisis situations and to the implementation of strategies.

Enhancing the efficiency implies: gaining competitive advantage; successful achievement of objectives; increased efficiency; development of the organization; setting of new targets, more important than the previous ones; increased productivity; increased profitability; development of new products; research-development and innovation improvement; improvement of the business management and process; improvement / adjustment of partnerships; growth of the HR quality (in terms of knowledge, efficiency, professionalism).

The outcome of this research direction (Fig.12) is the schematic representation of the increased efficiency of the organization by intelligence activities and securing information.

Fig. 12. Enchancing the organizational efficiency by securing information and intelligence activities (own model)

4. Discussion and Conclusions

Based on the literature study we concluded that it is absolutely necessary to prevent and systematically handle the security incidents that have significantly increased and, moreover, are in a continuous growth, leading to a permanent state of alert and prevention. Including for those organizations that do not seem to be exposed to risks related to information security there should be a "minimum package" of security and prevention, as there is a very subtle boundary between the factual overall state of the society we live in and a possible crisis. Therefore we dare to predict that it is possible that in the near future the certification of ISO 27001 or the existence of an ISMS to become a survival prerequisite for all types of organizations, whether imposed by the organizational environment, by partners or, most likely, by the legislation.

This study was centred on four research directions, starting from the IS need. During the research we found that each direction centred around the IS need. This need is to be found present in the assessment model of the organization in terms of IS (the first two sections), in the third research direction that includes the criteria identified by means of literature study, as part of internal factors that can influence the ISMS drawing up, and in the fourth direction as well, as securing information is made according to the identification of the IS need.

The HR importance and role have been underlined in the ISM context, as crucial elements in the ISM implementation and operation processes; the HR is at the heart of IS culture, policies, development of business set-ups and evaluation of risks, threats and vulnerabilities related to IS. Therefore, it is necessary to assess the ISM awareness by the HR and the degree to which it supports (in terms of qualification, training, specialization, potential) the ISMS implementation and operation.

The fourth direction of our research centred on enhancing the organizational efficiencies by use of IS and intelligence activities. Furthermore, the study revealed that IRM can be improved by use of the two components and that organizations can record benefit by exploiting the obtained results.

Intelligence activities are also present in the second research direction, especially when assessing the need of IS increase or decrease, where in order to determine the existing or potential risks and benefits, including the competitive ones, activities of gathering information are needed, of analysis and warnings, of estimates that can be assimilated to intelligence products.

The resulting model is based on the IS need, present in all four directions of our research, serving as a binder, as each direction becomes part of the previous ones.

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CRISIS MANAGEMENT AND AUTOMOTIVE INDUSTRY

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Abstract

Any organization may face, at a given moment, a crisis and this may be caused by internal or external factors. The manner in which the managers of some organizations prepare to manage the crisis influence the way in which their entire management process develops. Not all crisis have unexpected causes. A minor issue ignored may get worse and may turn into a real crisis. By using certain crisis management techniques, these risks may be greatly managed and limited.

***Purpose** –Crisis in three perspectives: economic and political, psychological and sociological;*
Stages of managing a crisis situation;
Crisis management strategies;
Human resource management and its importance in times of crisis in an organization.
***Methodology/approach** - Analyzing the phenomenon of the economic crisis in an organization with financial problems, insolvency.*
Questioning employees on the effects of the crisis on each person.
Study on crisis stages in an organization and management measures undertaken.
***Findings** – There are no miracle recipes for solving problems on crisis, but there is definitely a set of measures that can be taken in a timely manner, enabling an organization to evolve so as consequences, dangers and losses to be reduced.*
The crisis resulted in the organization is most often the result of inadequately managed situations in the past.
Effective management of the crisis means a strategic planning process and finding practical ways to manage difficult situations by communication strategies and restoration strategies.
***Research limitations/implications** – Crisis management includes activities to anticipate potential crises and establish plans to manage these situations.*
Here is how the management of an organization affected by the car market crisis is reflected in theory and practical examples which a manager can plan and lead to an effective and coherent strategy with which will minimize the consequences of a crisis situation.
***Practical implications** – Study on reactions of employees in an organization with big financial problems; Identifying how a manager can manage a crisis; Prioritization in crisis management is extremely important. A manager must manage the financial side and the rational overview, but he should not ignore the psychological and emotional issues, in order to overcome a crisis.*
***Originality/value** – elaboration, use and interpretation of a questionnaire concerning the employees' perception from an enterprise dealing with financial issues, during a period of crisis. Conclusions concerning the results of questioning the employees.*
***Key words:** Crisis, management, strategy.*

Introduction

Essence of management in crisis is the prompt and adequate management response at the events that directly threaten or affect the activity or normality in an organization.

The crisis is the result of environmental threats, weaknesses related to the organization and it occurs when threats in the environment are interacting with weaknesses within the organization.
Crisis management is a set of factors designed to tackle crises and to reduce the damage caused by crises, so the focus is on anticipatory management.
The notion of crisis has various and sometimes conflicting definitions. Some point out the gravity of the situation of crisis, while others, the unpredictable and unusual character. The concept of crisis mainly underlines the derogation from the rule laid down. The crisis does not affect only the good operation of a structure. In case of an intense advertising, the image of the structure is also damaged among the public opinion.[1]
Usually, the crises crop up. Although, it may happen to be warned of their occurrence, most of the time, there is no sign that could indicate that such an event will follow. Even if two crises may have common elements, still, we can hardly speak of two identical crises. These are cases that depend of the context where the phenomenon called crisis takes place. The contextual parameters may be geographical, historical, cognitive, political, cultural and symbolical.
The crisis is the result of the environmental threats, correlated with the weaknesses of the organization and it occurs when the environmental threats interact with the weaknesses existing within the organization.

Crisis management is a set of factors designed to tackle crises and to reduce the damage caused by the crises, so the focus is on the anticipatory management.
During the times of crisis, there exists the risk that the managers act wrongly, in certain situations, such as: to greatly reduce the costs, to wait so that the market restores itself, to make staff reductions (especially among the gifted people), to adopt the measures taken by other companies, to be pessimist and irrational, panicked – with emotional effects in the professional and personal life.
In a crisis, a manager does not detain all information he needs, but a realistic manager is aware that the result of a crisis cannot be correct or satisfying for the business. That is precisely why he needs to take measures from the first moments of the crisis.
These measures aim to:

- readjust the budget of investments and expenditures
- to strengthen the liquidity in order to increase the purchasing power
- to update the efficiency targets when the number of sales drops

Crisis from the psychological perspective

When referring to an individual, the crisis may inflict two kinds of issues, emotional and practical. The emotional issues refer to the way in which we perceive the events, while the practical ones to the way we take decisions.

The current crisis has two aspects tightly related to the psychological side, especially to fear:

1. The generalized crisis, with a behavior full of tendencies of unease, of generalized anxiety. It is highly influenced by external sources, by media on daily basis and by the influence upon the market and the business segments.
2. The local crisis as a phobia caused by the decrease of a certain sector of activity or decrease of some financial indicators of the company: liquidity, profit, sales and market share.

In the extreme, the psychological crisis may inflict effects of disruption of the consciousness and of mental and physical exhaustion of the persons involved. The cure of the crisis reflects on one side the financial signals: recovery of the banking system by flexible solutions for credit, return of consumption to quotas that exceed the consumer's needs, recovery of the investments etc. The cure of the crisis reflects on the other side, the psychological cure of the crisis: manifesting a predictable behavior highly oriented towards the future, which assumes risks of increase.

For any manager, the crisis is an extremely stressful experience and which implies a lot of panic spread everywhere.

During the times of crisis, a manager has two priorities: to manage the financial, rational side of the crisis and to take care of the psychological side.

The logical and rational side: to do everything possible in order to understand and overcome the crisis, to manage the expenditures and the capital. The emotional, psychological side: to calm the others so that the daily activity is not influenced. Usually, the managers take care of the rational side and neglect the emotional side.

The rational, logical strategy of the crisis management – work tools:

- to have a good level of capital;
- to reduce the operational costs;
- to continue to invest on a long- and medium-term;
- to focus on the relevant products / services (and to sell what is non-core); to leave the falling markets;
- to focus on the main clients, to keep, to carefully select the clients;
- to develop excellent relations with the suppliers, including with the banks ;
- to take quick decisions and to immediately act, to wisely manage the risks.
- Psychological strategy of crisis management – intervention techniques :
- to frequently and regularly inform the employees;
- to establish the process of change and of major changes;
- to become familiar with the schedule of change and development;
- to motivate and energize the others by informal actions;
- to invest in training programs in order to train the employees how to cope with the crisis.

The crisis may be considered as a situation which, by the element of novelty and by the amplitude of the challenges, forces the limits of an individual's capacity to adjust to the environment where he was used to operate. When facing the challenges of such a situation, the individual does not have efficient methods to react, a fact which brings back old feelings of unease and old operational methods which, during his life, turned out to be viable, but which do not help him in the new context.

Usually, the crisis is perceived subjectively disproportionately, due to the adjustment effort that demands it, as well as due to its element of novelty. The uncertainty and the lack of some known milestones that the crisis may entail, all make that the opinion of the group becomes a priority related to the personal opinion, the rumors being widely spread during such a period of time. The people feverishly search for information which could guide them. On the other hand, the media needs something sensational.

The HR management and the perception of the crisis by the employees are extremely important during the times of crisis within an organization, as they could directly influence the performance of each person. At the same time, one cannot talk about an effective crisis management unless its sources are not particularly known.

For that reason, the communication and the act of questioning the employees regarding the crisis effects on each of them may be essential.

In order to check the above-mentioned hypotheses, we drafted a questionnaire, with a set of 4 questions with 4 possible answers, applied on a number of 30 employees from different departments, in a company in financial difficulty.

Annex 1. Questionnaire concerning the perception of the employees of a company in financial difficulty, during an economic crisis

Please give short answers to the questions below/tick the appropriate box
Grading system: no=1; moderately=2; probably yes =3; definitely=4.

1. Do you consider that the loss of the job is a real danger in the given situation?

NO	MODERATELY	PROBABLY YES	DEFINITELY
1	2	3	4

2. Do you consider that the participative management is a solution in crisis situations?

NO	MODERATETLY	PROBABLY YES	DEFINITELY
1	2	3	4

3. The state of uncertainty is an unpleasant aspect concerning the activity within a company in financial difficulty. Do you currently feel a state of uncertainty within the company?

NO	MODERATELY	PROBABLY YES	DEFINITELY
1	2	3	4

4. The rational side and the emotional one are managerial priority actions in crisis situations. The managerial approach only from a rational point of view may be considered an issue in this moment?

NO	MODERATELY	PROBABLY YES	DEFINITELY
1	2	3	4

After analyzing the questionnaire, the question “Do you consider that the loss of the job is a real danger in the given situation?” was answered by 43% of the respondents with *definitely yes, by* 27% with *probably yes*, by 21% with *moderately* and only 9% claimed they had *no* fear they could lose their job.

Annex 2. Fear concerning the loss of the job

Analysis Questionnaire on employees’ perception

Question/assessment criterion	no (1)	moderately (2)	Probably yes (3)	Definitely yes (4)
Fear concerning the loss of the job	9%	21%	27%	43%

Questionnaire applied on a sample of 30 persons

Figure 1. Fear concerning the loss of the job

Question no. 2, "*Do you consider that the participative management is a solution in crisis situations?*" was answered by 46% from the persons interviewed with *definitely yes*, by 29% with *probably yes*, by 13% with *moderately* and 12% consider that this is *not* the solution in crisis situations.

Annex 3. Participative management as solution

Analysis Questionnaire on employees' perception

Question/assessment criterion	no (1)	moderately (2)	Probably yes (3)	Definitely yes (4)
Participative management as solution	12%	13%	29%	46%

Questionnaire applied on a sample of 30 persons

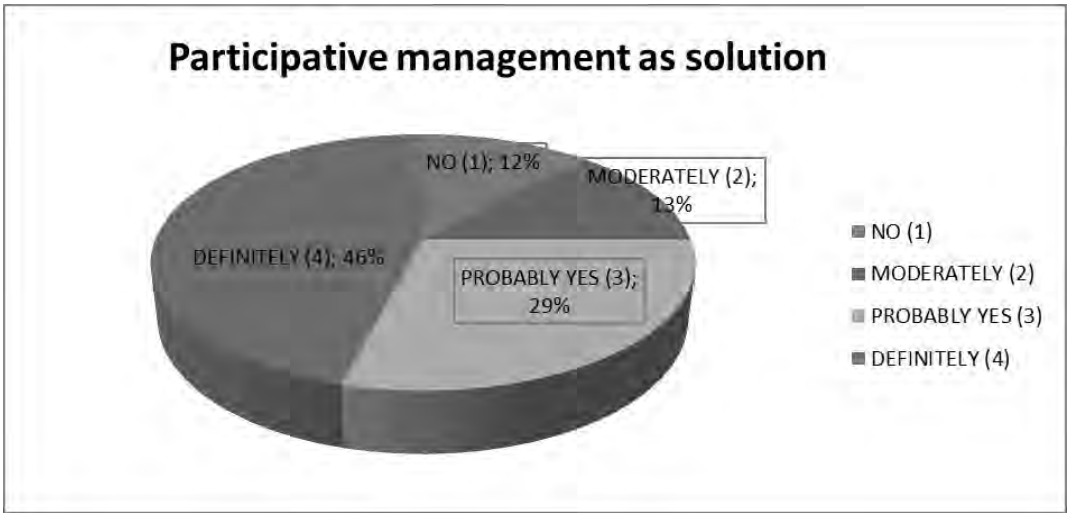

Figure 2. Participative management as solution

The question related to the state of uncertainty felt within the company, was answered by 79% of the persons that the uncertainty is a real issue affecting the employees' concentration and performance. 12% of the persons interviewed answer *probably yes*, 9% *moderately*. No person considers that the state of uncertainty is useful.

Annex 4. State of uncertainty

Analysis Questionnaire on employees' perception

Question/assessment criterion	no (1)	moderately (2)	Probably yes (3)	Definitely yes (4)
State of uncertainty	0%	9%	12%	79%

Questionnaire applied on a sample of 30 persons

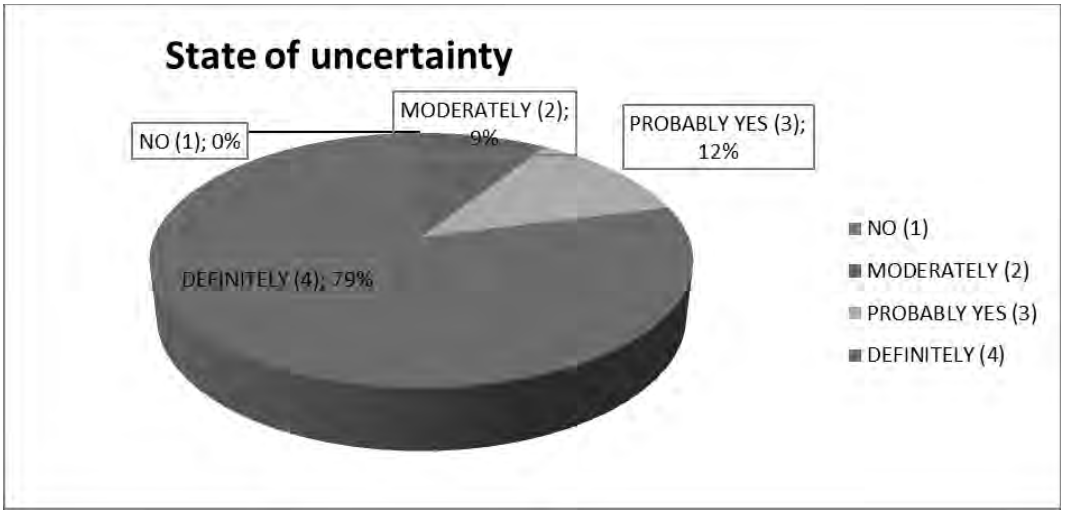

Figure 3. State of uncertainty

As for the last question of the questionnaire, the *Managerial approach only from a rational point of view may be considered an issue in crisis moments*, 30% of those questioned answer with definitely yes, 23% - *probably yes*, 30% with *moderately* and only 17% agrees there is *no* danger that the management in crisis situations be focused only on solving the financial issues.

Annex 5. Managerial approach only from a rational point of view may be considered an issue

Analysis Questionnaire on employees' perception

Question/assessment criterion	no (1)	moderately (2)	Probably yes (3)	Definitely yes (4)
Managerial approach only from a rational point of view may be considered an issue	17%	30%	23%	30%

Questionnaire applied on a sample of 30 persons

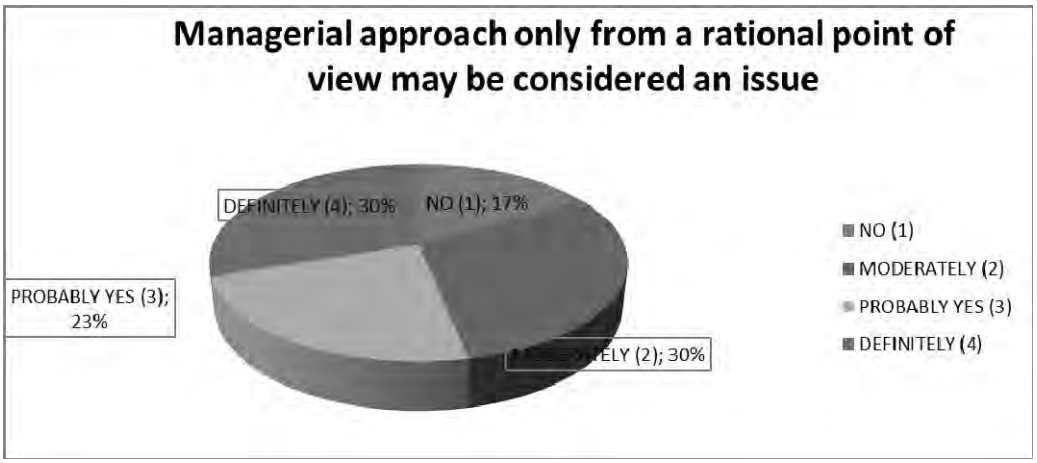

Figure 4. Managerial approach only from a rational point of view may be considered an issue

This questionnaire underlines the fact that most of the employees interviewed have a concern related to the loss of the job, that the participative management is a variant by which it can be easily found solutions in times of crisis, that in this way, the effective management is the one focused on solving the emotional issues, issues of communication with the employees during a crisis, not only the rational issues and that the state of uncertainty scares them and troubles most of them.

By applying this questionnaire in the organization, using questions similar to the above ones, there may be identified useful managerial solutions, in times of crisis, motivating at the same time the staff to whom you give importance by asking his opinion.

The psychological factors may influence the way we understand and pick up the objective situation. For instance, as a consequence of the knowledge and experience, the same situation is seen by different persons as being more or less threatening. The same psychological factors may influence the way we assess our capacities to cope with the objective situations, being likely to appear the undervaluation or the overvaluation of the resources (physical and/or psychological). Finally, the psychological factors may influence the way we adapt the requirement of the situation to our resources. To this end, the decisional capacity and the intelligence influence this match.

There are no magical recipes used to solve the issues or the crises, but there definitely exists a set of measures that can be taken in a timely manner, allowing an organization to manage itself so that the consequences, the dangers or the losses may be diminished.

Most likely, the crisis within the organization arises from previous situations that were inappropriately managed.

The effective crisis management is a process of strategic planning, by communication, by strategies of communication, by strategies of restoration and by finding practical modalities of managing the difficult situations.

The managerial prioritization in situation of crisis is extremely important. A manager should manage the financial side, the rational one, but he should not ignore the psychological, emotional side in order to overcome a crisis.

The crisis management includes anticipatory activities of the possible crises and establishment of the management plan of these situations.

Probably, the most wrongful attitude in management is the refusal to see the crisis as a positive force, as a factor which contributes to the existence of a company, of an organization. Still, the

crisis reveals both sides: the positive and the negative ones, the danger and the opportunity; its negative side (destructive) is a sine-qua-non condition of the development.
Lately, many scientists in the field of management underlined this duality (order and chaos, construction and demolition, order and disorder), suggesting that the normal situations or the crises should be looked upon as parts of the same unitary process.

Pursuant to the explanatory pattern of the theory of systems, the phenomenon of the complexity of crisis includes both the interrelations between the components and the system, as well as the two-dimensional nature of each particular element, implying also the sources of the order and disorder. That is why the systematic conception refuses to focus on one or two major causes of crises. Instead, it takes into consideration several events that could trigger forms of action and interaction within the system.

Moreover, we should also take into consideration the effect of the change to some components of the system (sub-systems) which trigger, at their turn, changes to the other elements of it, generating a complexity that may be hardly controlled.

Discussion and conclusions

The crisis is a situation which could occur within any organization. Given the fact that these crises cannot be avoided, it is not important to find out the conditions by which we may avoid such events, but rather what we can do in order to get out of them without having suffered disastrous and long-term effects.

There exist arguments regarding the need to consider the human resources as one of the most important factors within a company for the long-term sustainability of the business.

The mobilization of the human resources expressing conceptually the action of staff accession to the development of the company became for the management of our ideas one of the priorities of many organizations, since they consider it as a leverage to performances. The studies based on clients' and employees' questioning, the data collected, processed and interpreted may be relevant and useful for managers from the field of research.

The crisis management is revealed in theories and practical examples by which a manager may plan and implement a coherent and efficient strategy he may use in order to minimize the consequences of a situation of crisis.

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ASPECTS OF THE MAINTENANCE EMPLOYEE'S CRISIS AND SOLUTIONS FOR MANAGE IN ROMANIA

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Abstract

Purpose *– This paper analyzes the serious problems of maintenance domain, especially those related to workers' skills and competencies, in order to identify applicable solutions to solve, to improve the sustainability of production processes and accelerate innovation in the field.*
Methodology/approach *- This article is the result of research based on the analysis of achievements, experiences and international trends in the field, compared to the situation in Romania.*
Findings *– Due to the high value of fixed assets maintained, worker's abilities and skills have a major impact on the results of companies. Only a practical competency-based education, certification of those skills and competencies, complemented by financial motivation will lead to increasing the number and quality of the maintenance workers.*
Research limitations/implications *– The main limitation of the research is that the study focuses on the general maintenance without studying the particularities of each business sector separately.*
Practical implications *– This article is a warning to educational institutions and business environment, to the awareness of the serious problems of maintenance.*
Originality/value *– There was made a comparative presentation of procedures of management for maintenance problems, in context of globalization, followed by choosing those that best fit and will bring the greatest benefits for Romanian economy.*
Key words: *maintenance, overhaul, MRO.*

Introduction

In the current uncertainty and economic crisis, reducing costs is a primary goal. The objective of maintenance is to reduce the number of unexpected breakdowns due to failures, which may be catastrophic and may cause huge loss. In today's companies, maintenance is one of the costliest aspects of operation and plays an important role, not only the costs of maintenance itself, but also the costs of production losses due to equipment breakdown. In order to cut the cost and increase profit margin, it is necessary to develop an optimization system to achieve the system maintainability, reliability, availability and safety at the same time. The direct maintenance cost would be estimated in the range of 450 billion € for the European member states (KPMG Advisory, 2015). The ageing of maintenance employees in EU could become a stringent problem within 10 - 15 years if no adequate measures are taken (KPMG Advisory, 2015).

According to the EN 13306 standard, maintenance is a combination of all technical, administrative and managerial actions during the lifecycle of an item intended to retain it in, or restore it to a state in which it can perform the required function. Today, it's often a mixture of asset management and maintenance. The KPMG study published in 2015, revealed that in the field of MRO (Maintenance, Repair and Overhaul), there are working 10 - 15 percent of the active population of each EU country (KPMG Advisory, 2015).

Like most crises, it was announced initially in the USA, with more than 10 years ago (Schmidt E., 2015) and in 2008 it was a song done to raise awareness to maintenance problems (https://youtu.be/WJJ_zFvAS1M).

Unfortunately, in addition to specific technical maintenance problems, it was emphasized the lack of skilled employees in this sector. The USA has forecast an annual growth of jobs in this field for over 1 percent. (Bureau of Labor Statistics, 2016a).

Solving human resource issues involved in the maintenance of fixed assets should be treated not only at company level but also at the level of state institutions.

KPMG Advisory (2015) recommends the development of a Europe 2020 strategy with regards to maintenance problems.

The aspects studied are those related to organizing, education (certification), news dissemination, safety and wage. Based on the measures and results obtained in the USA and in the EU, regarding to the maintenance crisis, conclusions will be highlighted and recommended for implementation in Romania.

Professional association in maintenance domain

Professional associations are important, not to defend the rights of its members, but to disseminate the latest information from the field, to certify member's knowledge, to develop and propose procedures and standards to improve working conditions, to increase safety and environmental protection.

The largest professional associations in the field of maintenance are: Global Forum on Maintenance and Asset Management (http://www.gfmam.org), European Federation of National Maintenance Societies (http://www.efnms.org), Latin American Federation of Maintenance (http://www.fim-mantenimiento.org), Gulf Society of Maintenance Professionals (http://gsmpgulf.org).

At these important associations, there are affiliated national associations like: The Japan Institute of Plant Maintenance (http://www.jipm.or.jp/en/), The Society for Maintenance and Reliability Professionals USA (http://www.smrp.org), Asset Management Council Australia (http://www.amcouncil.com.au), Association Française des Ingénieurs et Responsables de Maintenance (http://www.afim.asso.fr), Plant Engineering & Maintenance Association of Canada (http://www.pemac.org). Most national associations are recognized as a public interest organization by their states. Most of the former socialist countries, Slovenia, Slovakia, Lithuania, Croatia, Serbia, are represented in EFNMS.

Romania has no representative in these associations, although there is the Romanian Society of Maintenance (http://www.soroment.ro) located in Constanța, which requested affiliation to EFNMS in 2012, but it has not yet been accepted.

We can mention the specialty club, Romanian Maintenance Club and Maintenance and Industrial Distribution magazine, founded by the association Impact in Society (http://www.msdi.ro), but which no longer have activities.

Education for maintenance jobs

"Europe has long faced the problem of mismatches between worker's qualifications and skills and job requirements; the crisis has made this situation worse. According to Eurofound, 39 percent of the EU employers reported difficulties finding workers with the right skills in 2013. Investing in skills is crucial to overcome these bottlenecks." (European Commission, 2014).

Employee's specializations in MRO are usually trained in the company, by learning from those experienced, due to the fact that there are no sufficient specializations in educational system. There is an increasing need for a quality-controlled assurance of competence among the people active in maintenance. To facilitate the integration of competent employees in the MRO domain, there were developed internationally several certifications.

Most professional associations in the field of maintenance are involved in the training of maintenance specialists and in the examination for obtaining the certificate of specialization in maintenance.

The internationally highest recognized certificate belongs to The Certified Maintenance & Reliability Professional (CMRP) Certificate accredited by the American National Standards Institute (ANSI), which follows ISO standards for its accreditation and processes. The Certified Asset Management Assessor (CEMA) certificates the knowledge and understanding of the Asset Management System in accordance with ISO 55001. The Certified Maintenance & Reliability Technician (CMRT) is used mainly in America.

The European Federation of National Maintenance Societies (EFNMSvzw), is the European organization, which has got all the necessary knowledge of the competence requirements in the areas of maintenance. The European Certification Committee (ECC) will, on behalf of the EFNMSvzw, perform the certification of persons in the field of maintenance in Europe, in accordance with international and European rules and requirements. The ECC will also be able to certify people according to the EFNMSvzw rules and requirements, even outside of the member countries of the EFNMSvzw.

Among the modules studied for getting these certificates, there are: Integrated Strategy for Maintenance Management, Production and Operations Management for the Maintenance Manager, Human Resources Management for the Maintenance Manager, Financial Management for the Maintenance Manager, Developing and Implementing Maintenance Tactics, Maintenance Work Management, Computerized Maintenance Management Systems.

At European level, an important step was the start of the project based on European funds INTERREG IVB, MORE4CORE – Maintenance for competitiveness, started in 2014. The More4Core project has a total financial budget invested by its partners of 2.5 million Euros of which approximately 50 percent is funded by EU. Through this project, a framework was developed for the European Maintenance Skill Passport, linked to individual sector-specific European Credit system for Vocational Education and Training (Strijbosch, 2015). Another important achievement of this project was identifying priority cases for transnational normalization of standards, providing guidance to business that aim to expand internationally, and starting the dialogue for action with standardization authorities (Association française des ingénieurs et responsables de maintenance, 2015).

Regarding the Romanian Ministry of National Education and Scientific Research (Ministerului Educației Naționale și Cercetării Științifice, 2016) there is a constant concern, reflected by updates to implement the EU educational policies. Unfortunately, subordinate institutions were not concerned about education in the field of maintenance. In order to compensate the shortcomings in the qualification of employees, according to the National Institute of Statistics (Institutul Național de Statistică, 2012), 24.1 percent of Romania's economic units have provided professional training to employees.

Safety and health at maintenance jobs

According to the European Union (European Agency for Safety and Health at Work, 2010), because maintenance workers carry out a wide range of activities, they are exposed to many and varied risks at work. Subcontracting maintenance is considered an aggravating factor in terms of safety and health. Analysis of EUROSTAT data based on the ESAW methodology, indicate that around 15 – 20 percent of all accidents in 2006 were related to maintenance operations. It's also

important that around 10 – 15 percent of all fatal occupational accidents were related to maintenance operations.

Studies indicate that industry maintenance workers might be especially at risk of contracting occupational diseases. According to a study by AFIM (Association Française des Ingénieurs et Responsables de Maintenance, 2013), maintenance employees have an occurrence of occupational diseases 8 – 10 times greater than the average population.

Occupational Safety & Health Administration, part of the United States Department of Labor, reported for October 1st, 2015 - September 30th, 2016, 625 people fatalities (https://www.osha.gov/dep/fatcat/dep_fatcat.html).

In the 2014 report of the Bureau of Labor Statistics (2015), there was an average of 107 cases of work accidents per 10,000 full-time employees. Regarding the 3 maintenance activities evaluated, the average is 827 cases per 10,000 full-time employees.

In 2015, according to the statistical bulletin "Working Conditions" of the Ministry of Labor, Family, and Social Protection of Romania (Ministerul Muncii, Familiei, Protecției Sociale și Persoanelor Vârstnice, 2016), it was registered a number of 4300 people injured in work, from whom 183 workers were deadly injured. Unfortunately, data are not divided by activities.

Wages and salaries for maintenance works

Because maintenance activity is performed in all economic sectors, wages in this area are very close to the average wage in each country. For example, in the US, according to the Bureau of Labor Statistics (2016b), compared to an average hourly gross salary per economy which is 24.3 US dollar, the average wages and supplemental pay in maintenance is 23.71 US dollar. According to the Romanian National Institute of Statistics (Institutul Național de Statistică, 2016), in the first month of 2016, the average hourly net wage per economy was the equivalent of 2.52 Euros, and the average hourly net wage in maintenance was the equivalent of 2.48 Euros.

This situation is determined by the fact that people in companies' management do not realize the impact on the profitability of the company, neither do they realize the higher level of technical knowledge required of those who perform maintenance work. An important exception are the big international companies, which are investing in the latest technologies, so they have revenues resulting from maintenance activities. They need extremely trained employees to work with systems such as maintenance resource management, condition-based maintenance, computerized maintenance management system or real-time maintenance. For instance, ThyssenKrupp Elevator AG Company with 50000 employees maintains more than 1.1 million elevators worldwide (Heinemann, 2016).

Discussion and conclusions

It is essential to draw attention to the complex problems of the maintenance, repairs and overhaul that are not yet perceived to the true severity in Romania.

Due to accelerating globalization and labor mobility, it is highly necessary to takeover and implement all standards, norms and procedures regarding maintenance by economic agent and educational system, too. In parallel, there should be increased the investment in new maintenance techniques, through computerization, automation and robotics, which lead to a higher degree of safety at work for employees and better environmental protection.

From the employer's point of view, the two major issues regarding specialists in maintenance are inadequate qualification and their reduced number.

As in any field, to attract more competent young men, it is not enough to get motivating salaries and bonuses.

A first step is to change the vision of economic agents: maintenance is not an expense but a source of business sustainability and increasing competitiveness (Mărăscu and Thomas, 2007). With such a vision, the employee will be stimulated to create, to bring a plus to the business and to be convinced that this specialization guarantees him/her a successful career. Partnership and sponsorship of an associations dedicated to maintenance will help the employer by stimulating and increasing competence of the employee that will activate in that association.

An important issue of the qualifications of workers in the field of maintenance is the lack of practical abilities of those with undergraduate studies. By restarting and development of vocational and post-secondary schools we hope this will be resolved in a reasonable time, but it requires the involvement of the business environment so that students can practice in a competitive environment close to the real world. One solution is to use simulated enterprises (Băban et al., 2013), but students will learn a lot in a company.

Given that the necessary for maintenance specialists with higher education will grow continuously due to technological progress, increasing their skills and qualifications is the biggest problem. Although we have internationally recognized professors, some even lecture in other countries, who understand the symbiosis required between maintenance and the other activities of the company, production, marketing, quality tracking etc. (Verzea and Luca, 2013), there is not enough emphasis on this interdisciplinary field. In Romania, for Bachelor's degree there is no specialization focused on maintenance and for master level studies, we have only three specializations that contain the word maintenance.

To combat the shortage of skills and qualifications, economic agents should get involved in solving the problem, both by raising awareness of responsible ministries and educational institutions, and especially by working with them at all levels: specialization, types of subjects, subjects content, organizing competitions and thematic symposia and especially in specialized internships. Students' internship within economic units will be beneficial not only for students, but for the economic agents, too, because they will be able to hire staff with the specific knowledge required by the company and will integrate more easily into current activities.

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A NEW APPROACH ON IT STARTUPS PROJECT MANAGEMENT

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Abstract

Purpose *– The purpose of the paper is to prove the efficiency and utility of the free project management platform called Freedcamp that we used for startups management in order to design a template for IT innovative startup project management.*
Methodology/approach *– The methodology used is based on Freedcamp which is a free project management platform that can be used by professionals in wide variety of industries.*
Findings *– For the case of Check4Green startup, using the Freedcamp platform, we followed the idea generation, prototype building and pre-feed phases. The main findings are related to the path towards the current state, which is feed and market insertion.*
Research limitations/implications *– The main problem during the startup evolution from idea generation to market integration is the team management that dramatically influences the success of the startup. This is hard to quantify by any existing tools, it is only estimated.*
Practical implications *– In a time of crisis, one way to bring development is to explore the innovative ideas related to the IT field that prove throughout the last 20 years as the main promoter of evolution of life, ultimately.*
Originality/value *– In our paper, besides showing the functionalities of the platform we have defined improvement opportunities that were based on our experience with it.*
Key words: *innovation, Check4Green, Freedcamp*

Introduction

The startup trend has grown in popularity after the dot-com boom, mainly because of the following advantage points: easy to create and develop, the life blood of a startup is fueled by the passion and dedication of the people involved, which also means that most of the time, a startup team has great chemistry.

A startup actually is a small business that offers innovative services and/or products that don't exist at that time and which are meant to satisfy the needs of a niche market.

In our paper, we have described and proved the efficiency of the free project management platform called Freedcamp in startup management. We have used this platform for over five months and this paper includes not only the description of the platform but also its applicability, the description of its functionalities and the demonstration of it in work. We have used the platform to help manage multiple startups but in this paper, we focused on showing how Freedcamp helped us organize our activities with one of our startups called Check4Green.

Check4Green is an environmental based startup that provides both hardware and software solutions for dealing with electronic waste and not only. Taking into account that electronics have a long time impact on the environment, a waste management system must be embedded in the lifecycle of the electronic products (Grecu, E., Petrilean, D.C. and Ionel, I., 2016). We provide both the hardware and software solutions. The hardware component consists of a sensor that can be easily installed into any kind of container. Once installed, it reads the waste load level of

the container and it transmits the data to the database in our software platform, from where it gets interpreted and allows the client to see the location of all the containers in which he had previously installed the sensor as well as schedule the pickups and maintenance activities.

The team that developed the project was both small and not used to working in a startup environment so there were plenty of challenges that occurred during the development of the prototype, challenges which we described in the paper amongst with how we overcame them.

Theoretical background

A startup can be defined as a newly emerged small business that offers innovative services and/or products that don't exist at the time on the market and which are meant to satisfy the needs of a niche market (Guillebeau, C., 2012). The startup trend has grown in popularity after the dot-com boom, mainly because of the following advantage points: easy to create and develop, team-chemistry, flexible variety of products and services, very close to the customer and passionate about its product. Startups can either launch off and become full blown business, choose to be bought by bigger companies that will develop them further or completely retreat from the market in case they fail. A problem that startups had to deal with initially was the founding, which today is easier to obtain due to the development of both technologies and the business life.

Startups can find founding either from one or multiple investors, bank loans of even the popular crowdfunding. Crowdfunding is a new way of raising capital by allowing the general public to pinch in and fund the idea or business, without having them to be investors or business people. People who share your passions and believe in your product will gladly contribute to seeing your dream happen and they can do so easily with the help of crowdfunding platforms. Before having complete strangers pinch in and help found a startup there are other more important or closer to the startup people that generally help. It is estimated that most startups receive founding from friends, family, work acquaintances and any other people they are related to, including second or third degree of connections (Osterwalder, A., Pigneur, Y., 2010).

In order to be able to define the process of project management and its importance, we must first define the notion of a project. A project is an individual or collaborative effort that is meant to achieve a scope/goal (Heerkens, G.R., 2001). The most particular things of any project is its temporary character, in the sense that it has a defined beginning and end in time, and its uniqueness – it is not a routine operation (Portny, S. E., Meredith, J. R., and Mantel Jr, S.J., 2007).

Project management is the application of processes, methods, knowledge, skills and experience to achieve the project objectives (https://www.apm.org.uk/WhatIsPM). Similar to the management processes, the project management processes fall into five groups: Initiating, Planning, Executing, Monitoring / Controlling and Closing (https://www.pmi.org/about/learn-about-pmi/what-is-project-management).

There are a number of tools available to help project managers through the project management process. Most are software-based, and some of the most common are: AtTask, Clarizen,and Earliz. Basic project management software apps include: task, team, and goal management features (Edelhauser, E., and Lupu-Dima, L., 2012). Other common features include time tracking and invoicing. Examples of this features include: Lighthouse, CreativePro Office, Basecamp, and No Kahuna, among many others (http://www.businessnewsdaily.com/4014-project-management.html) (Cioca, M., Cioca, L.I.; and Duta, L., 2011).

Real-life implications of using Freedcamp to manage startups

Initially, we used the Gantt chart to manage the progress of the Check4Green startup but we soon discovered that it didn't allow us to take into account all the details of the way we were managing the project.

A Gantt chart is a type of bar chart, devised by Henry Gantt in the 1910s, that illustrates a project schedule. Gantt charts illustrate the start and finish dates of the terminal elements and summary elements of a project. Terminal elements and summary elements comprise the work breakdown structure of the project. Modern Gantt charts also show the dependency relationships between activities (https://en.wikipedia.org/wiki/Gantt_chart).

In order to start using Freedcamp, all of the team members had to register with a valid email address and a password, or by using the social media option. Once a member is registered, he can create a project as well as invite others to register on Freedcamp and join his project or start their own projects.

Figure 1. Freedcamp dashboard

As you can see from Figure 1 after registering and logging in, the user can see a dashboard containing cards of all the projects he created, as well as the team members of each project and the possibility of adding new projects or editing existing projects. Other features available include fast access to the project tasks, discussions, files and calendar. There are three types of users: organizer – which is the equivalent of an admin: this user can do anything but delete the project (this means he can both invite and uninvite people from the project, modify task groups and tasks, add entries to the calendar amongst many other things), team player – the equivalent of a regular user: has full edit/delete access without ability to invite people or install apps to the project in which he's part of and the contributor – the equivalent of a guest. This user can only edit/delete tasks, comments, and other items created by him.

As soon as you click on one of the project cards you are taken into the project's task list as you can see from Figure 2.

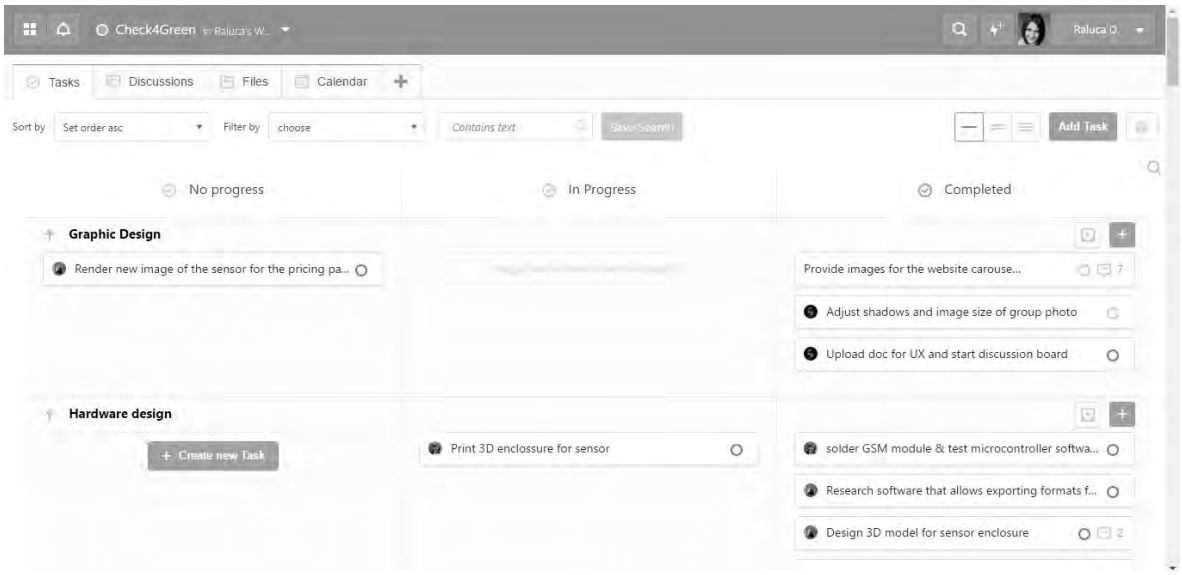

Figure 2. Kanban tasks list

The project task lists gives the user the possibility to manage tasks easily and group them into tasks groups. Since our project involved more than building the device, we also created a graphic design task group for the resources which we later used on the website and in promotional material. Our project also involved an advertising effort so we created a Marketing and Advertising task group as well as a Website front end development one and a Backend development task group for the software side of the project. By arranging the tasks into task groups it was easier for the team members to search through the tasks and easily find their assigned task by knowing their role in a team. For instance as a marketing assistant, only check the Marketing and Advertising task group and not waste time looking for tasks in other tasks groups which are not in your field of knowledge and experience.

Another very useful feature for us was the fact that the tasks could be arranged either as Kanban elements as in Figure 2 or as lists. We found it easier to use the Kanban list which is mainly a table with three columns: No progress, In Progress, Completed and as many rows as the number of tasks that the project contains. Progress as soon as a task is created, it automatically appears in the No column from which it can be dragged and dropped into any of the other two columns, while tasks that have been marked as complete can be removed to in progress in case further changes are required. Still in Figure 2 it can be observed that each task has an empty colored circle to its right, and that is because Freedcamp has a coloring system for the tasks according to their priority. There are three levels of priority: high priority – which has a red colored circle, medium priority – with an orange colored circle, and low priority with a blue colored circle.

Upon pressing the Add new task button, a form opens up and asks the creator to fill in the details including: the task group in which the task should be included, the name of the task and the description, the priority, deadline, person you want to assign the task to as well as the option of notifying the team member/s you assign the task to. In Figure 3 it can be seen the way the form looks.

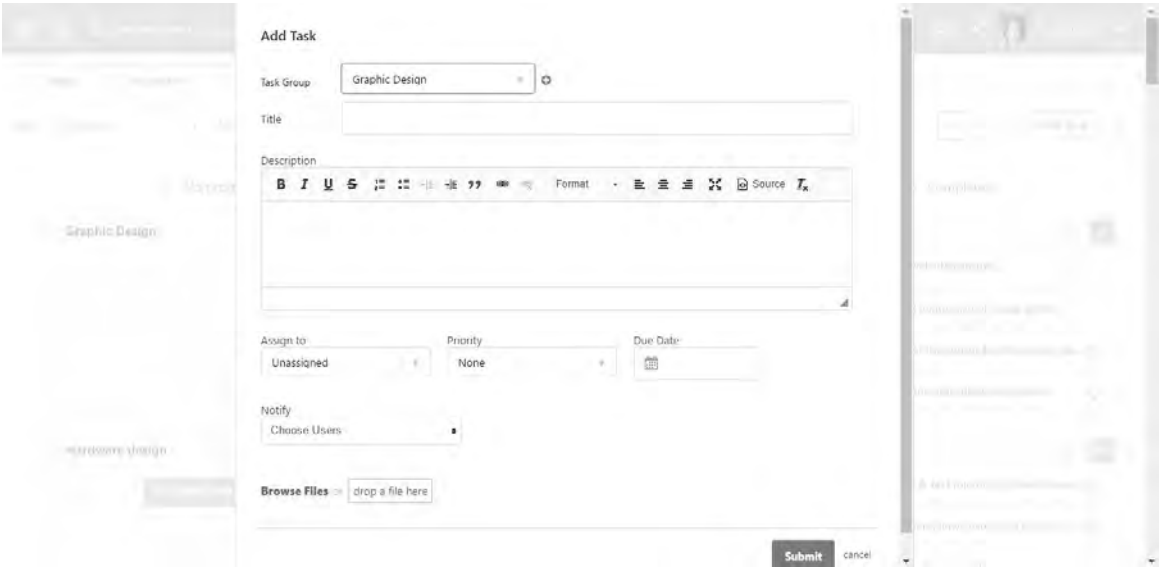

Figure 3. Adding a new task

Figure 4 shows the way the tasks which have comments from the users are displayed to make it easier for the team to stay in touch even if there are not in the same room or building at all times. Leaving comments underneath the description of the task allows the users to pinch in with ideas or questions at any given time as well as stay in touch and be up to date with their team mates' ideas. There were times when a team member didn't understand what he had to do and so he posted comments asking for clarifications. There were also times when a team member had a creative task like say: come up with a logo, and the rest of the team members were glad to pinch in with their ideas, becoming an effective creative force.

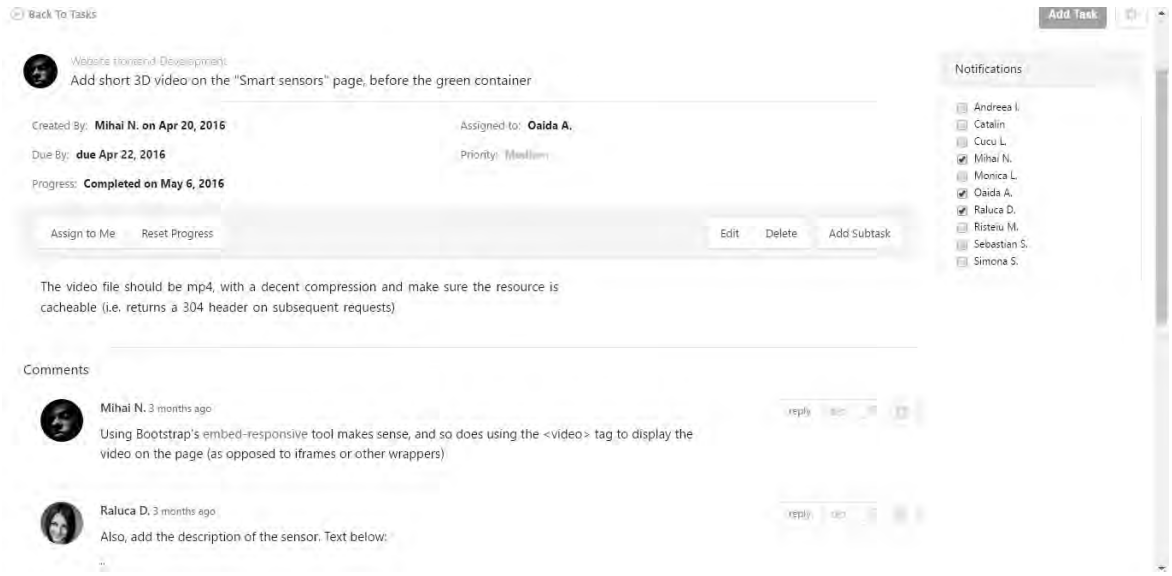

Figure 4. Task and comments

In Figure 5, it can be observed the way the tasks are organized in the list view of the tasks.

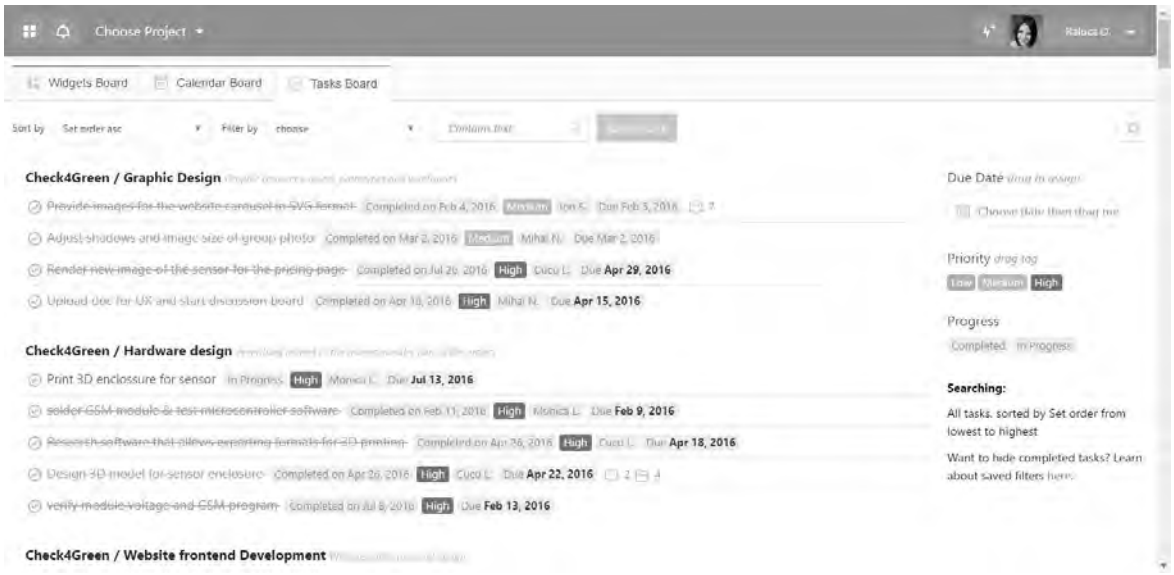

Figure 5. List view of tasks

Freedcamp comes with a tool specially designed to facilitate the communication between team members at all times. Freedcamp has four preinstalled apps which are also free: tasky - the app that allows tasks creation; discussions; files – the app that allows the users to upload images of documents summing 250mb for free, but can be upgraded to allow more storage space for monthly subscriptions; and last but not least, the calendar app that can be seen in Figure 6 which displays the tasks in the calendar view to make it easier for team members to see the deadlines for their tasks and give the project manager a visual overall.

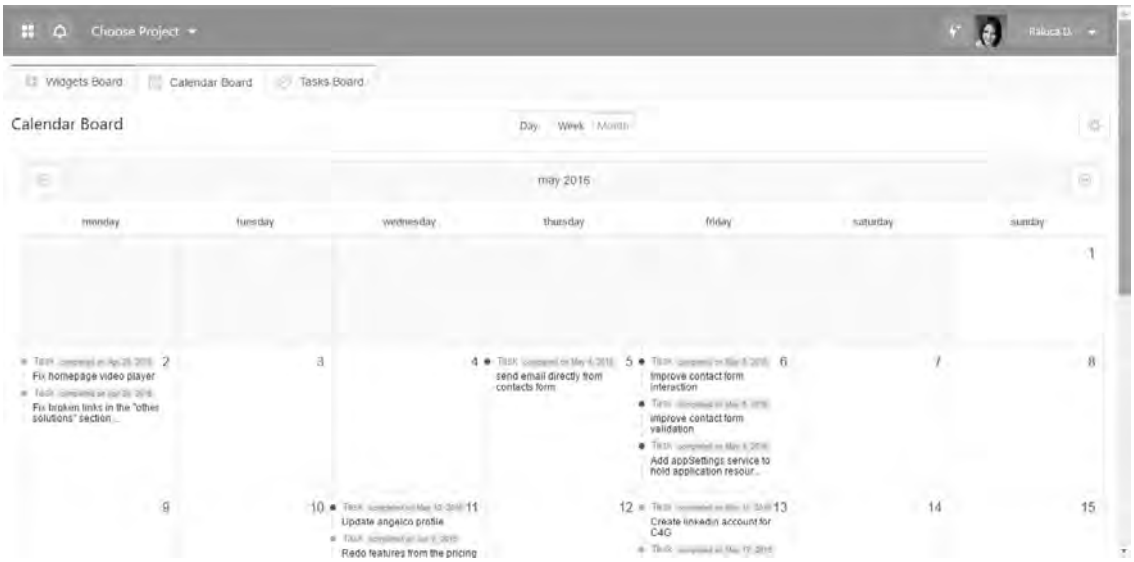

Figure 6. Calendar

The calendar app can be synchronized with the google calendar so the users can receive emails and notifications about their tasks, including if a task's deadline is approaching. The platform also allows its users to buy and install more apps like: invoicing, issue tracker, milestones, backups and many more.

The discussion tool captured in Figure 7 shows the way the team can organize and share ideas through the help of this very useful app that is already preinstalled upon registering but can be deleted if the user prefers to.

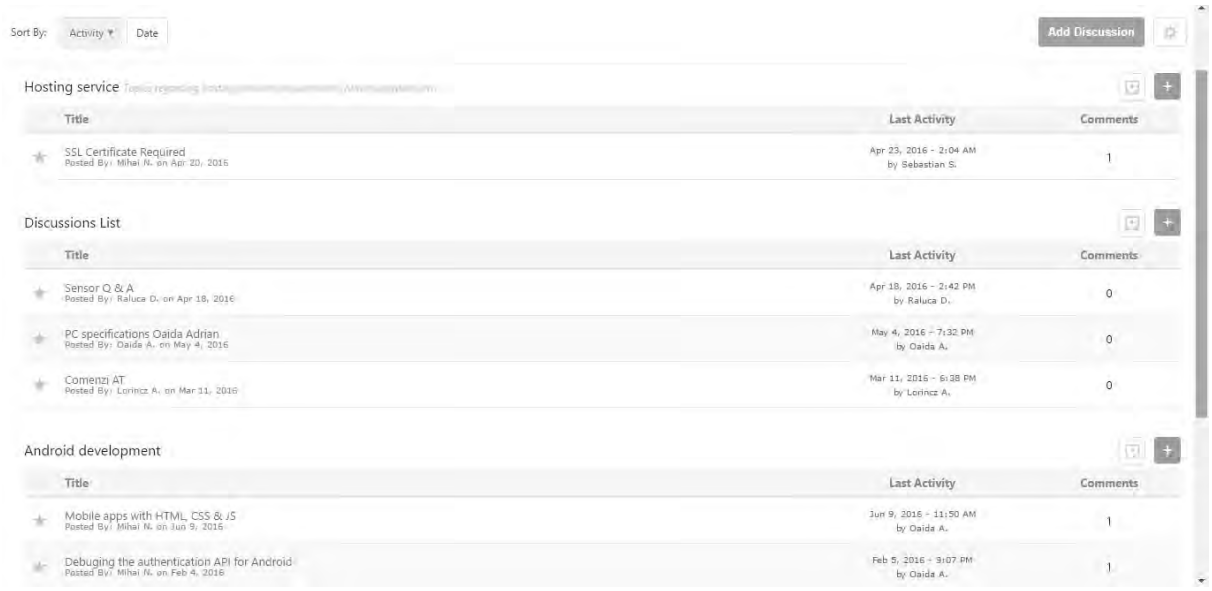

Figure 7. Discussion board

Discussion and conclusions

Freedcamp was the platform we chose amongst the others due to the advantages like: more customization options and preferences, useful apps, most user friendly interface and free of use.

If before, the team was unorganized and there were problems such as the lack of communication between team members and uncertain tasks, Freedcamp came to our rescue and proved to be a really useful tool for modern project management. Amongst other benefits, perhaps the most significant one was the ability to prioritize and update tasks without having to write them down on pieces of paper or be in the awkward position of forgetting to tell a team member his task.

Given the fact that we worked at a startup, our team was composed of members who were working remotely as well as members with different working patterns and schedules so there were rare occasions when all of us were in the same office at the same time. Freedcamp helped resolve this is issue as well by allowing us to open discussions and leave comments in real time. However, we felt the need for a live chat option which would have been very useful to us. Inspired by our team's demands and Freedcamp's functionality we have developed a mockup platform for project management. Some of the further developments for our platform include: live chats, automatically generating graphics and charts, such as Gantt charts and exclamation marks for tasks which are overdue but still in progress or not started amongst many others.

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MODELING THE INTELLECTUAL PROPERTY POLICY IN SMEs

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Abstract

Purpose *– The study of intellectual property (IP) has been given extensive attention, yet there is still a need for designing an IP framework at organization level. As such, present paper investigates modeling the IP policy by employing standard tools and notations.*
Methodology/approach *- Based on the underlying concept, an IP model is proposed for SMEs in particular, supporting their goal of successfully developing and exploiting technological innovations. The key issues of an IP policy were addressed and configured as elements of a process which was then designed and depicted as a graph of flow elements in a graphical notation, respectively in Business Process Model and Notation (BPMN) v2.0. For this purpose, the enterprise architecture modeling ADOxx v1.5 Platform was employed.*
Findings *– Research findings reveal that the IP policy in SMEs can be configured as a process comprising a specific flow of activities which systematically request execution. The use of a standard business process language facilitates the approach and works towards a standard model that SMEs should benefit from.*
Research limitations/implications *– The proposed IP model represents a generic data model which must be further adapted by organizations to fit specific needs by modeling micro-models. As such, the validation of automation features which is possible exclusively in the case of micro-models cannot be effectively performed at this stage.*
Practical implications *– Present paper contributes to modeling the IP policy in SMEs when undertaking technological innovation, focusing on identifying the most suitable IP instruments and on designing the strategies for exploiting the IP assets.*
Originality/value *– IP policy can be approached as a process, respectively as a sequential flow of activities designed with the help of Business Process Management (BPM) tools, further allowing for process analysis, simulation, evaluation and monitoring (i.e. IP process automation). As such, SMEs can reconfigure their process based systems and create a long term perspective on both their IP assets and revenues.*
Key words: *intellectual property, Business Process Modeling.*

Introduction

The creation, development and exploitation of IP in SMEs cannot be efficiently performed without planning, implementing and executing an IP policy. This is of great value in the case of technological innovation, i.e. process and product innovation, particularly when an invention is at the core of the innovation process. While being subject to fine tuning in each particular case, the IP policy should be designed to represent a standard model, regardless of the organization implementing it or the innovation to be brought to the market.

An IP policy should create the environment that supports and expedites the dissemination of discoveries, creations and new knowledge, while protecting it and facilitating the economic benefits (WIPO, 2010).

SMEs should configure their IP policy as a core process comprising of a flow of activities designed to establish the specific instruments allowing the organizations to perform in an open innovation framework. Modeling such process with the help of BPM tools supports the integration of SMEs in open innovation partnerships aiming at taking innovation to the market. This is of particular importance in the case of invention based process and product innovations, which require significant resources and deep knowledge in terms of managing research and development. Furthermore, designing a standard IP model can support SMEs in approaching innovation by providing them with a tool for better understanding and implementing a comprehensive IP policy at organization level.

An IP model should be configured using a standard language such as BPMN v2.0 which represents "a notation that is readily understandable by all business users" and which "creates a standardized bridge for the gap between the process design and process implementation" (OMG, 2011). The BPM tool employed to carry out the design of the IP model was the ADOxx v1.5 Platform.

The IP model

The proposed IP model, as shown in Figure 1 bellow*, incorporates the flow elements of BPMN and represents a Diagram which was structured in a single Pool (i.e. partition) comprising of two Lanes (i.e. sub-partitions). The Lanes graphically represent two levels of execution which configure the IP process, respectively:

- <Designing the Strategies for Identifying Suitable IP Instruments>
- <Designing the Strategies for Exploiting the IP>

The BPMN Modeling Elements depicting the IP model include Events (i.e. Start Event and End Event), Sequence Flow, Activities (i.e. Tasks and Sub-Processes), Gateways for branching, forking, merging and joining paths (i.e. Inclusive Gateway, Inclusive Gateway Converging, Parallel Gateway, Parallel Gateway Converging and Event-based Exclusive Gateway), Data Objects (i.e. Data Store, Data Input and Data Output), Data Association flows and Notes.

The IP model is detailed and discussed in the section bellow.

Discussion and conclusions

The Sequence Flow starts with a Start Event within first lane <Designing the Strategies for Identifying Suitable IP Instruments>. The first Task is <Monitor the National and International IP System Legislations>. In order to be performed effectively, the Task requires inputs from specific databases which must be designed, comprising of up-to-date specific information, respectively the Data Stores <European Innovation Policy>, <National Innovation Policy> and <National and International IP Legislations>. Based on the referred input data, the Task generates Data Output, respectively <Studies about the National, European and International IP Systems>. Up-to-date knowledge about the IP legislations and innovation policies of interest allow for identifying both the innovation opportunities and the IP exploitation opportunities, respectively for correlating the organization's objectives with those of national and/or international innovation policies and IP systems.

The Sequence Flow continues with the Task <Design a Methodology for Evaluating the Acquired Knowledge, the Newly-Created Knowledge and the Innovation Ideas> which generates the output evaluation methodology. As specified in the Note attached to the referred Task, the selection, analysis, evaluation and ranking of knowledge and ideas should consider at least quantitative and qualitative indicators measuring the market exploitation potential of a process/product innovation, the cross-industry innovation potential; the cost estimate for research-development and market uptake of innovation; the potential for meeting market needs and/or anticipating market future development; the innovation process potential to be developed in an open innovation framework.

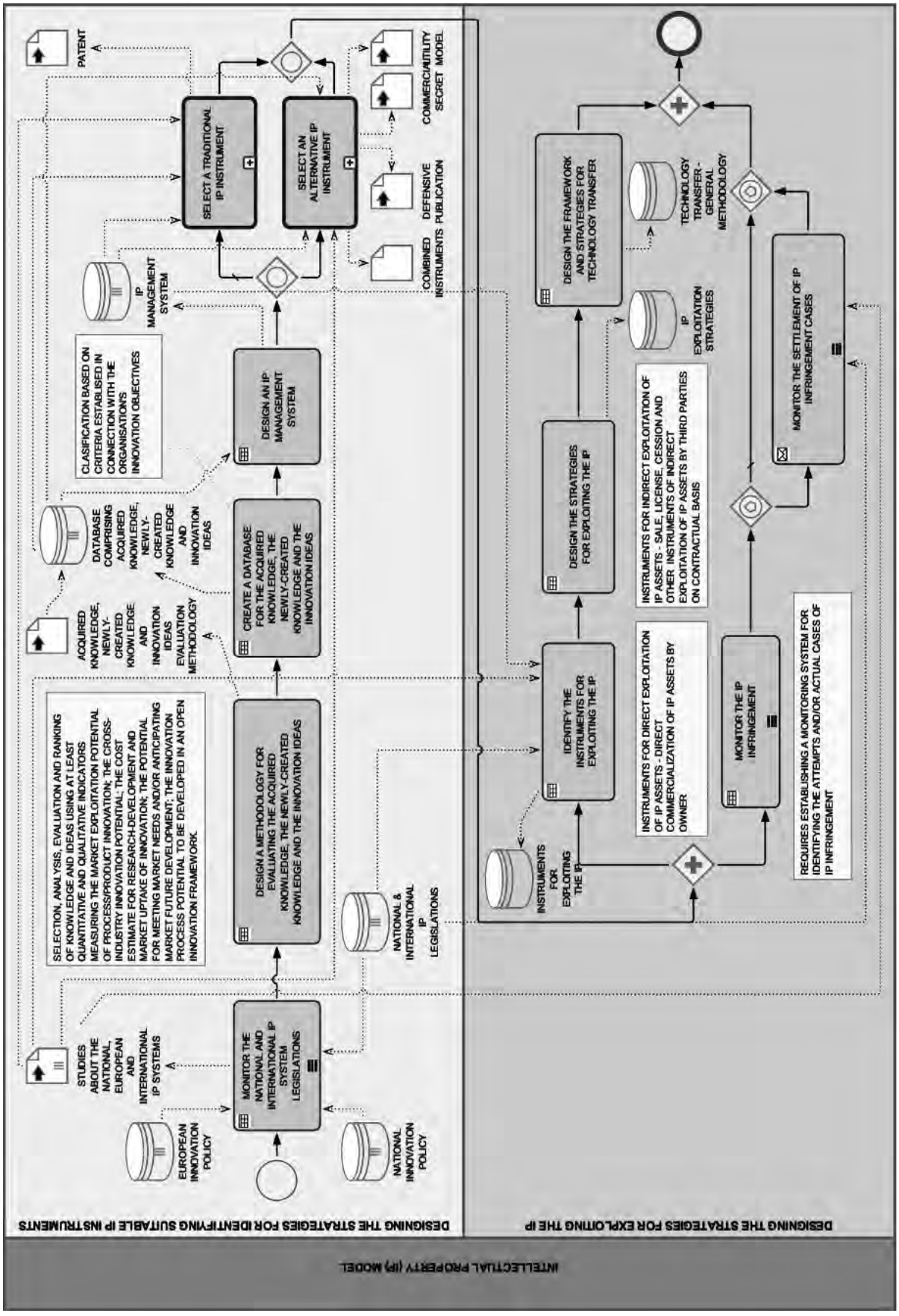

Figure 1. Intellectual Property (IP) Model

The IP model further requires the task <Create a Database for the Acquired Knowledge, the Newly-Created Knowledge and the Innovation Ideas> which generates the connected output database by classifying the knowledge and ideas based on criteria designed in connection with the organization's innovation objectives.

The next Task <Design an IP Management System> correlates all previously generated output data and databases into an IP management system allowing the organization to have an integrated approach. As such, once all the documents and databases have been formulated and established and all information sources have been identified, the methodologies and specific strategies can be designed and synthesized. Such integrated approach allows for creating an IP Management System from an informational perspective.

The Sequence Flow continues with two Sub-Processes, respectively <Select a Traditional IP Instrument> which is the patent (i.e. protecting the invention by filing a patent application), and <Select an Alternative IP Instrument> which comprises of various alternative solutions for protecting inventions, such as utility model, commercial secret, defensive publication or a combination of IP instruments. For example, the latter can comprise of the following combination: defensive publication, abandoned patent application and commercial secret. This refers to when the invention is partially revealed by filing a patent application which is later abandoned after its publication; this combined instrument allows for stopping others from patenting the same invention, while promoting the core idea and its inventors. Various alternative instruments are examined by literature and studies, an overall view on the subject being provided, for example, by European IPR Helpdesk (2013). When approaching alternative IP instruments, both advantages and disadvantages must be carefully documented and effectively adapted to specific cases. The two referred Sub-Processes are graphically represented as Collapsed Sub-Processes, where the details are not visible in the Diagram. This is due to the fact that their modeling and expanded representation represents the object of further separate research.

Once the Activities of the first Lane have been performed, the sequence flow enters the second Lane, respectively <Designing the Strategies for Exploiting the IP". Two parallel paths in the process need to be taken at this point.

The first path comprises of the following tasks: <Identify the Instruments for Exploiting the IP>, <Design the Strategies for Exploiting the IP> and <Design the Framework and Strategies for Technology Transfer>. The instruments for exploiting the IP refer to the instruments for direct exploitation of IP assets (i.e. direct commercialization of IP assets by owner) and the instruments for indirect exploitation of IP assets (i.e. sale, license, cession and other instruments for indirect exploitation of IP assets by third parties on contractual basis). The strategies for exploiting the IP are meant to support the best use of previously identified instruments for exploiting the IP. Furthermore, a general methodology for technology transfer needs to be designed in order to support the adoption of innovation by others.

The second path in the process comprises of the following tasks: <Monitor the IP Infringement> which requires establishing a monitoring system for identifying the attempts and/or actual cases of IP infringement and <Monitor the Settlement of IP Infringement Cases> which is an event-triggered activity (i.e. it takes place exclusively when IP infringement cases have been identified).

The IP model reaches the end which is marked by an End Event.

The above detailed model represents a generic data model configuring the IP policy at organization level. It can be further modeled into micro-models suitable for the specific needs of particular organizations, particularly SMEs. Once the process has been modeled, it can be automated, allowing for operations such as analysis, simulation, evaluation, monitoring and documentation. BPM Tools employing the BPMN standard language support the above operations based on criteria such as execution time, cycle time, activity costs and performers which can be assigned for each activity of the process, thus allowing real-time automated process

management. The validation of automation features on the proposed IP model can be effectively performed in case studies, when real values are attributed for each criterion.

When developing and exploiting IP assets, strategic activities should always be considered such as monitoring the legislation and innovation policy; creating a methodology for evaluating the knowledge, new data, as well as innovation ideas; creating specific IP databases; identifying the instruments for exploiting IP assets; elaborating the framework and strategies for technology transfer.

Intellectual property allows for effective exploitation of innovation, particularly in terms of process and product innovations which are generated by inventions. It represents a strategic tool in times of crisis when undertaking innovation is crucial for business survival. Integrating the intellectual property process in the value chain means that SMEs are increasing their competitive advantage, which becomes crucial when operating in a time of crisis.

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OPEN INNOVATION BUSINESS MODEL

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Abstract

Purpose *– The purpose of present paper is to introduce an open innovation business model which is configured as a business process, thus representing a sequence or flow of activities performed for carrying out the work of implementing the referred business model.*
Methodology/approach *– Based on the nine building blocks of Business Model Canvas, an open innovation business model is constructed with the aim of supporting the architecture of open innovation. To this end, a Business Process Modeling (BPM) instrument was employed, respectively the modeling platform Lean PAd Modelling Environment v4.0. The proposed model represents a business process diagram executed using the standard Business Process Model and Notation (BPMN) v2.0.*
Findings *– The objective of adopting an open innovation business model can be effectively mapped out by designing a business process supported by a standard notation and model and can thus be broken down into flow objects and data, comprehensively connected and grouped to provide paths for achieving said objective.*
Research limitations/implications *– The proposed model should be evaluated from the perspective of Business Analysis, yet requiring System Analysis/System Engineering.*
Practical implications *– Adopting an open innovation business model can increase the organizations' capacity to both undertake and achieve the market uptake of innovation.*
Originality/value *– The research supports the shift towards the open innovation paradigm by contributing to the design of a standard open innovation business model which can be implemented and managed as a standard business process. Furthermore, the paper highlights the efficiency of using standard notations such as BPMN in defining and managing business processes. As such, a knowledge product is provided for organizations adopting open innovation.*
Key words: *open innovation business model, Business Process Management (BPM).*

Introduction

Open innovation has become an increasingly popular tool for both academia and industry (Gassmann, Enkel and Chesbrough, 2010), being recognized as one of most effective strategic tools in exploring new growth opportunities at lower risks, while placing openness and collaboration between innovative organizations at its centre (du Preez, Louw and Essmann, 2014). It requires organizations to implement an open innovation business model in a sustainable manner in order to secure a framework for creating and capturing value while achieving the market uptake of innovation. The problem to be researched thus refers to developing a business process allowing for adopting an open innovation business model by designing flow objects and data in a formalized execution semantics.

The basic framework of the open innovation business model relies on the nine building blocks of the Business Model Canvas, i.e. nine strategic elements that depict how an organization can create value, as follows (Osterwalder and Pigneur, 2009):

1. The customer segments that are addressed by the value proposition,

2. The value proposition of what the organization offers to the market,
3. The channels to reach the customers in terms of communication, distribution and sales,
4. The customer relationships which are established by implementing the business model,
5. The key resources required to implement the business model,
6. The key activities required to implement the business model,
7. The key partnerships supporting the implementation of the business model,
8. The cost structure resulting from implementing the business model,
9. The revenue streams generated by implementing the business model.

Said nine basic building blocks were redesigned to both incorporate the core elements of open innovation and to fit the structure of a business process diagram executed using BPMN v2.0 with the help of Lean PAd Modelling Environment v4.0 software program. Moreover, two new basic building blocks were designed to complete the proposed open innovation business model.

BPMN represents a standardized language allowing for the execution of business processes, while they can be visualized with a business-orientated notation (OMG, 2011).

Lean PAd Modelling Environment represents a modeling platform aiming at providing a business process orientated collaboration platform merging the working and training environment for the purpose of providing an efficient BPM tool (Learn PAd Consortium, 2015).

Discussion and conclusions

The open innovation business model which is proposed by authors reinterprets the Business Model Canvas to fit the requirements for implementing an open innovation business model.

The four main areas of Business Model Canvas, respectively consumers, offer, infrastructure and financial viability, which are described through the abovementioned nine basic building blocks meant to help describe the way to generate revenue (Osterwalder and Pigneur, 2009), are construed to help an organization understand and undertake a predefined path for implementing an open innovation business model. Within this context, the two new basic building blocks required to complete the open innovation approach are:

1. Business standards,
2. Open innovation oriented RDI Department (Research, Development and Innovation Department) – the design of the RDI Department to fit an open innovation framework.

The new configuration of five main areas of a business described through eleven basic building blocks establishing an open innovation business model is presented in figure 1 bellow.

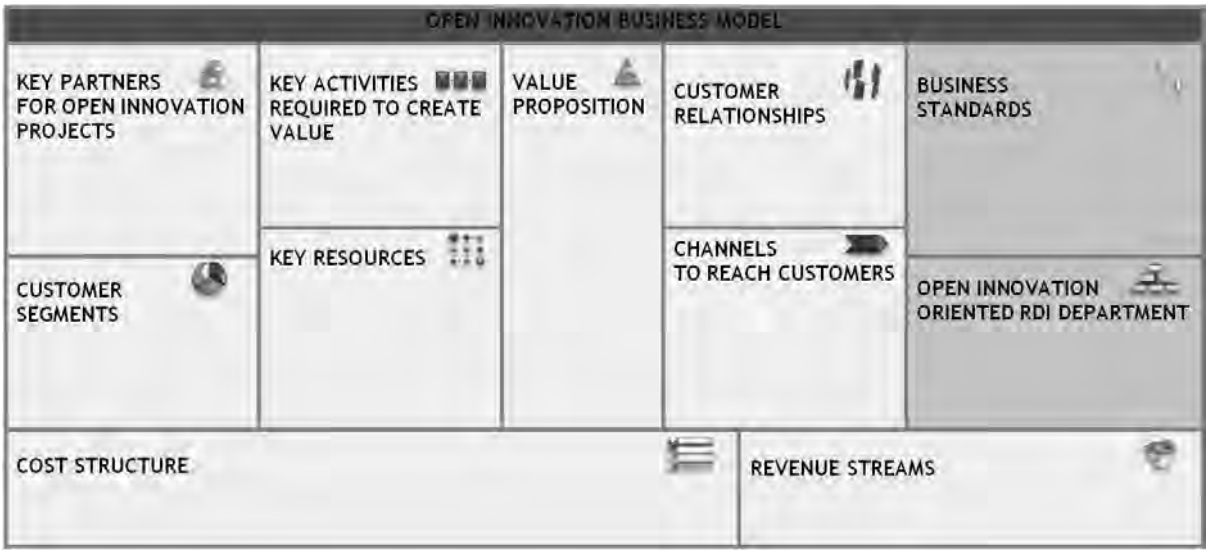

Figure 1. The eleven basic building blocks configuration of Open Innovation Business Model

The new open innovation business model which was designed in a dynamic manner, that is as a business process comprising of a flow of activities executed using the standardized notation BPMN, is depicted in Figure 2 and discussed next.

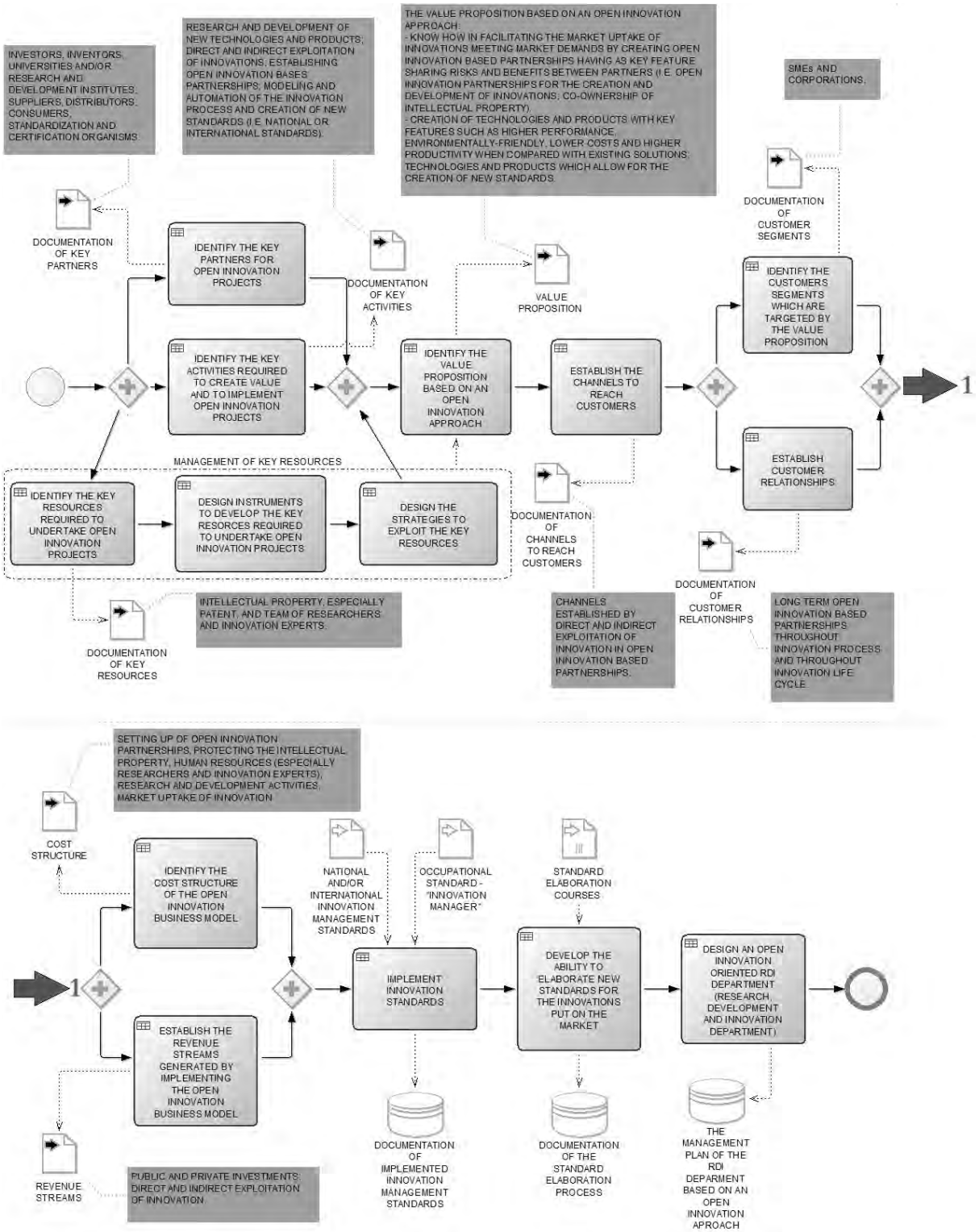

Figure 2. Open innovation business model

The business process flow starts (Start Event) with a Parallel Forking Gateway which creates parallel paths in the process, where activities can be performed concurrently, rather than sequentially. Said activities are Tasks, as follows:

- First path: “Identify the key partners for open innovation projects”. When implementing an open innovation business model, an organization should consider including as many external stakeholders into his innovation orientated business processes. As such, the referred Task generates the Data Output “Documentation of key partners” – when adopting an open innovation business model, the key partners should include, without being limited to, investors, inventors, universities and/or research and development institutes, suppliers, distributors, consumers, standardization and certification organisms. Partnerships creating a framework for innovation should be established for allowing the organization to develop a self-created open innovation environment.
- Second path: “Identify the key activities required to create value and to implement open innovation projects”. The referred activity generates the Data Output “Documentation of key activities” and should include research and development of new technologies and products; direct and indirect exploitation of innovation; establishing open innovation bases partnerships; modeling and automation of the innovation process and creation of new standards (i.e. national or international standards).
- Third path comprising of three sequential Tasks: “Identify the key resources required to undertake open innovation projects” which generates the Data Output “Documentation of key resources”, followed by “Design instruments to develop the key resources required to undertake open innovation projects” and “Design the strategies to exploit the key resources”. These three Tasks constitute a Group called “Management of key resources”. Said Group represents the framework for the best use of key resources allowing also for establishing the value proposition that the organization has to offer. There is thus interdependency between said Group of Tasks and the Task “Identify the value proposition based on an open innovation approach”. The key resources of an organization having a well-established open innovation business model should include intellectual property, especially patent, and team of researchers and innovation experts.

When signals from all the above Tasks arrive at the gateway, the multiple Sequence Flows join in the Parallel Joining Gateway so that one single Sequence Flow can emerge.

The process continues with the Task “Identify the value proposition bases on the open innovation approach” which generates the Output Data “Value proposition”. The value proposition should comprise of:

- Know how in facilitating the market uptake of innovations meeting market demands by creating open innovation based partnerships having as key feature sharing risks and benefits between partners (i.e. open innovation partnerships for the creation and development of innovations; co-ownership of intellectual property).
- Creation of technologies and products with key features such as higher performance, environmentally-friendly, lower costs and higher productivity when compared with existing solutions; technologies and products which allow for the creation of new standards.

The Sequence Flow reaches the Task “Establish the channels to reach customers”, generating the Output Data “Documentation of channels to reach customers”. When implementing the open innovation business model, organizations should employ channels such as: channels established by direct and indirect exploitation of innovation in open innovation based partnerships.

At this point into the process, a Parallel Forking Gateway divides the path into two parallel paths, where activities can be performed concurrently. Said activities, respectively Tasks, are as follows:

- First path: “Identify the customers segments which are targeted by the value proposition”, generating the Data Output “Documentation of customers segments”. The following segments should be considered in an open innovation approach: SMEs and corporations. SMEs should be approached in particular, as they are more “inclined” to take on innovation risks in their course for business development.

- Second path: “Establish customer relationships”, generating the Data Output “Documentation of customer relationships”, which comprise of long term open innovation based partnerships throughout the innovation process and throughout the innovation life cycle.

Once the above two Tasks are completed, the multiple Sequence Flows join in the Parallel Joining Gateway so that one single Sequence Flow can emerge.
Another Parallel Forking Gateway divides the path of the process into two parallel paths, comprising of concurrently Tasks, as follows:

- First path: “Identify the cost structure of open innovation business model”, generating the Data Output “Cost structure”. The following costs should be considered in an open innovation approach: setting up of open innovation partnerships, protecting the intellectual property, human resources (especially researchers and innovation experts), research and development activities (e.g. prototyping and Technology Readiness Level) and market uptake of innovation.
- Second path: “Establish the revenue streams generated by implementing the open innovation business model”. The task generates the Data Output “Revenue streams”, referring to public and private investments; direct and indirect exploitation of innovation.

When signals from all the above Tasks arrive at the gateway, the multiple Sequence Flows join in the Parallel Joining Gateway. One single Sequence Flow emerges and the process continues.

The next Task is “Implement innovation standards”, requiring Data Inputs such as “National and/or international Innovation management standards” and “Occupational standard – Innovation manager” and generating the Data Store “Documentation of implemented innovation management standards”.

The Sequence Flow continues with the Task “Develop the ability to elaborate new standards for the innovations put on the market”, requiring the Input Data “Standard elaboration courses” and generating the Data Output “Documentation of the standard elaboration process”.

Considering the complexity of innovation processes within the open innovation based partnerships, an organization requires both to implement innovation management standards and to develop their ability to elaborate new standards for the innovations reaching the market.

The Sequence Flow continues with the last Task of the process, respectively “Design an open innovation orientated RDI Department”, which generates the Data Store “The management plan of the RDI Department based on an open innovation approach”. In order to have a well-established open innovation business model, an organization should create or reconfigure their RDI Department to have a partnership orientated innovation process, while developing the ability to integrate and communicate the innovation inputs and outputs within the extended framework of the partnerships created for the market uptake of innovations.

The Sequence Flow reaches the end of the process, respectively the End Event.

The advantages of implementing an open innovation business model having the configuration and execution of a business process include, but are not limited to:

- Establishing documented paths for implementing an open innovation perspective on how to do business;
- Performing Business Analysis, i.e. designing the model, lays down the basic structure for System Analysis/System Engineering. The latter is performed with the scope of automating the business process, allowing for a dynamic approach, while performing real-time measuring, analysis and evaluation of the process through indicators such as specific costs, process duration, human resources, etc.
- Using tools such as Lean PAd Modelling Environment, the modeled open innovation business process can be configured as a knowledge product, i.e. knowledge which can

be available while executing business processes and, more importantly, which can be shared and further redefined.

The authors argue that implementing an open innovation business model by following the sequence flow of a referred business process designed in a standard language can help organizations particularly in a time of crisis when they could benefit from approaching innovation as an integral part of their management system.

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ADAPTING TO THE TIMES OF GLOBAL ECONOMIC CRISIS OF AN ENTERPRISE BY INCREASING LABOR PRODUCTIVITY AT A WORK STATION DUE TO AUTOMATION OF AFFERENT OPERATIONS

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Abstract

Purpose *– This paper aims the possibility of increasing labor productivity in a department assembly by eliminating the problems identified.*
Methodology/approach *– To fiind solutions for the identified problems which concerns the finding shortcomings in workplace organization - on one hand – and on the other hand to get an adjustment of how the elements of each operation correspond to the technological conditions prescribed, timing simplified method was used and the calculation of labor productivity*.
Findings *– A solution to increase productivity in montage department analyzed, and lowering or even eliminating defects due the repeatability of work, was the automation of related operations conducted by the operators.*
Research limitations/implications *– maintaining a constant values for the total manufacturing cycle was the main limitation imposed to find solutions to solve problems.*
Practical implications *– some of the operations related to automation was accomplished by introducing a pneumatic installations in the montage department analyzed.*
Originality/value *– It was succeeded eliminating a work station and an operator,which led to increased productivity within the department analyzed. Also, it has been able the inclusion of assembling operation existing in a position to maintain the value set for the total manufacturing cycle time.*
Key words: *labor productivity, timing method, automation.*

Introduction

As happened to many companies in recent years, the global crisis has influenced more or less serious immediate profits and even the existence of these organizations. A specific situation in this sense was found in a company whose main activity object is a final product through the production and assembly of subansamble. One of the solutions of the moment created by the economic crisis also was treated as an opportunity for the company studied in this paper. While many other companies operating in the same economic sector are reporting losses also were forced to temporarily restrict production capacities, the company analyzed managed to maintain and even increase their production due to the maintenance of markets, but also because some strategies right price applied to most of its products.

The research was conducted in one of the assembly departments of the enterprise that activates in automotive industry. Due repeatability of operations at technical quality control, were identified many defects. Also, it is found that it is necessary to reduce costs and touch-ups of the finished product.

One of the finished products belong to the range of products obtained in the manufacturing studied and referred, will be further noted with „product X”. For producing undertaking, the total production of „product X” is obtained at the end of the production flow and assembly, represents

total production volume of „product X" and has a value of 1.400 products / day. In the analyze assembly department, one of the stages of production of the total production of „product X" is performed by a total of 20 workstations with 20 operators.

Research issue treatment in specialty literature

In the specialty literature, labor productivity is understood as a synthesis of the use of factors of production, while the work is illustrating the effectiveness of using variable factor of production factors (Bădescu; Marinescu, p. 145, 2009).

From the perspective of Judea (2008), labor productivity depends not only on the amount of work, but also its quality, the amount of capital used, the expression of the complexity of the production process. Thus, labor productivity growth is an expression of requirements to increase efficiency and show reciprocal influence of the forces of production.

If at the macroeconomic level, labor productivity growth creates changes in the value of products, and at the micro level, labor productivity growth changes the ratio of living labor and labor materialized incorporated in to the unit value of goods, leading to reduced the unit cost (Khojasteh; Sato, 2015).

Simplified time observation is part of time observation methods (Drăghici, 2007). It is a method that can be applied in the case of repetitive manual activities. Being a method of quick enciphering, simplified time observation will allow to obtain accurate values for the operations analyzed.

Simplified time observation will be used as a method for measuring time performed directly on the work in progress – namely on each particular job. At the end of application simplified time observation method, it can normally be obtained for each task the durations, respectively durations activities within each of the operations studied. It also can perform a critical analysis of time consumption per unit of product (Lee, 2015).

The work cycle is defined as a succession of main stages contained in a period of time and reproduce well in an order determined for each unit (Bădescu; Marinescu, p. 112, 2009).

Applying simplified time observation **method** and analyze operations to **increase labor productivity organization**

Labour productivity noted with W was calculated using the formula:
$W = Q / N$ [products X / operator]
where :
N – represents number of operators involved in obtaining „product X", [no. operators];
Q - represents production volumule of „product X", [no. products X].

The initial labor productivity will be noted with W_{ini} and is calculated using the formula above. Thus, identified values are replaced in formula:

Q = 1.400 [no. products X]
N = 20 [no. operators]
$W_{ini} = 1.400 / 20$
$W_{ini} = 70$ [products X / operator]

To increase the value of productivity for the analyzed stage, given that the production volume remains fixed at 1.400 [no.pcs.], it is necessary to reduce the number of operators participating in the said step, default of production.

Reducing the number of operators can not do anyway, it must be done after a careful and realistic analysis of the operations sequences taking place in the assembly department analyzed. Thus, within the flow of production and installation of the producing company analyzed were identified three types of operations, namely:
a. manufacturing operations,
b. associated operations,
c. frequencial operations.
a. manufacturing operations are those operations which are performed during each cycle of work and are able to add value in the step of changind product. In this case studied, ,is considered the first grip manufacturing operations of parts and equipment and the last submission of parts and equipment.
b. associated operations are those operations which are performed at each cycle of work that are complementary and necessary to achieve manufacturing operations. In the case studied, those operations are considered associated operations that includes all movements, undertakings and intermediate deposits between the first and last deposit grip to the post of parts and equipment.
c. frequencial operations are those operations performed after several cycles of work for achieving supplies, the unpacking of parts and maintenance.

Thus, within the working area taken for analysis in the present study, work area that is part of the company manufactures assembley department analyzed, runs a number of ten operations. At the end of the execution of the ten operations, there is obtained a subassembly which is part of „product X".

Assembly line it is part of work area and is considered an mechanic assembly line. The ten operations that perform an operator in the work area are analyzed:
1 – fixing damper subassembly in a mounting means;
2 – mounting a protective sheath on the left rear arch subassembly;
3 – preparing the damper assembly. Thus, the shock buffer is inserted on the rod and the damper cylinder until the bottom of the bellows ensures the transition of the drawing of the damper. Follow, the lower tray positioning the damper arch, so that the rib of the lower tray correspond to the the spiral end. Finally, the upper plate is made and the position of the rod of the damper, so that the rib of the upper plate corresponds to the root end.
4 – mounting a bearing that is performed with the flat side underneath;
5 – installing a filter buffer that is performed with the collar below;
6 – mounting a hexagon nuts is achieved by screwing two to three screw threads on the threaded end of the damper rod;
7 – closing the door mounting device, thus completely closed this device gives a command contactor compression damper assembly;
8 – blocking the nut and damper assembly is performed at 62 Nm torque;
9 – open the door and releasing mounting device assembly damper;
10 – verification of previous operations and marking a paint sign on the thread rod damper, to ensure implementation of previous operations, but also quality assurance.

Further, it is necessary to determine the cycle times for each of the above ten operations that are executed by operators. These cycle times will be determined by simplified time observation method. Simplified time observation is a method that will apply in the case of manual activities with repetitive character - previously presented within ten operations.

Applied for the present study, simplified timing methodt herefore provides the possibility of detection of deficiencies in the organization of work - on one hand – and on the other hand a check of how the elements of each operation correspond to technological conditions prescribed. At the end of the application method simplified timing in this case, it will be revealed if the operator perform some unnecessary movements that could be avoided and subsequently removed.

By achieving simplified timing method in order to establish time bases, shall be complied some basic requirements specific to the activities of the assembly department analyzed, namely:
1. operator mode should be identical from cycle to cycle in performing the same task.
2. operator mode shall be according to that described in the operating standard documents.
3. the product obtained must be stable and conformable.
4. all equipment and devices used in operations to be performed must be kept in a good state of use and operation.
5. movements made by operators must be optimized, so each operator trening is an important element of its work, which will bring more precision and regularity in carrying aut his work.
6. all external conditions and by ambience must comply.
It is important that all those basic requirements in running simplified timing to be achieved. Otherwise, the results of applying simplified timing will be only approximate and they may not serve to establish the correct time bases.

For the present study, it was established as a unit of time centime a minute, still denoted by [cmn]. Also for this study, it was used a standard value for moving one step operator working station, namely: 1 [step] = 1 [cmn]. Applying the simplified timing method in the case studied, was carried aut on a total by ten cycles of working and thus were able to determine the values by cycle times for every operation in part - of the ten operations presented.

Cycle time for each operation from a workstation given a number of „n" operations, will note this t_{01} , t_{02} , … , t_n ., where t_n is the time for the operation cycle „n". Total cycle time T_{tot} for a given workstation „n" operations is calculated using the formula:

$$T_{tot} = \sum_{i=1}^{n} t_n \quad [cmn]$$

where:
n – represent the number of the operation of a given workstation,
t_n - represent cycle time for operation „n", [cmn].

According to the above quotations, cycle times for each of the ten operations analyzed have been denoted by t_{01} , t_{02} , … , t_{10} . These times were calculated using simplified timing methodt on a number of ten work cycles, and values are shown in Table1.

Also, total cycle time in the department of assembley analyzed was noted with $T_{tot\ init}$ and calculated as follows:

$$T_{tot\ init} = 8 + 8 + 15 + 4 + 8 + 8 + 4 + 30 + 4 + 4$$
$$T_{tot\ init} = 93 \text{ [cmn]}$$

The calculated value of the total cycle time $T_{tot\ init}$ it was placed also in Table 1.

Table 1. The values cycle times for the ten operations

Operation	Cycle time	Value [cmn]
Operation 1	t_{01}	8
Operation 2	t_{02}	8
Operation 3	t_{03}	15
Operation 4	t_{04}	4
Operation 5	t_{05}	8
Operation 6	t_{06}	8
Operation 7	t_{07}	4
Operation 8	t_{08}	30
Operation 9	t_{09}	4
Operation 10	t_{10}	4
Total cycle time $T_{tot\ init}$		93

Analyzing the obtained cycle times values for each of the ten operations, it is found that the highest value is a cycle time of operation 8 with a value of 30 [cmn].

It perform a careful analysis of the ten operations executed in an attempt to fiind a solution regarding their influence on labor productivity in assembly department analyzed. This analysis is aimed at finally finding solutions to the increase productivity in assembly department analyzed, and lowering or eliminating defects generated by operators as a result of certain operations repeatability.

Thus, a solution of labor productivity growth in the department assembly analyzed, and decreasing or even eliminating defects generated by operators as a result of repeatability of work, is the introduction of pneumatic installations, enabling the automation of some of the operations carried out.

With this pneumatic installations, the operator will be assisted in the operation by screwing the nut on the damper, by this is obtaining a reduction of effort by the operator and at the same time can automatically execute operations no. 6 and no. 8. Thus, the operator is acting only the power button of the pneumatic system, when the order of the operations is reached at the number six.

In other words, the new series of operations which will contain only nine instead of ten operations, the first five operations are unchanged, the change occurs in the sixth operation, as follows:
6 – submitting an hexagon nuts in the machine tight hexagonal head;
7 – closing the door mounting device and operating the START button;
8 – opening the door and release the bracket assembly damper;
9 – checking previous operations and marking a sign with paint on the screw thread rod damper, to ensure implementation of previous operations, and quality assurance.

Next, it will proceed to calculate cycle times emerging increasingly using the same simplified timing method. The new values for cycle times obtained for each of the new nine operations are presented in table2.

Also the new total cycle time of mounting analyzed department noted with $T_{tot\ fin}$ was also recalculated:

$$T_{tot\ fin} = 8 + 8 + 15 + 4 + 8 + 2 + 4 + 4 + 4$$
$$T_{tot\ fin} = 57\ [cmn]$$

The new value recalculated of the total cycle time $T_{tot\ fin}$ it was placed also in table 2.

Table 2. The new values cycle times for the nine operations

Operation	Cycle time	Value [cmn]
Operation 1	t_{01}	8
Operation 2	t_{02}	8
Operation 3	t_{03}	15
Operation 4	t_{04}	4
Operation 5	t_{05}	8
Operation 6	t_{06}	2
Operation 7	t_{07}	4
Operation 8	t_{08}	4
Operation 9	t_{09}	4
Total cycle time	$T_{tot\ fin}$	57

The difference ΔT_{tot} between the initial measurement of total cycle time $T_{tot\ init}$ and recalculated value of total cycle time $T_{tot\ fin}$ is obtained using the formula:

$$\Delta T_{tot} = T_{tot\ init} - T_{tot\ fin}\ [cmn]$$

Substituting the values obtained previously in this formula, there is obtained:

$$\Delta T_{tot} = 93 - 57$$
$$\Delta T_{tot} = 36 \text{ [cmn]}$$

So, there is a decrease – namely a reduction – of the value of total cycle time with 36 [cmn], from a baseline of 93 [cmn] to the value improved of 57 [cmn]. This reduction in the total cycle time with 36 [cmn], will allow the removal of a workstation, namely one operator, as will be reached from 20 to 19 operators.

And in this new situation, labor productivity - this time denoted by W_{fin} - will be recalculated. So, values identified after reducing the total cycle time with 36 [cmn] for the analyzed stage in the company producing are:

Q = 1.400 [no. products X]
N = 19 [no. operators]

In this situation, the new labor productivity denoted by W_{fin} is calculated by substituting new values obtained as follows:

$$W_{fin} = 1.400 / 19$$
$$W_{fin} = 73,68 \text{ [products X / operator]}$$

The difference Δ W between the value recalculated, final labor productivity - denoted by W_{fin} - and the initial value of labor productivity - denoted W_{ini} - will be obtained by using the formula:

$$\Delta W = W_{fin} - W_{ini} \text{ [products X / operator]}$$
$$\Delta W = 70 - 73,68$$
$$\Delta W = +3,68 \text{ [products X / operator]}$$

Thus, by reducing the number of operators – from a total of 20 to a number of 19 – due automating some operations performed, analyzed labor productivity for the stage analyzed in the company producing increased by Δ W = +3,68 [products X / operator].

Discussion, conclusions, perspectives

In conclusion, based on the total cycle time reduction value with 36 [cmn], were obtained a number of improvements in the assembly department analyzed, namely:

- removing a workstation, namely one operator - from 20 operators to 19 operators – which has led to increased productivity in the assembly department analyzed;
- reduction in work force costs by eliminating an operator;
- possibility of introducing new assembly operations, but which can be included in an existing job, in order to comply the stated value of 93 [cmn] for total time of manufacturing,
- eliminating a large number of defects generated by operators as a result of repeatability.

The research in this paper started in the assembly department, will continue in the following areas of research, namely:

- ☑ ameliorarea ergonomiei posturilor de lucru studiate,
- ☑ cost reductions needed retouching,
- ☑ improving ergonomics work stations studied,
- ☑ improving the organization of production space by using the method of 5S at the assembly line studied,
- ☑ eliminarea altor probleme de calitate prin instalarea unui sistem de interdicţie Poka-Yoke. eliminating other quality problems by installing a Poka-Yoke interdiction system.

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MANAGEMENT OF THE RECEIVING INSPECTIONS BY USING STATISTICAL PROCESS CONTROL IN ORDER TO MINIMIZE THE RISKS OF NONCONFORMING PRODUCT DELIVERED IN THE MANUFACTURING OF MECHATRONIC DEVICES

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Abstract

Purpose *– Manufacturing of the mechatronic devices uses a lot of parts coming from different kind of technologies as electronic parts, plastic molding injection parts, painted parts or steel components. The aim of the paper is to present the improvement of the management of receiving inspections by using statistical process control in order to minimize the risks of nonconforming product delivered in the manufacturing areas.*
Methodology/approach *- The used methodologies are related to the statistical process control based on the Xbar-R charts, and Xbar-s charts as well, also, the p/np-charts and c/u-charts for the parts with impact in the visual aspect as ceramic components, chromium components or other surface treatments components.*
Findings *– The quality of the products delivered in the manufacturing areas was visible improved, also the reduction of the cost and the stoppage of the lines were decreased. The suppliers improved their processes based on the feedback and the root cause analysis on the issues prevents re-occurrence at the failures.*
Research limitations/implications *– A lot of issues coming from the low quality of the supplier products can be detected only in the manufacturing areas due to sampling checking or skip lot at the receiving inspection. The research problem: lack of the centralized approach of risks assessment in the receiving inspection based on the variations and capability of the supplier processes.*
Practical implications *– The study of variation based on the received batches will help to detect the possible issues in the supplier processes and to ask them to put the processes back under control.*
Originality/value *– The receiving inspection monitoring system using statistical process control is developed and customized based on the type of technologies used by the suppliers to produce the parts, also based on the requirements of the part in line with the scope: surface visual parts or haptic touch part or commonly used part.*
Key words: *risk management, supplier management, fast response.*

Introduction

The quality of the manufactured parts is directly linked with the quality of the raw material and the quality of the components used in the processes. And, to assure the raw material and the components with a good quality level, the selection of the supplier is one of the more important processes in regard to this activity. The other important things are the implementation of the audits to check the conformity with the requirements of the processes in the supplier's facilities or the incoming inspection. But in term of the report quality and cost, the audits at the supplier's sites will be much more costly, because of that the incoming inspection will be preferred.

Nowadays, the incoming inspection as a process is presented in almost every organization, more so in the automotive supply chain where the explicit requirements of the qualifying standard, ISO TS 16949 are. As the approach, at the incoming of a new lot we can find one of three situations: the skip lot or no inspection, hundred percent inspections or sampling inspection. The skip lot is usual when the quality level of the supplier was already confirmed and when the last deliveries (could be from three to six, generally) had no issues claimed from the manufacturing processes. On the other hand, for the critical characteristics or when the quality of the delivered parts or raw material is very low, the hundred percent inspections are used in order to sort out the non-conforming material. The last inspection is the one large used in the majority of the other cases, and this is very well described in the standard ANSI/Z 1.4 [in press, ASQ], the Acceptance Quality Limits – AQL[1].

The paper aim is to present the using of the statistical process control tools as Xbar-R or Xbar-S charts for the materials with measurable variable characteristics are used to approve the lots, in order to evaluate better the supplier deliveries and to have a quick reaction to prevent the non-conform material to be detected in the next phases of the manufacturing areas, but also to reduce the number of the parts checked by sampling in AQL.

Study case

The study case was based on the supplier quality assurance processes in a mechatronic device automotive manufacturer and the number of the raw materials and components in receiving inspection is biggest than 950 - see Figure 1. The quality management system procedures for this department requires to do the incoming inspection almost for all the materials, for each three batches of a new or changed materials, as well for the case when a quality issue was detected on a certain material.

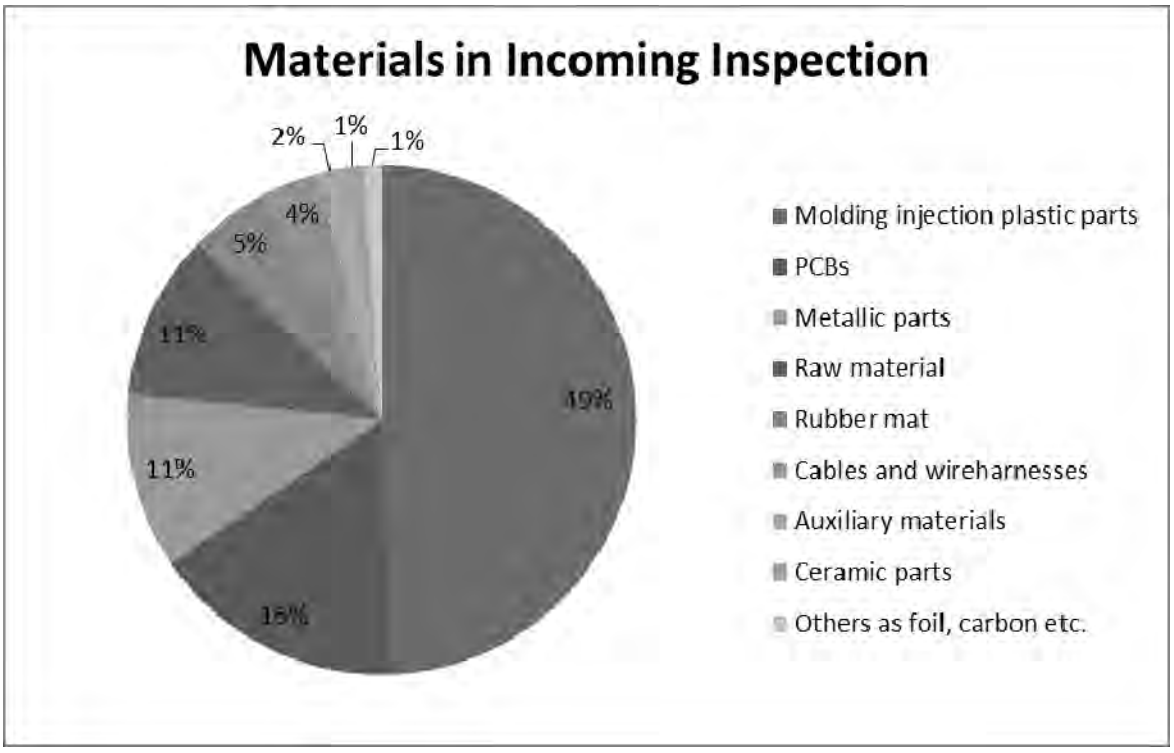

Fig. 1 Materials in Incoming Inspection

[1] *AQL – Acceptance Quality Limits - represents the quality level that is the worst tolerable, as described in ISO 2859-1*

As can be seen, half of the materials received are plastic molded injected materials. Most of them, named technical parts, are components used within the mechatronic devices and serve as mechanical actuators, the sliding guides or fixing elements and their size can be between 3 and 250 millimeters. For these parts, the characteristics inspected are some inner or outer dimensions, therefore, the variable data. But part of the plastic materials received is represented by the other categories as surface aspect, paint coated and chromium coated parts - see Figure 2. And for these parts, the characteristics inspected are some related with the surface quality, aspect, sink marks or scratches, therefore, the attributive data.

Fig. 2 Plastic parts in Incoming Inspection

As the manufacturer works in the automotive field, all the suppliers have implemented a certified quality management system and their processes were audited and proved for their efficiency by the supplier quality assurance engineers. More, the suppliers must provide the evidences regarding the capability of the molding injection plastic processes, short-term and long-term, and this is part of the file named PPAP[2].

The process capability index, Cpk, must be bigger than 1.67 for the critical characteristics or bigger than 1.33 for the normal characteristics. And this is calculated as in the equation below [AIAG, SPC, 2005], where the USL and LSL represent the Upper Specification Limit and the Lower Specification Limit:

$$C_{pk} = min\left(\frac{USL - \bar{\bar{X}}}{3\sigma_c}; \frac{\bar{\bar{X}} - LSL}{3\sigma_c}\right)$$

$$\sigma_c = \bar{R}/d_2$$

$\bar{\bar{X}}$ – represents the average of the subgroup averages, $\bar{X}$

$\bar{R}$ – represents the average of the range withing the subgroup

d_2 – a divisor of R used to estimate the process standard deviation

Fig. 3 Process capability index

[2] *PPAP, the automotive standard from AIAG which define the approval process to ensure engineering design record and specification requirements are consistently met*

The process performance index, Ppk, is calculated almost as the Cpk, the only difference consist in the calculation of the sample standard deviation that considers the total process variation – see below formula:

$$P_{pk} = min\left(\frac{USL - \bar{\bar{X}}}{3\sigma_p}; \frac{\bar{\bar{X}} - LSL}{3\sigma_p}\right)$$

$$\sigma_p = s = \sqrt{\sum_{i}^{n} \frac{(X_i - \bar{X})^2}{n-1}}$$

X_i – is an individual reading

n – is total number of the individual readings

Fig. 4 Process performance index

Based on the capability result for the process which is statistical in control the customer requirements are met, and normally, there should be not increased the incoming inspection. But the variation in the processes is inherent and sometimes could be that the supplier does not send all the information to the customers. Implementation of the statistical process at the incoming inspection will allow to detect early the issues in the supplier processes and to prevent sending of the batches with the non-conforming material in the manufacturing processes.

As the batches size are variable, from some hundreds to more hundreds thousands of parts in a batch, using the AQL sampling at the batches with low size will not generate very big effort, but as big the batch it is, as more resources – quality specialist, equipment and time - will be needed. The proposal to use the statistical process charts and graphs at incoming inspection will give the advantage that the resources are reduced and also, the advantage that the variation will be detected and the information can be sent to the supplier in order check and correct their processes, then the affected batches could be sent in the tightened inspection (as one hundred percent inspection) therefore, to detect the parts out of the specification.

The variable data cases

In this chapter, will be presented a case where an analysis of the batches at the incoming inspection was made by using the Xbar-chart and the capability comparison between Cpk and Ppk. The parts are manufactured by the supplier in the molding injection plastic processes and some critical dimensions are established to be measured in order to approve the process and to monitor its capability, marked with Dimension K1 which should be 10.68 MM +/- 0.1 MM. The study was done on 25th samples of 5 measured parts from each received batch and based on the date of production from the supplier the samples were taken from different production date. Using the Minitab 17 the data was computed and the result is shown in Figure 5. It can be seen, that the process capability index is very good, Cpk is around 3, which is in the same range as the one sent by the supplier as evidence.

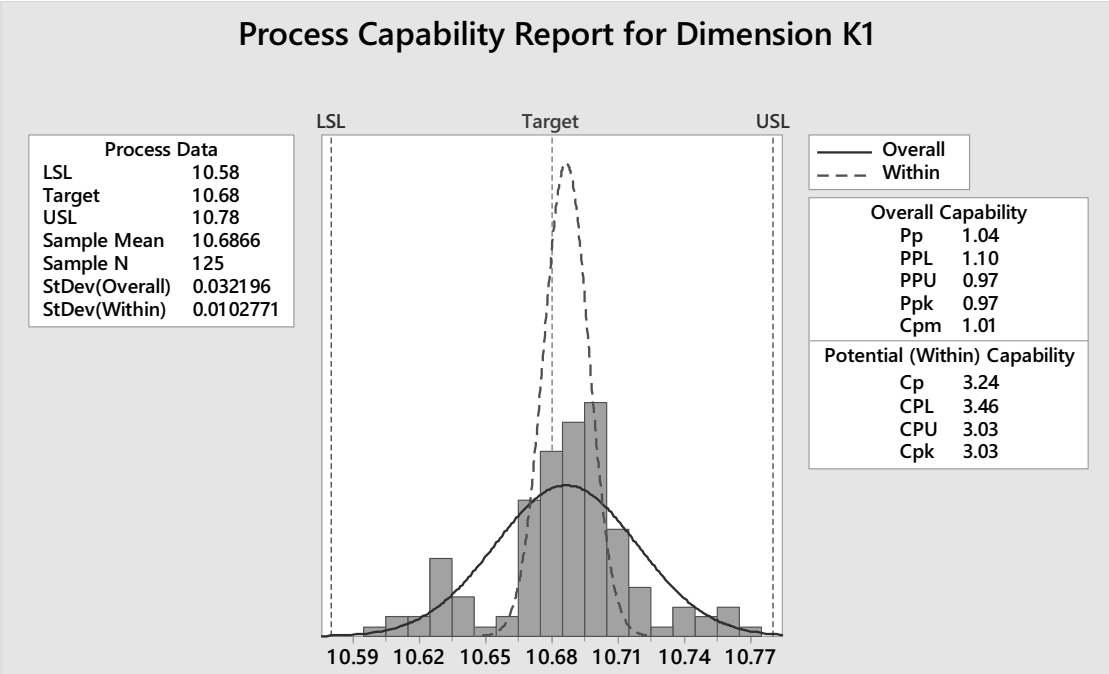

Fig. 5 Process capability for Dimension K1

As there were not received any part out of the specification, the assessor will be tempted to think that the process is good and there is not a risk. But this is not true and could be easy checked by comparison of the Cpk versus Ppk: while the Cpk is around 3, the Ppk is less than 1. Therefore, the assessor can understand that the supplier process is not in statistical control [Wheeler, 1993]. If there will be plotted the control chart, can be seen that a lot of points are out of the control limit, so, there are not the only variation due to the common causes, as in Figure 6.

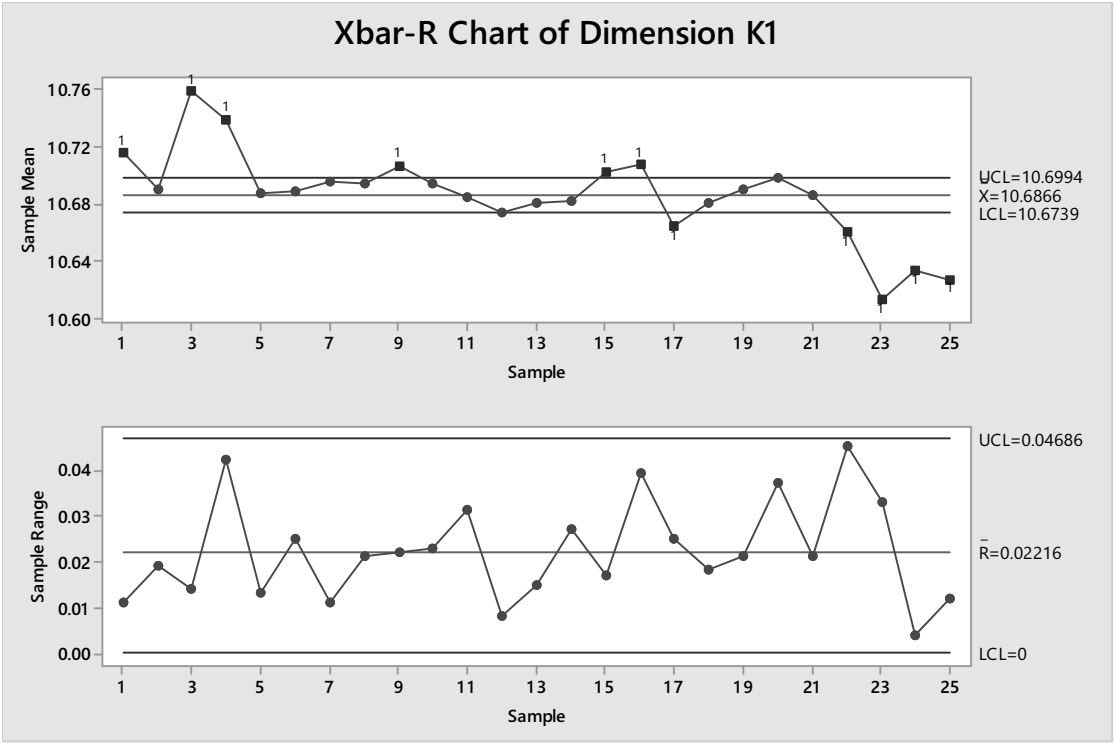

Fig. 6 Xbar-R chart of Dimension K1

In fact, could be detected that there are some shifts in the process [Wheeler and Chambers, 2010] and the chart with split control limits is to be sent to the supplier in order to check and eliminate the causes that generate this, to put the process in statistical control again. And the risk is that the next shift could generate the batches which could contain even the parts out of the specification, as the lower control limit for the last samples is near the lower specification limit – see Figure 7:

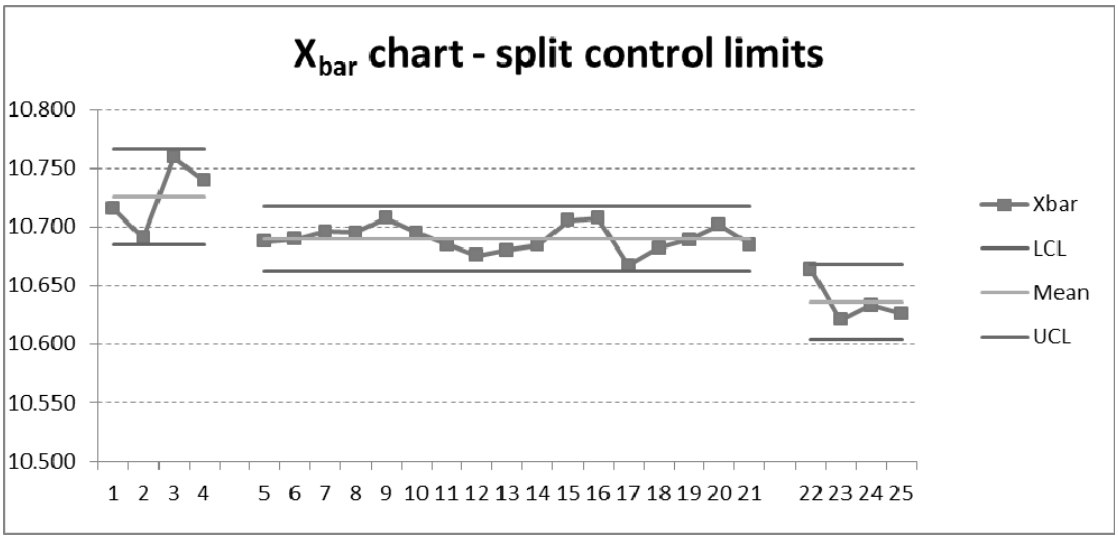

Fig. 7 Xbar chart with split control limits

A second case presented in this paper is in regard to a part from plastic molding injection too, where the dimension measured and monitored is marked Product 2 which should be 204.78 MM +/- 0.3 MM. A good capability index was obtained by analysis, but the histogram shows an important aspect: the center of the distribution is missing, as can be seen in Figure 8.

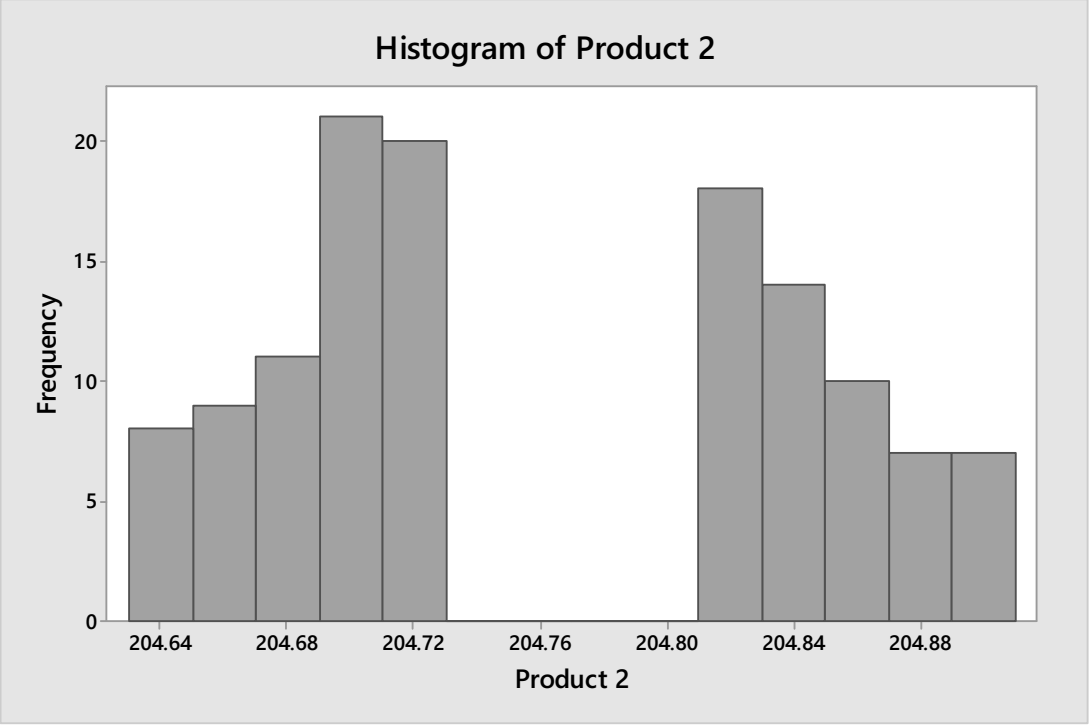

Fig. 8 Histogram of Product 2

This cannot be and the supplier was notified to send the relevant data because there was for sure a sorting in place for some defect. And, as in the records of the history of last defects was the one related with burr, the data regarding the possible lots sorted out was requested to be rechecked in order to prevent escaping of the parts with a burr, which can pass the supplier 100 percent checking.

Discussion and conclusions

The incoming inspection as part of the control plan of the quality management system in an organization is a very important quality gate which will assure good raw material or components in the manufacturing processes, as long as the developed supplier quality assurance activities are completed with the statistical process control studies added to the actual sampling inspection which is more often used.

Even the supplier must provide the evidence regarding their processes capabilities, by implementing and monitoring the incoming inspection batches using the tools from statistical process control can be prevented a lot of risks to approve the batch which may contain the defective parts or the opportunity to ask the supplier to improve their processes, as well to put back these processes in statistical control, otherwise the assumptions to estimate the probability to have the defects by using the capabilities studies will be not relevant.

As the case studies presented, the same studies could be used in case of the attributive data and there the p/np or u/c charts are useful in monitoring of the supplier performance based on their deliveries.

To decrease the efforts in the analysis of the data, software like Minitab or even SAP[3] features could be implemented in the quality management system and the recorded data from the sampling at incoming inspection will be easily computed and the charts or graphs will help in the interpretation of the collected data.

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CONCEPTUAL MODEL IN SUPPLY CHAIN COLLABORATION FOR RENEWABLE ENERGY RESOURCES PROJECTS

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Abstract

Purpose *– The limitations of supply chain collaboration models currently requires the development of a conceptual model applied to renewable energy projects (RES) that can provide a dimensioned agreement between logistic chain links.*
Methodology/approach *– The research team after analyzing limitations of supply chain collaboration models for RES projects were identified in an optimum combination multicriteria analysis methods (AHP) and management programs (DBR and SAP-MRP) through which was created a necessary formalism.*
Findings *– The conceptual model validation proposed in RES projects presents connections that highlight drivers, such as knowledge and trust, premises that implemented effectively contributes to a collaborative space in RES logistics chain.*
Research limitations/implications *– The limitations of the three collaboration models shown connections adapted to the strategy, performance and intensity which facilitates the collaboration process between logistics chain links.*
Practical implications *– In this paper is presented a RES case study that underlines the effectiveness in obtaining collaboration solutions between links in supply chain through algorithms, formalism, drivers and operating rules.*
Originality/value *– The collaboration between supply chain activities in implementation of renewable energy projects offer new development opportunities, cooperation and support in an integrated way an economic advantage for energy produced from RES to reach sustainable development goals*
Key words: *Collaboration, Supply chain, Renewable energy projects*

Introduction

Fierce competition in today's global markets, the emergence of modern technologies with increasingly shorter life cycles and increased expectations from customers pushed business enterprises to invest in, and focus attention on supply chain fluctuations to set up various collaboration agreements for buffer management at each link in the chain. (Proștean & Badea, 2014) More specifically, exemplifying the phenomenon described above, highlight through this paper, express collaboration difficulties between project developers in renewables energy and supply chain links. Although the implementation of renewable energy projects offers superior characteristics on green energy wide distribution, the complexity of implementing these projects require to search mutually beneficial collaborations between suppliers and wind industry components manufacturers. Wind energy manufacturers that aspiring to enter the supply chain for supplying components of a wind power plant found that quality standards imposed by RES projects developers are rigorous and must meet unique technical parameters. Wind blades manufacturers looking to optimize long-term relationships with raw materials suppliers, although

difficulties access to capital and failure to comply with contractual terms causing delay or interruption of production orders.

Literature review and limits of existing collaboration models

The research team propose in this paper a conceptual model for collaboration of supply chain links that support strategic activities for implementation of RES projects.

Collaborative alliances, become a solution to the existing constraints in implementing RES projects (technical, economic, social, political and environmental) and an efficient method for managing problems arising in supply chain for procurement the necessary components. Previous studies conducted by the research team showed through multicriteria analysis methods and management programs, restrictions that limit chain links collaboration by different formalism (technical) in implementing RES projects.

The general model of an alliance limitations (Popa, 2009) it contains defined procedures for performance continuous measurement without specifying an algorithmic way of obtaining collaborative operating rules. Identifying facilitators for determining the expected efficacy is not based on a decision-criteria method for optimizing the collaboration. Search and select criteria presents implementing constraints without using a bidirectional advantageous formalism.

Collaboative model-potential and intensity limitations (Bititci & Mokadem, 2010) shows no formalism by which can be measure the trust degree between partners in supply chain under risk conditions. Collaborative culture and trust are very important components for maintaining a lasting relationship but does not include a decision-making mechanism to establish a hierarchy for collaborative alternatives. It is necessary to formalize the innovation level in the organization by which the contractual constraints enable collaboration between partners with other entities.

Collaborative Performance System limitations (Simatupang, 2004) it involves aligning decisions with performance, taking appropriate decisions jointly. Specific information that facilitates the process and provides visibility status is not guided by a dimensioned algorithm to ensure a cooperation agreement synchronized with chain objectives. Performance metrics that guide members toward improving supply chain performance do not define through decision method the weight that holds each indicator. The third level of the performance system compares collaborative expectations and actual results of cooperation but not identifies clearly by analysis a mechanism for unwanted effects of the system.

Collaborative conceptual model proposed to support supply chain activities in implementation of RES projects

Analysis of the three collaboration models, the general model of an alliance (Popa, 2009), collaborative model-potential and intensity (Bititci & Mokadem, 2010) respectively, collaborative performance system (Simatupang, 2004) presents connections adapted to the strategy, performance and intensity which facilitates the collaboration process between links in the chain. These connections highlight the drivers as knowledge and trust premise that implemented effectively contribute to a collaborative space in the logistics chain. Knowledge and trust drivers facilitates collaboration among supply chain links and togheter with facilitators offer collaborative leverages by varying degrees.

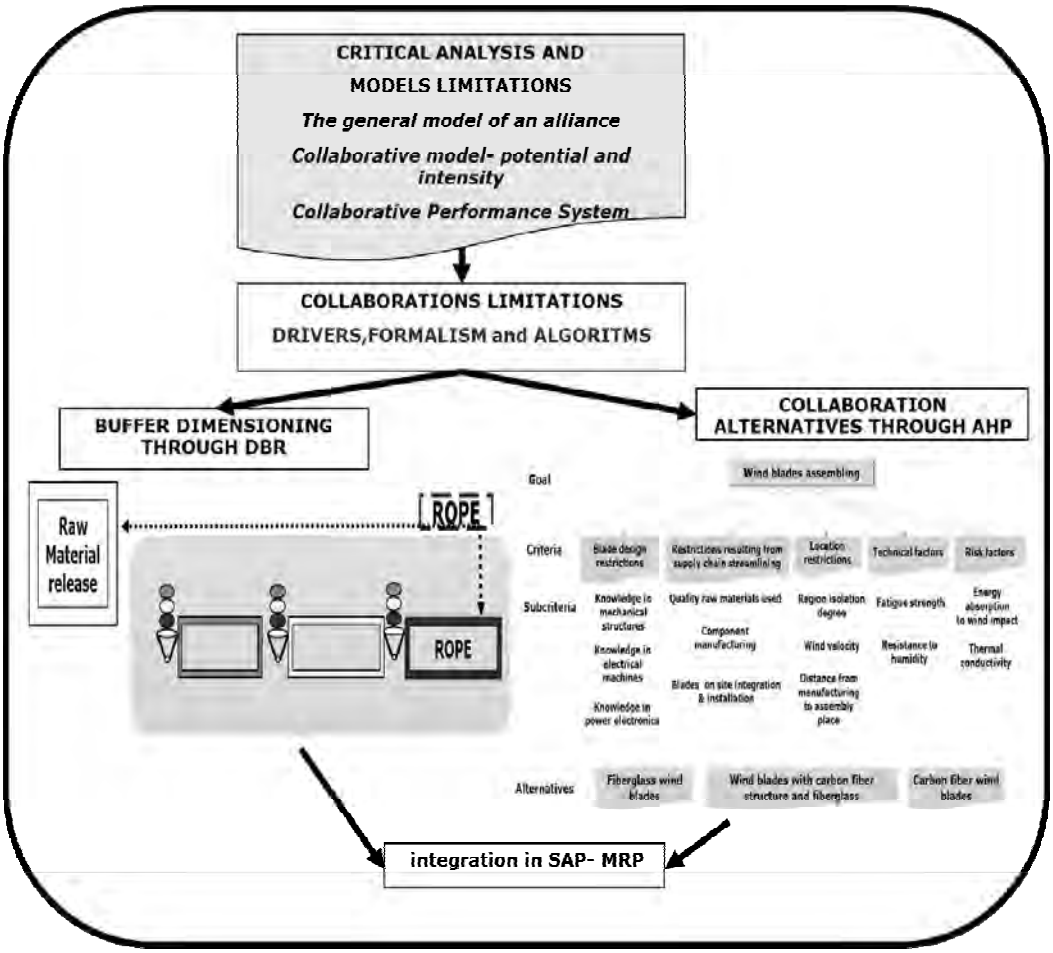


Figure 1 Conceptual model

Knowledge drivers
The continuing need for creating a valuable knowledge flow enable supply chain partners to be engaged in interconnected processes and dispose important information to process and create new knowledge. (Malhotra et al. 2005).

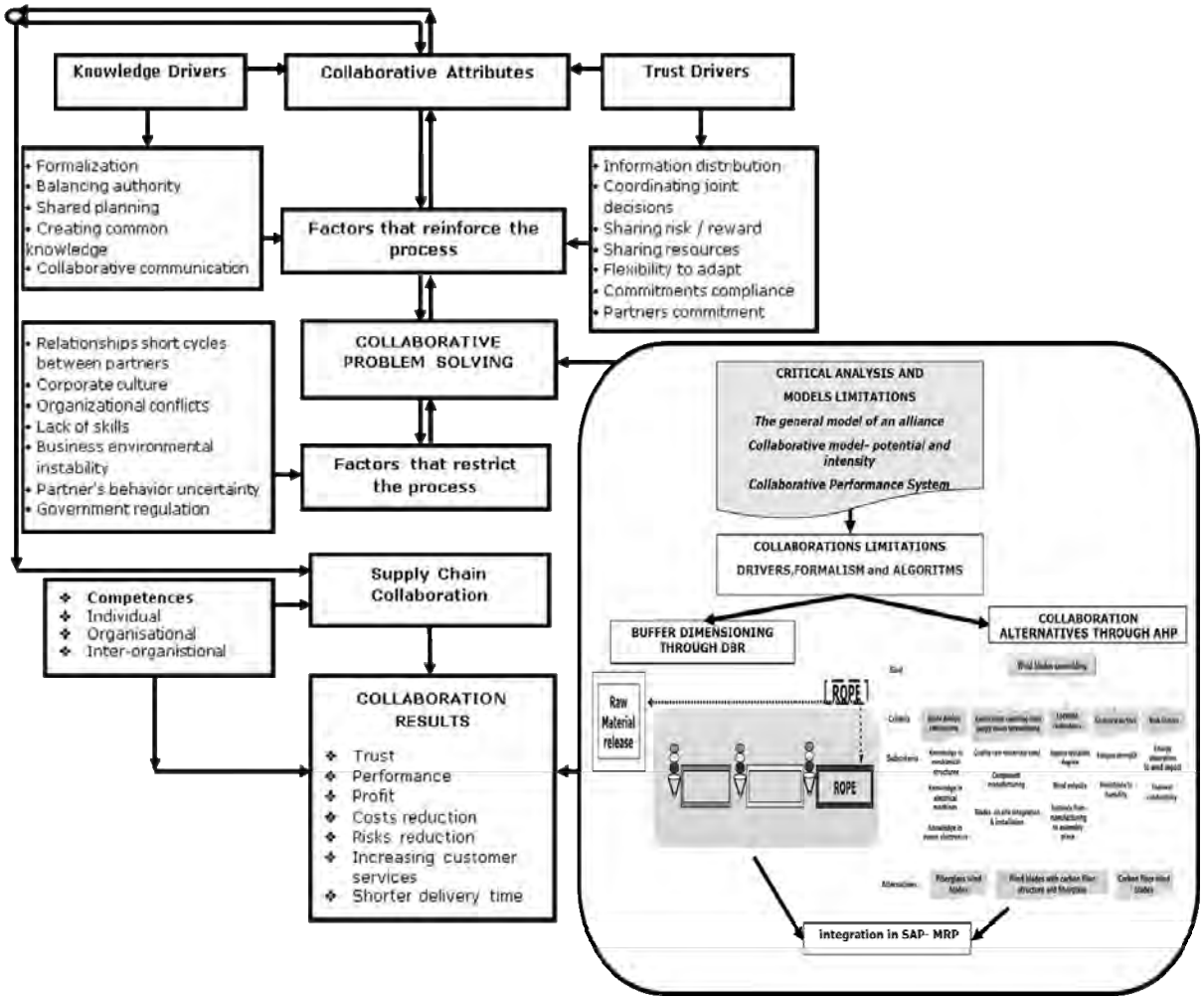
Trust divers
Moody (1993) defines trust as the fastest way that leads to achieving the partnership. Trust is the decision to rely on a partner with the hope that he will act in accordance with a joint agreement (Currall & Inkpen, 2002).

Factors and relational facilitators
Bejarano (2013) identified in his study a relevant set of relational factors which characterize the simultaneous operation in supply chain. Each relational criterion has a significant importance if the collaborative process involves partners in the supply chain. Depending on their degree of impact collaborative process relational factors can lead to success or failure.

Knowledge and trust drivers, positive and negative relational factors and collaborative relationships facilitators help to shape collaborative attributes that enable development of collaborative strategic alliances in supply chain. Thus it can be argued that the collaborative attributes are an important part, ensuring a profitable alliance that can solve problems.

Critical analysis of the collaborative factors highlights aspects related to organizational and human environment. It is noted that there are barriers that are related to collaborative relationship development and barriers related while maintaining a collaborative relationship. Also the collaborative attributes are divided into factors that strengthens the collaboration process to solve

problems in the supply chain and the factors restricting the collaboration process and make it difficult to maintain a profitable supply chain collaboration.



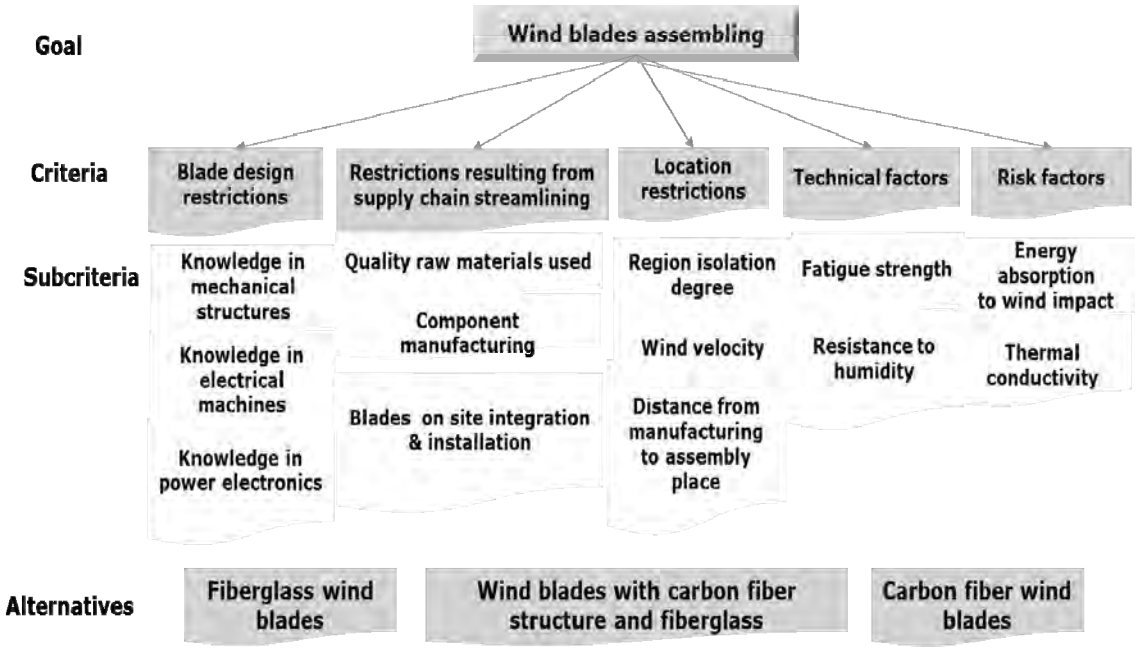
Multi-Criteria Decision-Making through AHP Methodology

Multi-Criteria Decision-Making (MCDM) methods provide a logical framework to investigate, analyse, and solve different problems. MCDM methods are usually categorized in multi-object decision making (MODM) and multi-attribute decision making (MADM). MADM again can be categorized in outranking relation-based and utility function-based approaches. The AHP approach, which is used in our study, is a utility function-based MADM method.

Analytic Hierarchy Process (AHP) it was developed between 1971-1975 by Thomas L. Saaty at the Wharton School (University of Pennsylvania) and is a tool for prioritizing alternatives to a problem. AHP decision-making method is used to highlight reasoning and subjective views of stakeholders in relation to each issue, summarizes the views expressed, establishes priority structures and analyse conflict situations. (Saaty 1986) AHP developed by Hamllainen and Seppalainen (1986) solve a large-scale socio-technical decision problem with intangible criteria. Ernest H. Forman, Saul I. Gass (2001) offers a remarkable synthesis in different sectors to the interest paid of the Analytic Hierarchy Process method.

Wind blades assembly using an Analytic Hierarchy Process approach

Finding quality raw material components of a wind plant is an important step, which involves multiple criteria and objectives to join complex decisions. Through AHP method was obtained the final decision and were taken into account all technical aspects, risk exposure, environment accessibility and not at least logistics elements so selected raw materials for the manufacturing process to be available at the appropriate time, even if they are not yet integrated into a logistic flow. Evolution of intermediate and final results of AHP methodology out clearly in evidence the importance of logistical aspects to select the final alternative. Research stages results obtained by the research team in a wind energy project in a remote region with extreme weather and challenging landforms showed that the solution provided by the algorithm AHP, using the scale Saaty 1 (Equal Importance) - 9 (Extremely high importance) provides conclusive results. AHP decision tree structure for assembling blades contains 4 levels. The highest level describes the general decision, goal, the middle level describes the criteria to be considered in choosing the best alternative, the role of sub-criteria at the intermediate level involve a more complex analysis in choosing the final decision, and the lowest level shows the three alternatives. A first step the comparison results provided by the initial criteria matrix shows the contribution of each criterion to the purpose defined in the decision tree.



TOC through Drum-Buffer-Rope Philosophy

Appeared in 1984, Theory of Constraints (TOC) started with production optimization system and has distinguished itself as a management philosophy proposed by E. Goldratt (1990), which aimed to initiate and implement improvements discovered by focusing on a constraint. (Goldratt & Cox, 1984). TOC has evolved from a production planning program to a suite of integrated management tools that include three interdependent areas: logistics / production, performance measurement tools and solve problems through thinking processes. (Spencer & Cox, 1995) Simatupang (2004) exemplifies through bibliographic study the applicability of TOC strategy proving interest of the research in this area by publishing a number of considerably scientific articles and books. Rahman (1998) analyzes the TOC approach to manufacturing firms. Siha (1999), applies TOC to tackle different types of services in organizations. Klein and Debruine (1995) and Dettmer (1998) used TOC thinking processes to identify the core issues in public policy. Womack and Flowers (1999) applied the TOC approach in the health system to improve its performance. (Simatupang, et al. 2004)

Originally solutions offered by the TOC method have tried to solve the basic problems in production systems using methods such as Drum-Buffer-Rope scheduling, performance measurement focused on a constraint and buffer management (Goldratt & Cox, 1992).

The continuing evolution of this method was extended to Supply Chain Management by applying Drum-Buffer-Rope (DBR). TOC-DBR paradigm asserts, in essence, that each organization at a time, experiencing at least one constraint. Goldratt and Cox (1992) define a constraint any element or factor that limits the system to achieve all that has been designed to meet (eg, reaching its objectiv). TOC through DBR uses a process focus to identify the constraint, restructuring the rest of the organization around it. Constraints can be internal or external to the system. There is an internal constraint when the market demands more from the system than can deliver and external constraint when the system can produce more than the market will bear. Constrained operations system makes difficult material movement causing a break in the chain that can be restored only if the information flow update in the transportation program allow necessary time for delivery buffer so that correlated informations are sent to start releasing materials in production.

Buffer dimensioning for fiber glass through DBR philosophy

DBR method levels orders delivery in logistics chain through security stocks that are placed and sized so as to protect individual rhythm of each link of supply chain.

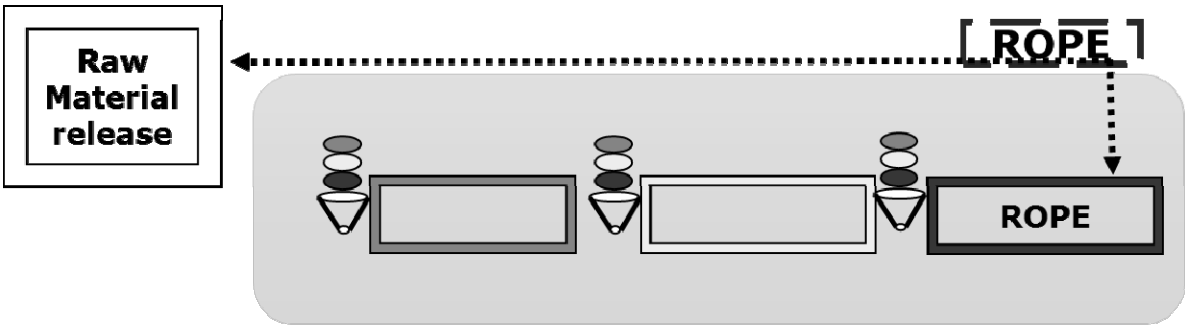
The purpose of using DBR solution for intermediary stock dimensioning is designed to protect chain links against orders fluctuations that occur within the chain with the condition to keep the same rhythm at every link in the supply chain. Dimensioning these buffers is closely linked to variations identified in each link in the right hand, as to avoid placing orders only when it reaches stock intermediary minimum level. DBR method avoids this disturbance through setting rhythm by each link (D-Drum) and sizing algorithm of the three decision-making levels (B-Buffer, R-Rope) for each buffer individually. Specifically, according to the study conducted by Proştean and Badea (2014), DBR method is designed to optimize a flow process, getting the maximum capacity of the most constrained links (CCL) in supply chain. Then the rhythm of CCL represents the drum for the rest of the system. The rope represents the mechanism of releasing the raw material into the flow process, protecting the CCL from being swamped with “work in progress”. The rope regulates the rate of inserting the raw material into the flow process. The inserting rate is no faster than that impose by the drum. The rope is connected with the drum with the help of the safety buffer that protects the CCL from starving because of the work during the process. (Proștean & Badea, 2014).

DBR helps to move important raw materials (fiberglass) in supply chain in safety stocks that are placed and dimensioned to protect the rhythm of each individual link in the chain. DBR method helps at any time to supply raw materials for creating security stocks, which are placed and sized to ensure fluency tests included in the project development cycle phases.

In the SAP- MRP procurement system is integrated and facilitated Purchasing Info Record, with transaction code "ME11". This facility is useful, offering information about buying a certain raw materials or subassembly in connection with their suppliers. Material determination is done either by adding the requirement reports prepared by each department (PNM) or using automated functionality for planning and material control MRP (Material Requirements Planning -MD02 and MD03). MRP is a control and planning system of production and inventory used to manage manufacturing processes. Most MRP systems are software-based, but it is also possible to perform manual MRP based on an algorithm.

MRP system is designed to simultaneously meet three objectives:

- based on customer delivery sales orders is synchronize material flows with production capacity
- helps to optimizes the inventory
- are synchronizes key activities of supply chain, production and sales.



Discussion and conclusions

The model and the study case presented have implications to academic as well as to policy makers and practitioners in the field of supply chain and RES project implementation in order to be more efficient and effective. Project managers in wind power can prevent potential blockage in supply chain if they carefully choose their suppliers, and adopt a formalism driver.

The conceptual model applied provide immediate responses through AHP, DBR and SAP-MRP therefore, assessing strategic collaboration, allow project developers to examine the relationships between suppliers and manufacturers.

The AHP methodology utilized demonstrate that criteria and alternatives can be asses as part of the framework to facilitate and support project developers to identify good decisions. The efficient use of the DBR application in wind power supply chain can ensure material procurement at any time and develop a good linkage between suppliers .In this paper are highlight very clearly the advantage of applying SAP- MRP tool, which notifies the facility "Purchasing Info Record" adjusts the amount purchased, cumulating an additional amount of raw material, which however provides the necessary production process without requiring activation of another specific procurement process.

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GROUNDING DECISIONS IN TIME OF CRISIS
- Case studies on SMEs

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Abstract

Purpose *- The aim of this research work is a study on decision making within IMM during the crisis, especially in a construction company.*
Methodology/approach - *The research methodology used, includes applied research methods and techniques in the implementation of tendering activity in mathematical models, especially simulation.*
Findings - *By applying the simulation the manager of the organization improved the commercial activity that provides winning tenders at optimal costs that provides profit to the company too.*
Research limitations/implications *– Simulation techniques presented in this paper can be used to optimize decisions and rationale of IMM, particularly decisions involving uncertainty.*
Practical implications - *The present study shows a high degree of engagement improving practice through technology simulation, management decisions adopted under the tendering department - sales, namely the formation of the price tendered for the construction company at public auctions in which they participate.*
Originality/value *– By formulating research questions, methodology for data processing and collection to fix the problem, and the use of simulation as a method of substantiating the tendering decision, the paper presents a high degree of originality and value.*
Key words: *SME, management in time of crisis, simulation*

Introduction

Economic crises at national and international level affect the activities of businesses, therefore influencing their financial developments.

The quality of decisions and their way of foundation in crisis has a decisive role in the trajectory of companies. Overcoming the crisis period involves maintaining economic performance through management methods and techniques used in decision making.

The sales department of the construction companies engaged mostly tendering activities, participating in public auctions. The formation of bids for constructions is a major pawn in the maintaining of the market in construction companies during the crisis.

The research problem in this paper is focused on improving management decisions taken by the tendering department - sales, namely the formation of the price offered by the company at public auctions in which they participate.

References in text

The crisis in Jon D. Miller perspective is defined as "an event that occurs suddenly, requires rapid response, interfering with organizational performance, and creates uncertainty and stress." (Miller, 2004)

Băileşteanu defines the performance as a state of competitiveness of the economic agent reached through a level of efficiency and effectiveness that provides a sustainable presence of the organization in time. (Băileşteanu, 2005).

In this context, during the crisis the management must ensure cost savings and maintaining efficiency and effectiveness, so that the activity of the company is not interrupted during the crisis.

In Prof. Ion Verboncu perspective performance "is a great result obtained in management, economics, trade, etc. which imprints features of competitiveness, efficiency and effectiveness of the organization and its procedural and structural components." (Verboncu, 2005).

Simulation is a method by which the model representation of a system is realized for analyzing its behavior or performance. (Bârsan-Pipu and Popescu 2003).

The simulation is the achievement of a real system's model with the help of special programs, based on a large number of parameters to be able to predict how it functions. By changing the parameters we can obtain different variants, and in this way the optimal one can be selected.

By numerical simulation we understand all the calculus and mathematical procedures destined to study the behavior in time of the real systems with the help of the numeric calculators, taking into account that the evolution of the systems involves random elements (Barbu and Miroiu 2012) Simulation techniques involve the construction of a model of static-mathematical nature.

The application of simulation methods in tendering-auctions

In order to improve the tendering-auction activity in IMM, which sphere of activity is civil engineering, I have conducted in first stage an analysis over the company's method of tendering, and also of the main counter offers. In the analysis I have conducted a database that centralizes information through SEAP that consists a number of 29 auctions on which the analyzed company had participated in 2012.

Performing an analysis of the correlation between the estimated value and the lowest price offered, it is noted that a simple linear correlation coefficient has a value of 0.981. Given the fact that the coefficient ranges at (0.1) results that between the lowest price and the estimated value is a direct link, and the correlation coefficient tends to 1. So, we can say that the link between the two indicators is very strong. The data presented above are from Chart 1.

Given the number of auctions that society overlapped with a part of its counter bidders, I've selected 10 against bidders, on which I have conducted a detailed analysis taking into consideration the bid amount at each auction compared to its estimated value, analysis after which I have identified the percentage used by each bidder highlighting the minimal, probable, maximal practiced proportion, in this way can determine the distribution of values for each counter candidate.

The second stage of the research is to formulate the problem of decision submitted to simulation. The construction company wishes to participate in a tender published on SEAP whose estimated investment value is 990,000 lei, and the tenders award criterion is the lowest price. The tender submitted to simulation will be completed in final phase electronically, so the company has information on bidders who will participate in the final phase, bidders O1, O4, O5, O7 and O10 as well.

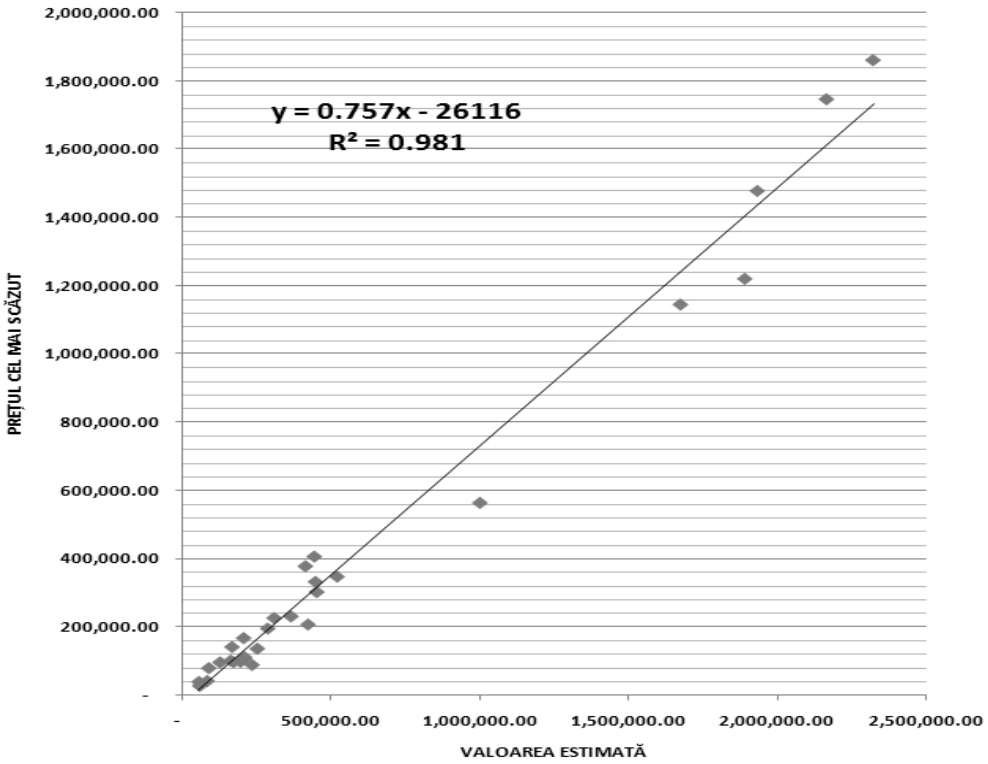

Chart1 - Analysis of correlation between the estimated and lowest price

Based on the previous analysis, performed on the main counter candidates, we can estimate the following percentages of bidders against the estimated value of the work:

- Competitor 1 O1: triangular distribution with a minimum of 60% of the estimated value, a probable value of 76% and a maximum of 92%.
- Competitor 2 O4: uniform distribution with a minimum of 82% of the estimated value and a maximum value of 91%.
- Competitor 3 O5: triangular distribution with a minimum of 65% of the estimated value, a probable value of 76% and a maximum of 87%.
- Competitor 4 O7: triangular distribution with a minimum of 58% of the estimated value, a probable value of 74% and a maximum of 89%.
- Competitor 5 O10: uniform distribution with a minimum of 85% of the estimated value and a maximum value of 99%.

With the help of the exchange program the company which is under research calculated a 430.000 lei work executing cost, and based on incurred expenses of the centralizers by the control department we can estimate a cost of 2.000 lei. The decisional problem is the following: What value should the company offer so it can win the auction, but also to gain profit?

The third phase of research is to simulate decision with Palisade @RISK simulation program. Building simulation model is initiated by inserting into Microsoft Excel the with data problem for which there is certainty

The next step is establishing alternative decisions, considering ten possible values for tendering: 440.000 RON 500.000 RON 560.000 RON 620.000 RON 680.000 RON 740.000 RON 800.000 RON 860.000 RON 920,000 RON and 980,000 RON, and the formula for tendered amount is:

C9 = RISKSIMTABLE({440,500,560,620,680,740,800,860,920,980}).

Afterwards there are entered the hypothetical data having into consideration the random variable, respectively the tendered value of each counter candidates.

Using the function RiskTriang we obtained a 5% probability that the values offered by bidder O1 can be contained in the range of 594 thousand lei and 644,10 thousand lei or in range of 860,7 thousand lei and 910,80 thousand lei, but the probability is 90% that the offer will be contained between 644,10 thousand lei and 860,70 thousand lei, with a probable value of 752,40 thousand lei.

We used the function RiskUniform and we obtained a 5% probability that the values offered by bidder O4 can be contained in the range of 811.800 thousand lei and 816.300 thousand lei or in range of 896.400 thousand lei and 900.900 thousand lei, but the probability is 90% that the offer will be contained between 896.400 thousand lei and 816.300 thousand lei, with a uniform distribution.

Using the function RiskTriang we obtained a 5% probability that the values offered by bidder O5 can be contained in the range of 643.50 thousand lei and 677.90 thousand lei or in range of 826.90 thousand lei and 891.30 thousand lei, but the probability is 90% that the offer will be contained between 677.90 thousand lei and 826. 90 thousand lei, with a probable value of 752.40 thousand lei.

We used the function RiskTriang and we obtained a a 5% probability that the values offered by bidder O7 can be contained in the range of 574.20 thousand lei and 623.50 thousand lei or in range of 833.40 thousand lei and 881.10 thousand lei, but the probability is 90% that the offer will be contained between 623.50 thousand lei and 833.40 thousand lei, with a probable value of 729.30 thousand lei.

With the function RiskTriang we obtained a 5% probability that the values offered by bidder O10 can be contained in the range of 841.500 thousand lei and 848.400 thousand lei or in range of 973.200 thousand lei and 980.100 thousand lei, but the probability is 90% that the offer will be contained between 848.400 thousand lei and 973.200 thousand lei, with a uniform distribution.

For generating the profit we used the following formula:

C19 = RiskOutput()+IF(C9<=MIN(C12:C16);C9-C7;0)

After the introduction of the calculus formula, it is necessary to effectuate the settings for the simulation period. In this case the number of simulations is required; this highlights the number of decision variations.

After the simulation it is possible to obtain a summary report from the obtained results. The results are presented in Table 1.

Table 1. Centralization of the outgoing results

Name	Cell	Sim#	Graph	Min	Mean	Max	5%	95%	Errors
PROFIT	C19	1		8	8	8	8	8	0
PROFIT	C19	2		68	68	68	68	68	0
PROFIT	C19	3		128	128	128	128	128	0
PROFIT	C19	4		0	177,096	188	0	188	0
PROFIT	C19	5		0	155,744	248	0	248	0
PROFIT	C19	6		0	48,664	308	0	308	0
PROFIT	C19	7		0	2,576	368	0	0	0
PROFIT	C19	8		0	0	0	0	0	0
PROFIT	C19	9		0	0	0	0	0	0
PROFIT	C19	10		0	0	0	0	0	0

Analyzing the data resulted from the simulations and presented in Table 1, the decision maker may be tempted to choose the variant simulation in which maximum profit is generated or simulation no. 4, situation in which it can make a profit of 177.096 RON, the amount considered average in relation to the likelihood of the realization.

From the report of simulation 4 result that there is a probability of 0.08 that profit can be 0.

In this situation, there is little chance that the profit generated is 0 and the offer of the company won't be declared the winner. In order to avoid the risk that the bidder is declared unsuccessful, we focus on simulations where the minimum amount of profit is greater than 0.

So in the decision making, we take into consideration the values of simulations nr..1, 2 and 3. From these three different decisions, we choose the optimal one which ensures maximum profit for the company, and ensures the victory.

Analyzing the report of simulation 3 presented in Chart 2 we observe that the probability that the company obtains a profit of 128 thousand is equal to 1.

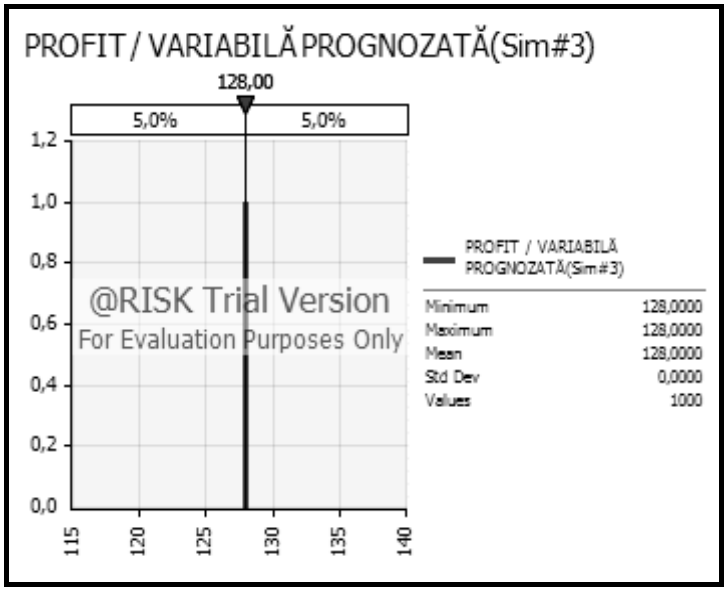

Chart 2. The report of simulation 3

Correlating the data in Table 1 and in Table 2, it is noted that the best solution for the construction company value to offer in public auction is 560,000 lei, which ensures the company to win the auction and a profit of 128,000 lei.

The decision of the offered value of 560 thousand lei is based on random value variations offered by the other five counter bidders, values that are shown in Table 3.

Table 2. Synoptic table of possible options for decision making

Name	Cell	Sim#	Graph	Min	Mean	Max	5%	95%	Errors
Category: Ofertă Atlas Company									
Ofertă Atlas	C9	1		440	440	440	440	440	0
Ofertă Atlas	C9	2		500	500	500	500	500	0
Ofertă Atlas	C9	3		560	560	560	560	560	0
Ofertă Atlas	C9	4		620	620	620	620	620	0
Ofertă Atlas	C9	5		680	680	680	680	680	0
Ofertă Atlas	C9	6		740	740	740	740	740	0
Ofertă Atlas	C9	7		800	800	800	800	800	0
Ofertă Atlas	C9	8		860	860	860	860	860	0
Ofertă Atlas	C9	9		920	920	920	920	920	0
Ofertă Atlas	C9	10		980	980	980	980	980	0

Table 3. Synoptic table of possible options for optimal decisions

Name	Cell	Sim#	Graph	Min	Mean	Max	5%	95%	Errors
Ofertă Competitor 1 O1 / DATE IPOTETICE	C12	3		599,7675	752,3947	903,9161	643,6255	860,3792	0
Ofertă Competitor 2 O4 / DATE IPOTETICE	C13	3		811,8411	856,3501	900,8701	816,1902	896,4261	0
Ofertă Competitor 3 O5 / DATE IPOTETICE	C14	3		643,6691	752,3984	857,3744	677,6535	826,6017	0
Ofertă Competitor 4 O7 / DATE IPOTETICE	C15	3		576,5338	729,2986	874,5597	623,2569	833,2876	0
Ofertă Competitor 5 O10 / DATE IPOTETICE	C16	3		841,5698	910,8001	980,0704	848,3187	973,0641	0

Analyzing the data and the values offered by the five competitors in Table 3, we observe the following:

- In case of bidder O1 the minimal possible value of auction is 599,76 thousand lei;
- There is a possibility that the minimum value offered by the bidder O4 is 811.841 lei;
- The minimal amount tendered by bidder O5 is 643 669 thousand lei
- In case of bidder O7 the minimal possible value of auction is 576,533 thousand lei;
- There is a possibility that the minimum value offered by the bidder O10 is 841,569 thousand lei;

Discussion and conclusions

In taking a decision on the bid submitted by the company in the public auction in winning a contract for constructing kindergartens, I have made simulations on the counter candidate's offers using Palisade @RISK simulation software.

Through @RISK simulation program we conducted ten simulations based on random variations chosen by us, variants representing values between execution costs and estimated labor costs. After the simulation, the best option is to offer a sum of 560,000 lei, value that ensures the company a profit of 128,000 lei.

In order to obtain a higher profit, the company has decided to participate at the auction with the value of 560,000 lei, respecting the optimal value generated by @RISK software.

After the final phase of the public auction, the construction company was ranked first with a value of 560,000 lei, and finishing in second place bidder O7 with a value of 570,000 lei.

Analyzing the data presented in Table 4, it is noted that the difference between the bid in the auction and the simulated values is about 1 percent, which ensures safe use of the working model.

Table 4. Comparison between the simulated and auctioned values

Bidders	**Simulated value**	**Auctioned value**	**Deviation %**
Competitor O1	599.760 lei	603.500 lei	0,62
Competitor O4	811.841 lei	815.000 lei	0,39
Competitor O5	643.669 lei	637.000 lei	- 1,04
Competitor O7	576.533 lei	570.000 lei	-1,133
Competitor O10	841.569 lei	842.000 lei	0,05

The research paper captures a management problem within a building company, by applying the simulation, the quality of managerial decisions, and also the decision of the bidding value at public auctions improved. With the help of the simulation we generated the effects of every possible decision and based on the gained information, the decision maker can choose the best solution that respects the chosen criteria and leads to the fulfillment of the decisional purpose.

So, based on the obtained results from the ten simulations, the decision maker has chosen to offer a value to ensure the victory for the company at the public auction, and also an optimal profit.

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EUROPEAN PROJECTS- THE CHAMBER OF COMMERCE RESPONSE IN A TIME OF CRISIS

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Abstract

Purpose – The purpose of this paper is to present the way the Chamber of Commerce can enhance the opportunities for smaller companies through European projects.
Methodology/approach - The research methodology is based on theoretical and applied research. There were studied various works on European projects, in order to outline a clear image of the implication of the Chamber of Commerce. In this study we applied methods of quantitative analysis and some graphic representation of the case study.
Findings – By acting on every level, as an information source, as a potential partner or even as a main beneficiary, the Chamber of Commerce has improved its activity and its impact on the economic market.
Research limitations/implications –The limitation is provided by the complexity of the situation that needs to be analysed in order to have a precise picture of the system's implication.
Practical implications – The research paper presents a high degree of a practical involvement, as it shows new methods of development for companies, even in times of crisis.
Originality/value –. The originality and value is in revealing that a study of the Chamber's system and its implication with the European projects can show a homogenous answer to solving crisis, appliable throughout the country.
Key words: European Projects, Chamber of Commerce, crisis management

Introduction

Crisis is a reality of our time. Both the social and the economic market suffer from drastic changes that appear all over the world. In order to manage crisis there have to be taken steps in the direction of development, from implementing innovative ideas, to supporting the growth of business.

A system as well represented as the Chamber of Commerce has the opportunity to represent the Romanian market, both socially and economically, and create a stable environment in the best supporting chapter- European projects.

The Chamber of Commerce and its multiple role

The European institutions have a specific purpose of helping to increase the competitivity of Romanian companies, to increase the mobility of human capital, but also to adapt with new working procedures in order to better fit the Romanian market need.

Regarding the European projects, the Chamber of Commerce has a very important role in helping the businesses get important information, in order to benefit from the commercial opportunities,

but also to analyse the input from these clients regarding the governing politics of the European Union, in order to prevent crisis.

So, the role of the Chamber of Commerce is more complex: it can provide information on European policy, for all citizens, and on specialized themes for educational system and other types of partners. It can be a feedback centre, where any beneficiary of European projects can send their input about possible problems they met or by new opportunities that haven't been addressed yet.

In order to accomplish their mission, that of offering support in sustainable economic development, the County Chambers can become partners and access European projects that protect and help finance several lines, dedicated to firms.

Another important role would be that of direct beneficiary of European projects, so that its competence can be enhanced and the support for the economic market can be valuable.

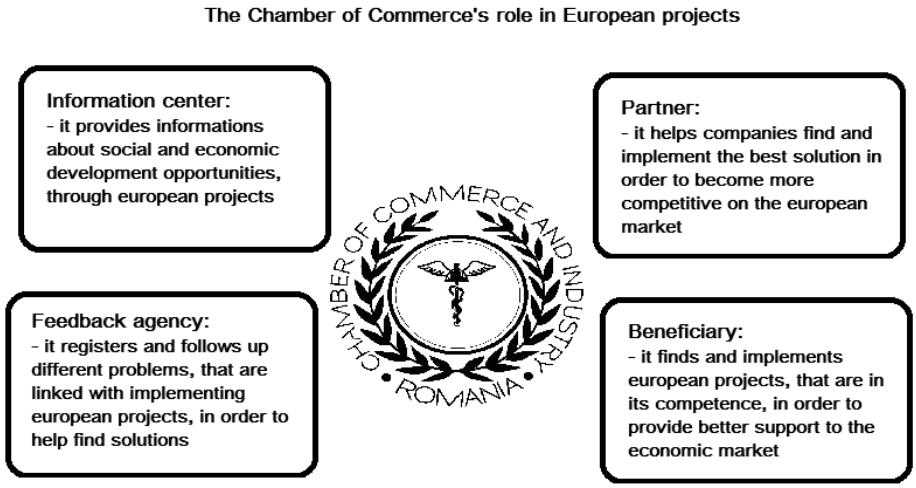

Figure 1. The multiple role of the Chamber of Commerce

As a consultant on European projects, the Chamber of Commerce considers that there is still a need for implication from other types of financing sources. The local public authorities can attract investors, make a plan for regional development and sustain it with promotions campaigns and business events.

The public national authorities can reduce the administration barriers and promote the Romanian produce locally and internationally.

Through this study the goal is to measure the impact of the European projects, on regional development, sustained by the Chamber of Commerce and to understand the diversity of targets that can be reached by extending the Chamber's role.

New paths of collaboration for the economic market

"The projects financed by the European Union can contribute to the development of a region through their positive effect on organisations and society. The long term effects, produced intentionally or not are, in fact the image of their impact." (Ioana – Natalia Muresan- 2012)

For the Chamber of Commerce it is important to research relevant areas of cooperation between its member enterprises, as the information resulting from this research largely determines the

later work. Building relationships among members can be an effective operating mode for the Chamber system to get to the core of the economic needs of its location.

The Chamber can meet its goal by providing its members with useful information initiatives, as the lack of information is one of the biggest obstacles for business and project cooperation. Best practices should be gathered and disseminated not only as consultants but also as beneficiaries.

As long as the Chamber of Commerce implements European projects and consults companies, in order to get a real feedback, there is a high-potential for development of successful elements.

Starting from the broad concept of management of crisis we give this study value and originality by proposing a structured approach to improving the management in time of crisis by making European projects more approachable and the process of cooperation with the Chamber of Commerce more attractive.

The conference theme „From Management of Crisis to Management in Time of Crisis" was a starting point for analizing the Chamber of Commerce's influence in opening new chapters for the participants to the social and economic life.

Researching and analysing the data will show if there is a chance of improving the effects of the projects that have been implemented, or if there will be defined a special path specific for the Chamber of Commerce's influence.

Means of evaluating European projects as a response in times of crisis

This study is important as we are now in a new phase of European development (2014-2020) and evaluating the impact generated by European projects and studying their results can lead to an improvement in the results of the projects that are currently implemented or of future ones.

Discovering new means of dissemination is an important aspect, as it is imperative that businesses that are supported during projects are both capable of distributing the information and trustworthy to promote quality.

"The efforts to improve our environment through planned social change are based on the ability of those managing projects to influence those around them" (Calinescu, L., 2007).

Taking into consideration the management of crisis and the need to have an efficient management in time of crisis, The Chamber of Commerce offers its services to the economic environment to help increase efficiency of the economic activities undertaken by commercial companies, respectively maximizing the company's potential by offering a professional and result oriented support.

Crisis can develop in a very large number of situations. In economy a large part of them are directed by powerful factors which take decisions that can even have an effect on entire countries. It is a must to have organizations that can help with preventing these crisis or to research the economic market for solutions to exceed them. The involvement of the Chamber of Commerce in European projects offers a guarantee that useful information reaches its target.

This qualitative study has been realized starting from the official data from four different County Chambers of Commerce, chosen based on their proficiency with implementing European projects.

As we can see in Figure 2, there are several domains where the Chamber of Commerce are more prolific: training courses to combat unemployment, other training courses, entrepreneurship, agriculture, tourism and miscellaneous.

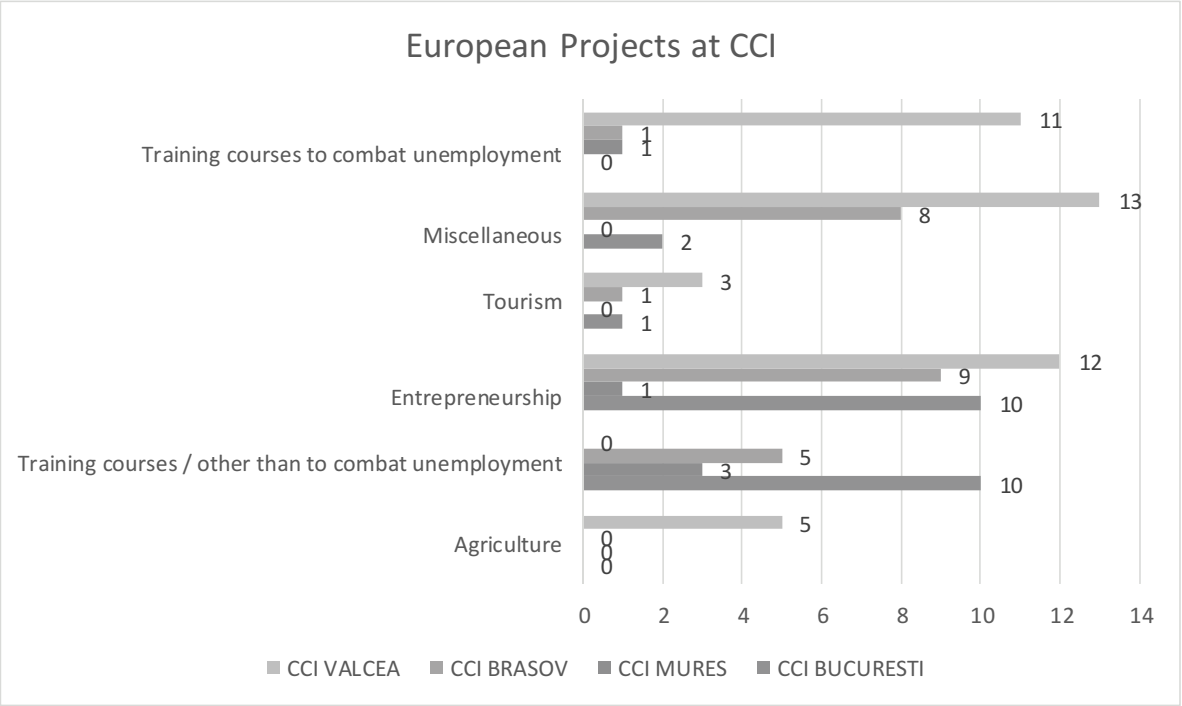

Figure 2: Domains of influence in EU projects

In most cases as it can be seen in the official informations provided, the projects where the Chambers of Commerce act as a partner to local business are less advertised. Most of the informations regard the projects where they are direct beneficiaries.

The Chamber of Commerce in Mures County has informations about both types of position during their activity with European projects.

All over Europe technology advances at a fast rate and the Romanian market has fewer opportunities to become an equal. Being a partner with an important University, the Chamber of Commerce in Mures County introduced innovative solutions for the education of professionals, aswell as an inovative peer learning assessment system (“TIT-us”, “IQVET”). Through these tools, the Chamber helps young students prepaire for both the challenges of the economic market and its expectations, as communications skills and adaptation to the working environement are very important.

A major impact for Mures economic development has been created by three different projects- “Future”, “Profi” and “Alternative”, which have covered different needs of the local community.

Taking care of unemployment isn’t a specific task of the Chamber of Commerce, but, through “Future”, CCI Mures used the negative data of unemployment in Mures County and researched the need of its members, in order to qualify and offer professionals to fill in the gaps in different organisations.

“Alternative” was an occasion to prepaire a new wave of entrepreneurs. The Chamber of Commerce in Mures County had the occasion to prepaire the future of the economic market, as these entrepreneurs could learn from the experience of an organisation that has a larger immage over the economy in Mures County.

“Profi” represented a direct mean to qualify employees to european standards and to help the companies have better products and more efficient working environment.

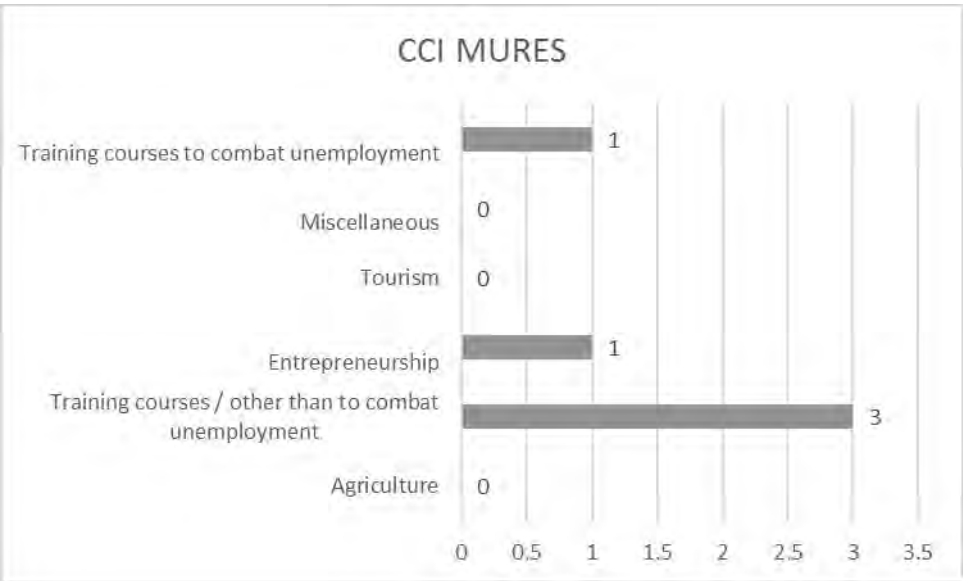

Figure 3: European projects at the Chamber of Commerce in Mures

Some of the crisis are subjected to the social and economic environement. We can see this aspect in studying the implication of the Chamber of Commerce in Brasov in certain types of European projects.

From learning to make a transition from school to the job market to learning new skills, mainly for tho wood industry, that is specific for the location, the Chamber of Commerce promoted important projects in increasing and diversifying professional skills of people in the Central region.

Considering that increasing the number of entrepreneurs might lead to a diminished unemployment rate, The Chamber's overall objective is to promote Romanian new companies and to introduce new patterns of functional flexibility – "European innovative and modern forms of work organization" - in order to increase the flexibility of workers and enterprises in Romania and improve their adaptability to new conditions of business.

The Chamber of Commerce in Brasov has quite a number of miscellaneous projects, which are very important to the business community, as they open new lines of collaboration. The environment protection system has been sustained, by "Solaris Plus", where it contributes to the development of new professional skills in renewable energy.

Through Project "Euro Info Centre RO825", the Chamber of Commerce in Brasov illustrates one of the roles presented in this paper of being "the interface between the European Commission and business, with the mission to inform businesses on issues community to advise SMEs in applying the legislation and the Community rules , to support them to exploit the opportunities offered by the single European market , to transmit European Commission reactions SME community on issues affecting them directly" as the project objective shows it.

Identifying difficulties and creating a coherent mechanism for consulting businesses continues in other projects like: "ERE-Entrepreneurial Regions in Europe" and "Rom Panels", where seven different regions were involved: Timisoara, Brasov, Baia Mare, Bucuresti, Constanta, Galati, Valcea.

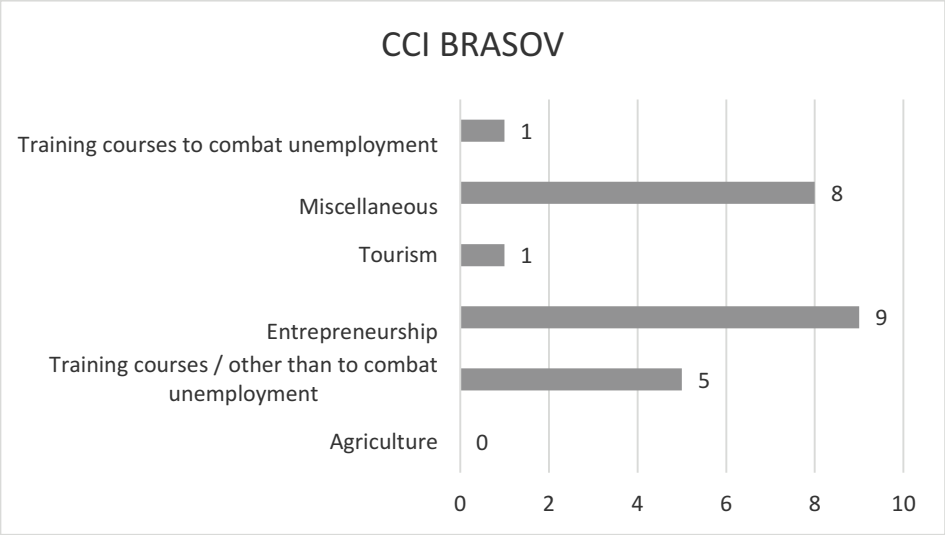

Figure 4: European projects at the Chamber of Commerce in Brasov

One of the most prolific in promoting European projects as a tool to develop companies and, if it is necessary, to exceed crisis, is the Chamber of Commerce in Valcea.

In tourism by accessing European projects, the Chamber of Commerce promotes the use of modern communication, at european level, in order to help tourist attractions be more visible and, at the same time shows its concerne in environement protection (“Techtec”).

European Projects are not a simple way to exceed crisis, the european regulations are quite strict and need a very good understanding.

In agriculture, through five projects the Chamber of Commerce in Valcea provides initiative for a sustainable rural development –“RO4RURALBIZ”, provides informations about the perspective of benefits but also costs of being part of the european community and also shows the need and means to get produces that are more competitive.

In the entrepreneurial segment, the Chamber of Commerce in Valcea makes a distinction between rural and urban entrepreneur, sustaining programs for both, but finding mechanisms ment to promote their specificity.

As unemployement is a very important issue, there have been several European projects that address this problem. The main objective was facilitating access to different training courses in order to promote adaptability and increase competitiveness.

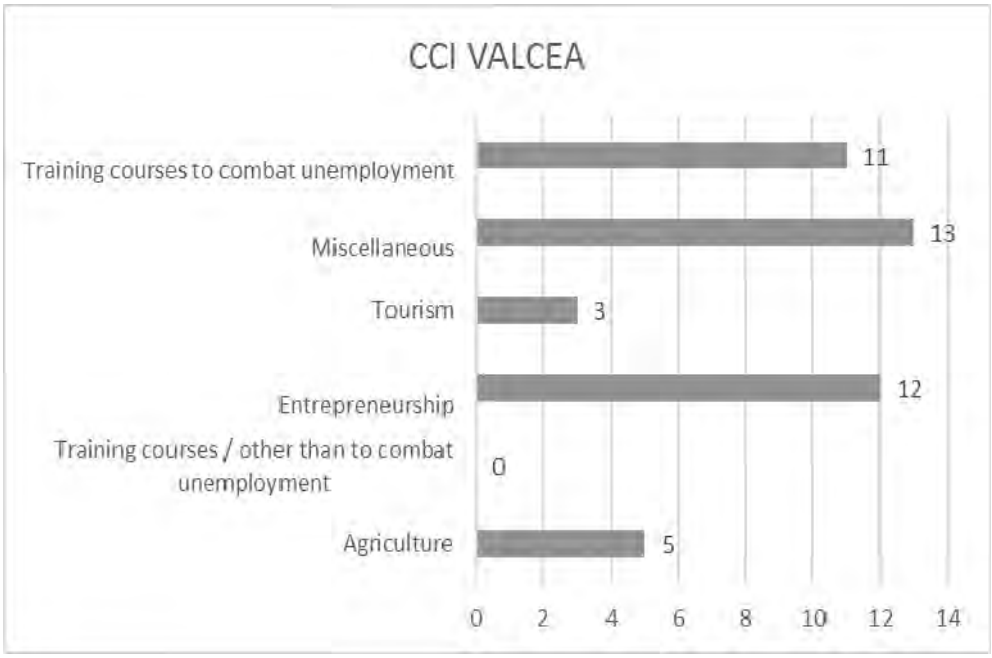

Figure 5: European projects at the Chamber of Commerce in Valcea

For the Chamber of Commerce in Bucharest, the main objective is to help develop entrepreneurship and also to improve the qualification of the employees.

It is a very important european objective to get to have, in the shortest time frame, qualified employees, as in most domains the technology is quite advanced and knowledge limitations translate in poor quality products, leading to crisis.

Being an entrepreneur doesn't mean to be succesful no matter what business you choose. Knowing the difficulties of the economic market, the Chamber of Commerce in Bucharest access different european projects that helps make an impact in its own domain of influence. The entrepreneurship projects are ment to develop the management skills in order to capitalize business opportunities and innovate.

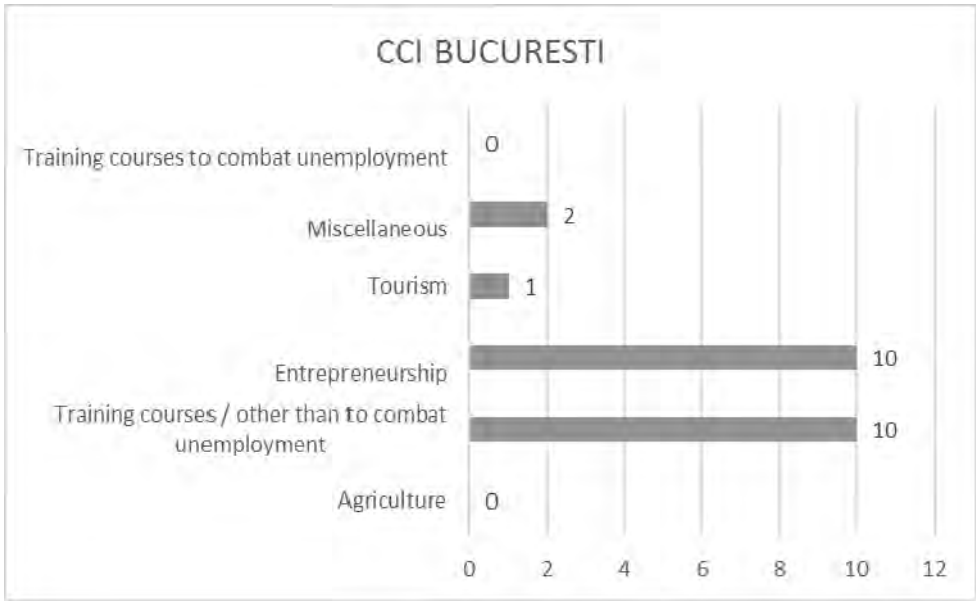

Figure 6: European projects at the Chamber of Commerce in Bucharest

Results of managing European projects

The Chamber's involvement in transforming part of its role in a mechanism of providing valuable information about the European projects has positive effects that can help in managing large or small economic crisis, at the moment and in the future.

The economic market is in a process of transformation and the system of Chambers of Commerce in Romania proposes a measurable change in using European projects as a tool to create positive impact.

By getting actively involved the Chamber of Commerce contributes, on one hand, to the acknowledgment of the rules imposed by the financing institution and, on the other hand, to a better understanding of the necessity to initiate projects that solve real issues of a region.

"When engaging in a project one must necessarily take into account the hazard (risk). The effect of the project can be seen sometimes after several months or even years, and its benefits highlights much later. Loan invested resources mobilized under the managerial inability may turn into losses if the expected results are not achieved. In an evolving technical, economic and social context, no decision can be considered truly final and orientation changes during the conduct are related both to the client and other internal or external factors" (Liviu Marian, 2001).

Coordinating European projects for the Chamber of Commerce means an involvement in all chapters of the economic and social life, as it has social positive effects, by creating new jobs opportunities, increasing the quality of the educational activity and also has a positive economic effect: leading to the establishment of new companies, development of old ones, increased turnover, increasing the efficiency of resource use, supporting business and so on.

The benefit introduced by the Chamber of Commerce relies in its presence throughout the country, its unity and its power to study any type of project, without being influenced by a certain type of business.

By offering their support, the Chamber of Commerce can analyse the impact of European projects, they can identify their effects and by using specific methods of analysis they can improve the management of crisis by having already had the experience that provides answers to problems.

The problem which this present paper analyses consists mainly of improving the efficiency of the activities deployed by the Chamber of Commerce, as it deals with different types of companies and requirements, involving its human and material resources in order to provide an efficient starting point to get the best result out of European opportunities.

Discussion and conclusions

The development of effective communication between companies and the Chamber of Commerce, concerning European projects, contributes to the understanding of the rules imposed by the financing institution and to a better understanding of the necessity to initiate projects that solve real issues of a development region.

By meeting the public's needs –may it be social or economic- and being a support organism, through its implication, the Chamber of Commerce contributes to the absorption of the European funds through the initiation of sustainable projects.

Improving the impact of European projects can lead to better ways to manage crisis, and at the same time to achieve the European policies objectives, in order to have a specific dynamic balance of sustainable development.

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ACTIVITIES IMPROVEMENT AT AN OPENING MINING WORK EMPLOYING THE TECHNIQUE OF LABOR METHODS ENGINEERING

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Abstract

Purpose *– As it is commonly known, the goal of labor methods engineering is to eliminate all the elements of the production process that, after running through the methodology, proved to be useless, and to get, accordingly, an improved method.*
Methodology/approach *- This work analyzes the activity of a mechanized mining, systematizing functioning breaks. The causes determining the breaks have been analyzed and mathematical functions have been established for them; the results of the study help managers to co-ordinate the activities according to the overlapping of certain breaks and re-organize the activity depending on such overlapping.*
Findings *–Solutions meant to decrease the number of the workers belonging to a team have been found; the new method employs three face workers (as it is, in fact, usual) instead of five. Under these circumstances, the degree of workers' occupying considerably increased as compared with the initial case.*
Research limitations/implications *– The profitableness of mining activities is not a new problem. All these determine important savings at the level of the mining unit, a fact that requires, at present when mining industry confronts with serious losses trying to make all activities profitable, the rigorous implementation of the methodology of methods engineering*
Practical implications *– Standard forms for such schedules end with the comparison between the existent method and the improved one; differences are clearly emphasized. Accordingly, there are differences regarding the duration of the studied activities, of length of the routes taken by the worker, workers, and work objects; the number of labor stages and situations changes.*
Originality/value *– Such proposals are materialized in the schedules of the production process, of each individual worker, of all workers, of multiple activities etc. According to such proposals the methods of improved labor are being settled; schedules of the improved method or methods are going to be drawn out.*
Key words: *profitableness, improvement, solutions.*

Introduction

The profitableness of mining activities is not a new problem. This work analyzes the activity of opening works within a Jiu Valley mine; functioning breaks due to various causes are systematized and analyzed and dead times are eliminated. The results of the study can help managers to administrate the activities according to the overlapping of certain breaks and re-organize them depending on such overlapping.

1. Collecting and systematizing information

As it is commonly known, the goal of labor methods engineering is to eliminate all the elements of the production process (operational complexes, handling complexes, etc.) that, after running through the methodology, proved to be useless, and to get, accordingly, an improved method.

Such an improved method might contain fewer elements of the production process; certain elements might have been replaced, others modified; movements have been reduced to a minimum resulting in shorter durations of the process, a decreased labor consumption and low investments.

All these determine important savings at the level of the mining unit, a fact that requires, at present when mining industry confronts with serious losses trying to make all activities profitable, the rigorous implementation of the methodology of methods engineering.

In practice, one should notice the preoccupation to improve the quoting system both at the level of the mining unit and at the level of the ministry. The decisions taken at various levels, though correct, have been difficultly implemented and, consequently, the results have been under expectations. We should also mention the fact that the quoting activity has not been paid proper attention by managers; the priorities were different and the causes determining important losses and originating in the quoting and salary system have been neglected.

This approach exhibits concrete researches regarding the implementation of methods engineering according to the work stages settled by “Labor Research”, vol. II. The measuring of labor consumption has been made through timing according to the instructions exhibited in the work called “Handbook of Industrial Engineering”, vol. II.

The researches have been done at Livezeni Mining Unit, at the faces of two opening and preparing mining works. Due to the huge volume of the approach, this paper exhibits only the manner of working.

The documentation stage has as a goal the gathering of all items of information connected with the method of the production system, the stage of the process, the operation or the analyzed work so that, according to these data, one should be able to critically analyze these methods.

1.1. Labor means and labor objects

The analyzed mining works have as a goal the opening and preparation of the faces with a view of exploiting the 3rd layer within level 350 of Livezeni Mining Unit. The preparation mining works are approached from the collector plan of level 350 and should be done towards the margins of the mining field along 800 m for each drift.

The digging of the opening and preparation mining works is done owing to the explosives technology; the simple process is divided into several phases; we are going to analyze only its executing. This phase is also divided into several operational complexes.

The drilling of the face is done for each digging cycle with jack hammer drills type PR-8 that functions with compressed air.

The loading of the holes is done by the pyrotechnic employee together with the shift leader and employs safety explosives type AGP; its initiation is done with staples activated by an exploding device.

The evacuation of the stuff drilled within the face is done with the help of shovels on chain conveyors type TR-5 displayed in cascade that ends in a collecting silo; further, the stuff enters the main transporting flux of the mining unit.

The support of he mining works is done with metal springs type SG-23. A drift support GDM-10 comprises two feet and a beam as well as joining elements made of clamps and tightening devices. A beam is 3600 mm in length and its curving radius is 2050mm. In order to be joined the elements of a sustain frame are overlapped along 400 mm; they are joined owing to the clamps disposed by twos at each frame. The support field is given by the length of the assembled tightening device that, in most of the cases, is 0.6 m in length.

The ventilation pipe is made of ventilation tubes being 2000mm in length and 500 mm in diameter.

Water supply plants as well as compressed air plants are made of pipes being 3500-4000 mm in length and 76 mm in diameter (in case of water) and 105 mm (in case of compressed air); they are connected to the main water and compressed air networks of the mining unit. The energy supply of the chain conveyors starts from the electric stations coupled to the main stations.

The lagging of the mining works is done by a special team gathered at the level of each productive level.

The supplies team transports all the sustain elements and needed stuff 100 m to the face where they are taken by the face team. The transport flux of the stuff exploited at the face is made of chain conveyors type TR-5 displayed in cascade.

A chain conveyor is made of operating and returning stations, pipes, chains and scrapers. A pipe is 1 m in length; the maximum length of a chain conveyor varies between 80 and 100 m; further another conveyor is disposed. The operating of a chain conveyor is done owing to a 45 KW electric motor.

1.2. Labor

In order to do opening or preparing drifts working schedule comprises four shifts a day, five days a week. A team that works at the face includes five workers as follows:

- Two miners of whom one is the shift chief;
- A miner assistant;
- A wagon worker;
- An unskilled worker.

The shift chief is the one who co-ordinates the whole activity of the team and is directly in charge with the carrying out of the responsibilities by the face team and the observation of labor protection norms during the shift he co-ordinates. In case the shift chief is absent the other miner of the team is going to co-ordinate the activity. The miners who are shift chiefs should be qualified and have experience specific to the mining works of opening and preparation.

The training and improvement of the workers' skills is done at vocational schools and owing to training and improving courses organized by the mining unit. Among the individuals of the team there are collaboration and subordination relationships; the shift chief is the one who mainly co-ordinates the activity of the shift.

The shift chief is directly subordinated to the foreman or to the engineer leading the team who co-ordinates the shift at a sector level. Due to the decreased degree of mechanization of the production process's operations, the physical effort that must be made is quite impressive; this fact determines important fluctuations of the workers employed in such jobs.

Man's action upon labor's object can be direct or through labor means; in this second case, the worker should do a series of movements that may be the main source of fatigue, especially underground where they mainly are compound movements done upright.

Micro-climate conditions where the worker deploys his activity influence the efficiency of labor consumption. Normal working conditions provide human beings a physical and psychical balance that helps the maintaining of raised labor productivity.

The physical component of labor environment is determined by microclimate (temperature, humidity, air draught, lighting, noise, vibrations, etc.). The inclination of the floor of the work place largely determines energy consumption; accordingly, in case of a 15-20 degrees floor inclination, the effort made by the human body when moving upward is twice higher than in case of horizontally moving. We can talk about a physiological efficiency as being the ratio between the useful measurable power and total used power. When the whole mechanic energy used during a physical work makes up useful measured power, the efficiency represents 30%; in such a case the lost energy represents 70% and is transformed into heat.

In case working conditions require the changing of the normal position or, in case certain movements statically stresses the body, then a part of the useful measured energy is consumed by this supplementary work and efficiency decreases. As an example, bent working with a shovel has an efficiency of only 3%. It is quite important that the optimum physiological efficiency should be attained in case of hard works by creating proper conditions and taking ergonomic measures.

The modification of daily working time determines changes of the workers' efficiency. One frequently encounters extensions of the working hours but the results are poor both regarding the production level that insignificantly increases and especially regarding the level of labor productivity that significantly decreases. The worker has a tendency towards maintaining a certain level of daily productivity; he looks for compensating the increase of daily working hours by decreasing work rhythm.

The miner who is the shift chief should do his best in order to provide a proper ventilation, a strong roof support capable of avoiding crumbling, people' refuge in case of face blast working or in case of danger; he also should prevent gas and coal powder explosions.

The operations that take place at the working face should be done according to the order stipulated by the shaft facilities handbook; changes are admitted only when approved by the technical manager of the unit.

1.3. General working conditions

The technological process of doing mining opening and preparation works employing explosives implicates the running through several stages.

The supply of the working place is done at the beginning of the shift by three workers while the shift chief controls the working place and the miner assistant prepares the drilling of the face. The drilling of the face is done with the rotating drilling machine type PR-8 pneumatically operated; the holes are done with a helicoidally borer with attack point. The drilling of the holes is done by the shift chief and a miner.

The charging of the holes is done by a fire worker and the shift chief. After charging explosives into the holes they are tamping plugged and blasted. After blasting they should do the ventilation of the face by activating the ventilation circuit and the double-acted ventilators (pneumatic and electric). Further the shift chief together with the blaster check the way the face blasting took place; after the blaster leaves, the shift chief detaches the rocks that are to fall from the hanging walls; the operation implies the entire surface of the face and is done from a single point.

Simultaneously with these complexes of operations they provide the stuff required by the work place, five meters from it; the stuff is going to be transported to the face when necessary. After detaching the falling rocks, they evacuate the dislocated coal. The evacuation is done with shovels on the chain conveyor; this complex of operations requires the participation of all the members of the work team.

The support of the mining work is done with metal springs type SG-23; the work is type GDM-11 that corresponds to a drilling surface of 13.4 square meters and a free supported surface of 11 square meters. The support pace is of 600 mm; it is standardized and settled by the length of the metal distance separator that is set between the two consecutive drifts supports. After the temporary fixing, they set the laggings made of pieces of wood on the whole surface of the metal support; then the final tightening is done and a support field is accordingly obtained. The length of a hole is 1.40 m having a dislocation coefficient of 0.85.

A complete cycle determines two support fields corresponding to a face advancement of 1.2 m per cycle and a production of 16.08 cm/work place.

The pieces of information that represent inflow data can be synthetically exhibited in tables.

Microclimate conditions specific to underground work places negatively influence labor efficiency. Such conditions are influenced by the ore body, work technology, and work place humidity.

In the mining industry labor productivity is largely influenced by the natural state of the ore body that determine both the choice of the preparation and exploitation method to be used and the working conditions of the workers.

Opening mining works are located in the sill of the coal layer, under diagonal, directional or transversal drifts.

The link between the opening mining works and the ore body is done either owing to inclined planes or ladder shafts or by intercepting the ore body due to such mining works. The opening mining works have as a goal the opening at Livezeni Mining Unit of the 3rd layer within level 350. In order to do the opening mining works one can also use the advancing combine CI-2 with point attack; the stuff is loaded in skips or conveyors. These works help: coal transportation, workers' access, and stuff transport; they have an average exploiting duration of 10-15 years while preparation works 2-5 years.

Blasting works are done only according to the written disposals approved by the sector chief. These disposals are given at the beginning of the works, month or whenever necessary for each work place. They specify the persons who are entitled to do the works, the system of ignition, the distance to the refuge, the ventilation system, the scheme of holes' arrangement, and the surveillance location.

Only trained and authorized persons have the right to do blasting works (blasters). When the blaster comes with the explosives to the face all operations should be stopped; the workers and the tools are evacuated. The surveyor is nominated; then they check holes configuration, their length, direction, and cleanliness as well as the presence of tamping stuff.

The holes are charged and tamped by the blaster and the shift chief. After charging and tamping the holes they are connected. Their coupling to the network is done only after the previous checking of blasting conductors; the operation is done only by the blaster. Before initiating the blasting, the workers move towards fresh air, at least 100 m from the blasting place.

When the holes normally explode, the minimum waiting time is 15 minutes; after this the blaster together with a miner may have access to the face in order to check the blasting effect and possible failures.

1.4. Detailing the simple process of initiating a drift owing to explosives technology
1.4.1. Analysis of production process

At Livezeni Mining Unit, in case of executing opening or preparation works, the phase of initiating a drift is divided into the following operations complexes:

- 01. Checking the work place when entering the mine;
- 02. Face drilling;
- 03. Charging and blasting the holes;
- 04. Ventilation and rest;
- 05. Checking the work place after blasting and detaching the falling rocks within the face;
- 06. Evacuation of detached stuff;
- 07. Drift supporting;
- 08. Installing temporary railroad or chain conveyor;
- 09. Installing connected devices.

Operations complexes may include several operations such as:

- 01. Face drilling;
- 02. Transporting tools and drills to the face;
- 03. Installing the drilling machine;
- 04. Lubricating the drilling machine;
- 05. Initiating the functioning of the drilling machine and drilling the face;
- 06. Disassembling the drilling machine;
- 07. Cleaning the holes;
- 08. Transporting tools and drills to the storage place.

Operations are divided into handlings complexes and handlings; accordingly, for the 02 complex of operations called “Face drilling” one should notice the following:

1. Tools and drills transporting to the face

Complexes of handlings	Handlings
1.1. Tools transport to the face	- Moving to the storage place; - Tools taking; - Tools transporting to the face; - Placing the tools within the face.
1.2. Drills transport to the face	- Moving to the storage place; - Detachable ends’ taking; - Drills taking; - Drills transport to the face; - Placing the drills within the face.

2. Assembling the drilling machine

2.1. Transporting the compressed air hose to the face.	- Moving to the place where the hose is stored; - Taking the hose; - Transporting the hose to the extremity of the compressed air pipe.
2.2. Connecting the compressed air hose to the pipe.	- Unrolling the hose; - Moving to the air pipe; - Opening the tap in order to clean the pipe; - Coupling the hose to the pipe; - Blowing the hose.
2.3. Assembling the drilling machine	- Moving to the storage place; - Holding and lifting the drilling machine; - Transporting it to the face; - Placing it within the face; - Blowing the drilling machine; - Connecting the hose to the drilling machine.

The same procedure can be used in case of the other complexes of handlings. An observation paper is exhibited below:

Study no.3	OBSERVATION PAPER	Leaf no.1
Observation goal: Opening mining works	Activity: Directional drift execution	
Work place: Directional drift level 350	Worker: 5th category miner, registration no. 7345	

No.	ACTIVITY DESCRIPTION	Time (min.)
01	Checking the work place when entering the mine	20
02	Drilling the face	50
03	Charging and blasting the holes	75.7
04	Ventilation and rest	15
05	Face checking after blasting and detaching the falling rocks	20
06	Evacuation of detached stuff	36.7
07	Drift support	90
08	Installing temporary railroad	43
09	Installing connected devices	43

In order to register the schedule of multiple activities into the observation paper one should write down both the activities deployed by each worker and their overlapping.

For example, in the case of the “Evacuation of detached stuff”, one should notice the following:

OPERATIONS	WORKERS	TIME (min.)
Transporting tools to the face	4;5	8.5
Breaking huge blocks	3;4;5	3.3
Charging stuff on conveyor	1;2;3;4;5	16.7
Transporting tools to the storage place	4;5	8.5

1.4.2. Exhibiting the employed method

According to the observation papers previously displayed one should subsequently draw out the schedule of the activities of each individual worker, of all workers, of the process, of multiple activities, of machines and even of one’s hands’ activities.

2. Critical analysis of the employed method. Interrogative method

In 1930, Maynard and Stegenmerten introduced the term of methods engineering which they defined as being the determination of a coordinated and systematic solution capable of improving labor methods with a view of getting maximum labor efficiency.

One can demonstrate that the improving desired results cannot be achieved owing to isolated studies of the movements and operations, owing to labor norms separately settled, or owing to stimulants separately thought of; they can be achieved only owing to a simultaneous approach of all these aspects. In other words, this means that the labor method is critically analyzed and it is continually improved; time is going to be studied according to the improved method. Labor norms and standards are settled as a result of time study according to the improved method, and, finally, the system of material incentives should provide both the implementation of the improved method and the carrying out of the established norms.

In order to analyze labor method we are going to use the interrogative method. The foundations of the interrogative method have been laid by Mogensen who is the author of “why?” questioning in methods engineering.

During this second stage of planning the improved method one should emphasize the efficiency of analyzed methods and the opportunities of improvement.

The interrogative method implies the implementation, according to a well determined order, of a set of questions, and the search for answering these questions. Subsequently we have implemented, in fact, interrogative method within mining works processes.

3. Elaborating and choosing the improved method

After implementing interrogative method, due to the answers given to all the questions, improvement solutions of labor methods resulted. In order to choose the optimum variant, during the stage of analyzing the existent situation, one has proposed the elimination, modification, combination, or simplification of labor stages or situations the process or the worker belongs to.

Such proposals are materialized in the schedules of the production process, of each individual worker, of all workers, of multiple activities, etc. According to such proposals the methods of improved labor are being settled; schedules of the improved method or methods are going to be drawn out.

Standard forms for such schedules end with the comparison between the existent method and the improved one; differences are clearly emphasized. Accordingly, there are differences regarding the duration of the studied activities, of length of the routes taken by the worker, workers, and work objects; the number of labor stages and situations changes.

4. Conclusions

Solutions meant to decrease the number of the workers belonging to a team have been found ; the new method employs three face workers (as it is, in fact, usual) instead of five. Under these circumstances, the degree of workers’ occupying considerably increased as compared with the initial case. It has also been proposed the use of the charging machine as the inclination of the mining work allows such a thing. In order to illustrate the labor method that uses pneumatic charging machines we have employed the combined schedule worker-machine.

In order to choose the improved method certain criteria suggested by practice are to be noticed as follows:

- The cheaper method is preferred as performances are almost equal;
- The method having the lowest duration is considered to be the best one;
- The method implying fewer operations is usually cheaper and accordingly preferred;
- The method determining the most efficient use of both hands is, normally, the best one;
- The method where the worker’s occupying degree and the machine’s use degree are the highest is preferred.

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STRATEGIES FOR INCREASING COMPETITIVENESS OF THE ROMANIAN TEXTILE AND CLOTHING INDUSTRY

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Abstract

Purpose – The objective of this research is to identify the possibilities in increasing the competitiveness of Romanian companies based on the strategic theories and to propose strategies and initiatives that should be taken to upgrade this sector. With the above mentioned objectives, the paper will first assess the general situation of Romanian textile and clothing (T&C) industry and find out the different opportunities and threats.
Methodology/approach - Analysis of records and case study research method was applied for this study. Before being able to outline certain strategic directions, a review of works was carried out on the theme of textile and apparel industry evolution as well as qualitative analysis of recent statistical data. We used the case study additional to other research methods to illustrate or emphasize the presented approaches.
Findings – Given that the Romanian T&C sector is no more considered highly competitive due to several factors, which are highlighted, we propose that the companies should moving away from traditional cost oriented strategies toward strategies that emphasize product differences while maintaining a competitive price or to develop a focus strategy and concentrated on niche products. We also propose the innovative clusters as strategy to manage knowledge among organizations as well as a competitiveness improvement strategy.
Research limitations/implications – The paper examines only the textile and clothing industry.
Practical implications – Results of this study could be used by textile engineers and academic researchers to analyze factors effective to use globalization strategies, notice the perception of important problems in the external business environment and identify the strategies which contributed to a company's success inside the Romanian T&C industry and global business environment.
Originality/value –It offers a suggestion for policy makers in universities to revise their curricula and create formal and informal linkages between university researchers and entrepreneurs.
Key words: *T&C Industry, competitive strategies, competitiveness*

Introduction

The liberalizing policies of the EU and WTO as well as the intense competition from low cost producing countries present a number of challenges for Romanian textile and apparel firms. Managers of firms in textile industries face major challenges in coping with the day-to-day problems that arise from constantly changing operating conditions. They also face subtler strategic challenges that have to be addressed successfully if the firm will survive. Under pressure from various unfavorable conjectural factors (Meyer, 1998), Romanian T&C Industry has traveled a restructuring period forced, by the defensive adaptation type, characterized by reducing the market share and increasing the productivity. The other two reaction variants identified in the literature, namely the strategic reorganization, or organizational culture change, do not seem to be applicable by Romanian firms.

Recently there have been recommendations on management researchers to employ more mixed method approaches rather than just quantitative or qualitative research (Teddlie and Yu, 2007) .The idea is that a combination of research methods can provide opportunities for the integration of a variety of theoretical perspectives thereby enhancing and enriching current knowledge by „filling in the gaps" that studies adopting a singular approach are unable to do (Currell and Towler, 2003). Given this recommendation, analysis of records and case study research method was applied for this study. Before being able to outline certain strategic directions, a review of works was carried out on the theme of textile and apparel industry evolution (Pickles and Smith, 2011; Curran, 2009; Stanisławski and Olczak 2010;Yilmaz and Karaalp, 2015; Girneata et.al, 2015) as well as qualitative analysis of recent statistical data. We used the case study additional to other research methods to illustrate or emphasize the presented approaches.

The paper is organized in five parts: the first part outlines the theoretical basis of the competitiveness and also provides a brief literature survey. Second part we calculated the Revealed Competitiveness (RC) index for Romanian textile and clothing sectors. The third part analysesthe stand of the Romanian textile industry and the diverse opportunities and threats for Romanian organizations from the textile industry. Part four draws some conclusions based on the findings and the final partpresents the two case studies.

1. Literature review

A large number of concepts of competitiveness have been proposed in the economic and business literature. There are two schools of thought; the economic school, with a macroeconomic perspective, and the management school, which supports the notion of competitiveness at a country/industry/company level.

According to the macroeconomic interpretation of competitiveness an economy is considered to be competitive if it contains a vast number of internationally competitive companies and industries. Broadly a macroeconomic perspective deals with internal and external balance at the country level, competitiveness being a measure of a country's advantage or disadvantage in selling its products in international markets. In other words, it must perform strongly in exports.

One of the most quoted definition in the literature is the one provided by Freebairn (1986): "*Competitiveness is an indicator of the ability to supply goods and services in the location at the time they are sought by buyers, at prices that are as good as or better than those of other potential suppliers, while earning at least the opportunity cost of returns on resources employed.*" This idea underlies the concept used by Dollar and Wolff (1993), who propose to measure it in terms of productivity, both labor and total factor productivity. Another definition of competitiveness can be expressed as: *"The ability of companies, industries, regions, nations and supra-national regional units to produce with simultaneous exposure to international competition, relatively high income and high levels of employment*"(European Commission, 1999).

In a management perspective, in today's economical environment, competitive advantage arises from an organization's ability to take advantage of its core competencies (Prahalad and Hamel,1990), to create, control or emphasize the resources that are critical to its activities. More than ever, the textile and clothing industry in Romania is challenged to identify goals, core competence and strategies to improve their competitiveness.

Over the years, strategic management literature offers a lot of view on possible generic strategies. Porter (1980) introduced the well known generic strategies: low cost, differentiation and focus, Miles and Snow(1978) proposed the strategy types prospector, analyzer, defender, and reactor, Dess and Davis's (1984) and Douglas and Rhee (1989) who suggested the strategy types of broad-liner, innovator, integrated marketer, low quality, niche and synergist competitive and co-operative strategies.

Since textile industry is considered a mature industry, using Porter's traditional strategies is appropriate. In this paper, we focus on Porter's framework of generic strategies also because it

overlaps with other typologies. For example, Porter's strategy of differentiation is very much like Miles and Snow's prospector strategy, the cost leadership is similar to Miles and Snow's defender and Dess and Davis's cost leadership strategies. Porter's strategy of focus resembles Douglas and Rhee niche innovator strategy. Although Porter postulated that firms should follow a specific generic strategy, he also warned that a firm cannot ignore activity connected to other strategy types.

Both traditional macroeconomic perspective and microeconomic perspective overlook the effect of technological development and capabilities on competitiveness although various researchers. Lall (2001) , Wignaraja (2003), Smit (2010) argued that there is a strong positive relationship between technology factor and competitiveness.

In the present paper we compare first microeconomic with macroeconomic interpretations.

The T&C industry is dominated by small and medium-sized enterprises (SMEs) concentrated in a number of regions that are highly dependent on this sector (Commission of the European Communities, 2003). So far, researches mostly focus on strategic management on large organization. Few studies investigate the role of strategic management in (SMEs) although strategies are essential for building competitive advantages for these (Coulter, 2008; Girneata et.al, 2015). Even if there are many advantages of using strategic management, there are still many SMEs organizations resist using it, because the lack of management education or because some of them believe that this process is useful only for larger organizations and have not recognized that it is also very useful for SMEs. (Miricescu, 2015).

In order to present the T&C industry and to propose strategies that it should taking into account we use these concepts:

- „value chain"in Porter's view when we refer to horizontal expansion or vertical integration of the companies and „global value chain" in Gereffi's (1994) view to propose a functional upgrading of companies from simple assembly of products (OPT) to taking care of the entire production process (OEM) or even design (ODM) and sale under own brand (OBM).
- „Networks"- there are groups of firms that cooperate formal or informal, complementing each other and specializing in order to rise above common problems achieve collective efficiency, exchange knowledge and penetrate markets beyond their individual reach.
- „Cluster" in the sense that was defined in the paper „Clusters and the New Growth Path for Europe " (Ketels and Protsiv, 2013). Clusters lead sometimes to the development of networks within them and also, a network can, in time, advance into a cluster, as it develops enterprise associations and the involvement of public institutions.

2. Competitivenessof Romanian textiles and clothing industry

We calculated the Revealed Competitiveness (RC) index for Romanian textile and clothing sectors. The index developed by Vollrath (1991) is calculated on the basis of export and import data. The interpretation of the index is straight forward: positive value of the index indicates competitiveness, whereas negative value means that the product is not competitive. The revealed trade advantage indicator is calculated as the difference between relative export advantage(RXA), which calculates the ratio of a country's export share of a commodity in the international market to the country's export share of all other commodities, and its counterpart, relative import advantage(RMA)on the basis of following formulas:

$$RTA_{ij} = RXA_{ij} - RMA_{ij} \quad \textbf{(1)}$$

where

$$RXA_{ij} = (X_{ij} / X_{it}) / (Xn_j / Xn_t) \quad \textbf{(2)}$$

$$RMA_{ij} = (M_{ij} / M_{it}) / (Mn_j / Mn_t) \quad \textbf{(3)}$$

M is import, X is export, i is the country, j is the commodity/industry, n is the world or a set of countries, and t is all product groups.

Vollrath's second measure is simply the logarithm of the relative export advantage (ln RXA); and his third measure is *revealed competitiveness* (RC), defined as:

$$RC_{ij} = ln\ (RXA_{ij}) - ln\ (RMA_{ij}) \quad \textbf{(4)}$$

When RXA and RMA are compared in logarithmic form, they are symmetric at the origin.

The results for the years 1990 to 2014 show that the clothing products possessed competitive advantage during the entire period analyzed unlike the textile sector, albeit shows some growth lately, continues to have a negative value.

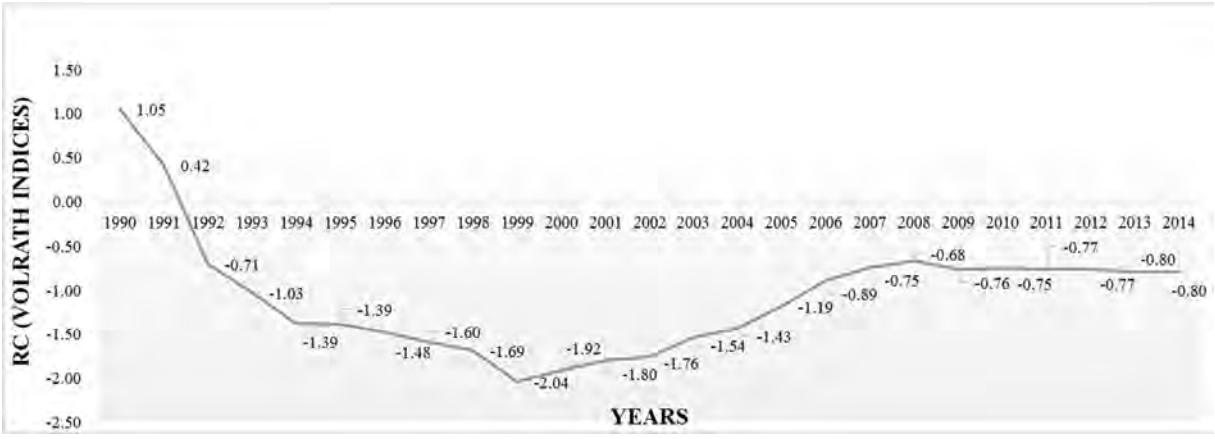


Figure 1. Evolution of Romanian RC (Volrath indices) for textiles in the period 1990-2014. Calculated by the authors according to the WTO dates.

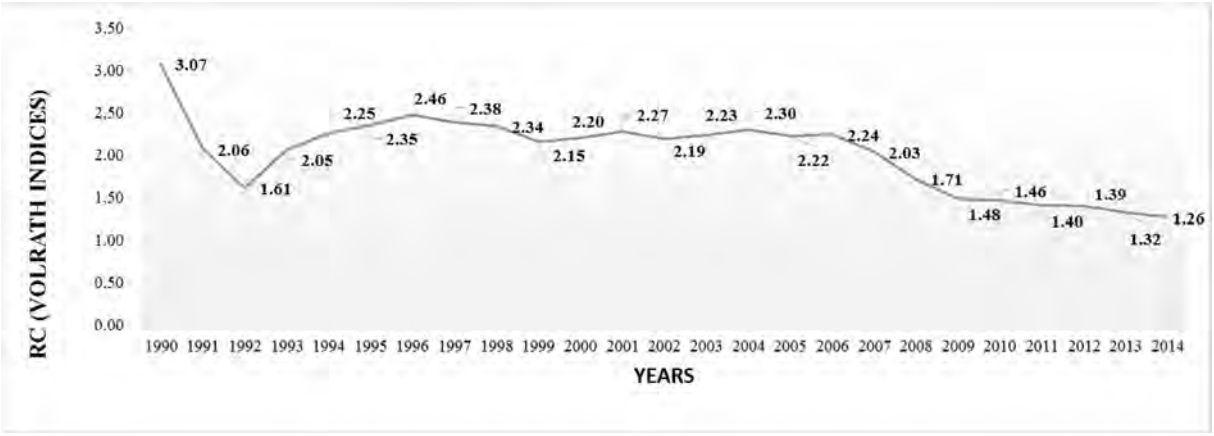


Figure 2. Evolution of Romanian RC (Volrath indices) for clothings 1990-2014.
Source: Calculated by the authors according to the WTO dates.

3. Romanian T&C Industry, Opportunities and Threats

This chapter analyzes the situation of the Romanian textile industry, the different opportunities and threats for Romanian organizations from the textile industry.

The textile industry has gone through fast and rapid changes, especially in the last years. The Romanian T&C industry has a tradition of supplying good quality products and despite increasingly ferocious global competition and significant relocation of manufacturing to low-wage

countries it continues to represent one of Romanian's major industrial sectors, representing 2,49% of GDP in 2011 and 3% of GDP in 2012. (INS, 2013)

It continues to remain one of leading exporters, textile and textile article exports, representing 8,42% out of total Romanian exports, in 2010, 7,88% in 2011 (INNSE, 2013a) and 7,88% in 2014 but also an important employer. For example, in February 2015 the average number of employees from light industry represented 15,65% out of the average number of employees in manufacturing.

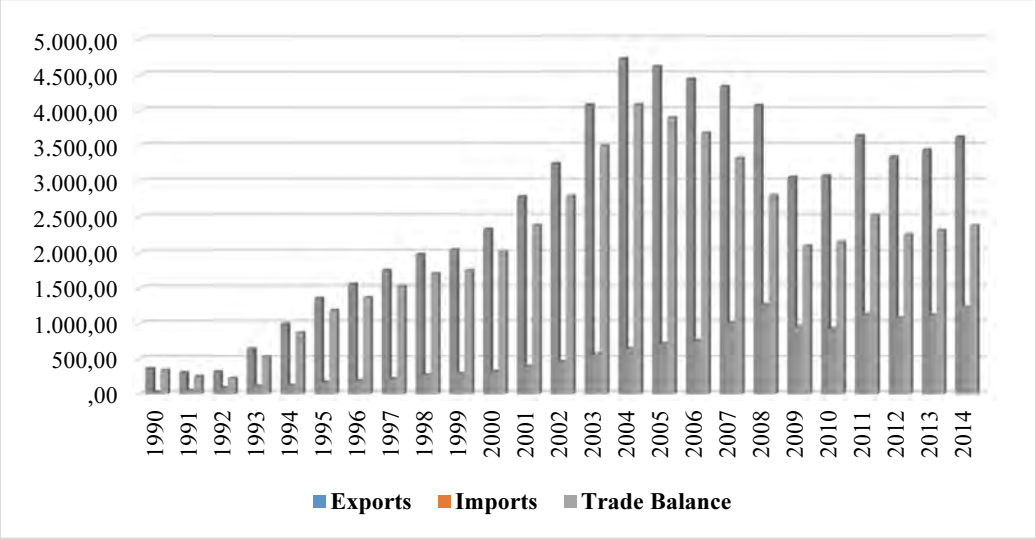


Figure 3. Evolution of Romanian Clothing Trade (Euro)
Source: Developed by the authors according to the WTO dates

Internationally women are the majority of the employees in the textile and apparel industries, putting the female proportion of the global apparel industry workers at more than 80%. (Dickerson,1999). Romania is included in this interval, the percentage of women employed in apparel firms is 86,87% and in textiles 72,74% (INNSE, 2013b) .

The number of employees in manufacturing was in February 2015; 1104,1 thou persons. Regarding manufacturing branches, the first place is held by food industry with 155,7thou persons, followed by clothing products industry with a number of employees of 137,2 thou persons and manufacture of motor vehicles, trailers and semitrailers with 164 thou persons. As shown in figure 4the dynamics of employees in textile and clothing industry was negative. The clothing industry has recorded sustained growth in the period 1999-2003 and a sharp decline in 2011.

As presented in figure 5, there is a discontinuous trend of Romanian textiles and clothing manufacturing over the14 years examined. This uneven evolution of the indicator that notifies growth in a year and then decrease it in the next year can be explained by the fact that companies in the clothing manufacture still prioritize cheap labor, they may get contracts on short periods of time, when the production growths.

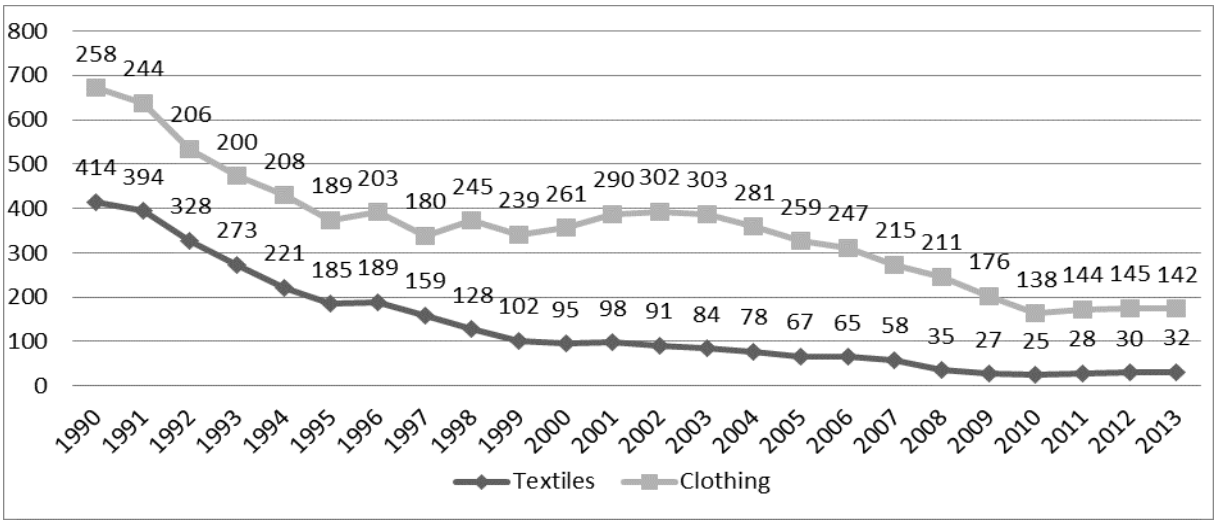
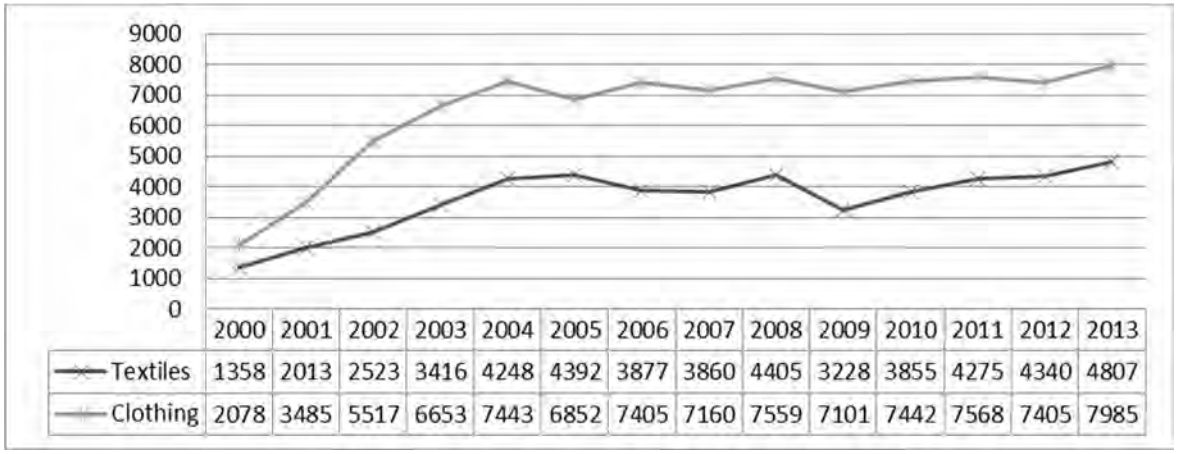


Figure 4. The evolution of average number of employees (thousands)
Source: Developed by the authors on the basis of Romanian Statistical Yearbooks



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Textiles	1358	2013	2523	3416	4248	4392	3877	3860	4405	3228	3855	4275	4340	4807
Clothing	2078	3485	5517	6653	7443	6852	7405	7160	7559	7101	7442	7568	7405	7985

Figure 5. The Evolution of Industrial Production (mil Lei)
Source: Developed by the authors on the basis of Romanian Statistical Yearbooks

The data presented in Table 1 illustrates the differences in turnover changes in the T&C sectors in the whole EU27, in the Central and Eastern European Union countries (EU-CE10) and in Romania. In Romania the turnover changes in 2011 – 2012 are positive in both the textile and clothing sectors, respectively, +5.81% and +9.39% while in the EU27 a significant decline (–4.53%) was observed in the textile manufacturing turnover, and a slight decline (–0.96%) in the clothing manufacturing turnover, and in EU–EC10 countries in the textile sector +1.67% turnover growth was observed but in the clothing sector a –1.48%turnover decline in the period analyzed.

Table 1. Textile and clothing manufacturing turnover

Country	Textile			Clothing		
	Euro (mil)		change in %	Euro (mil)		change in %
	2011	2012	2011/2012	2011	2012	2011/2012
EU27	82 453.87	78 716,93	– 4,74	74.915,65	74.194,81	– 0.97
EU-CE10 7	7.376,61	7 500,14	+ 1,68	7 315,02	7 206,75	–1.50
Romania	940,8	1080,98	+1,10	2.104,0	2146,08	+1,99

Source: Developed by the authors on the basis of Annual detailed enterprise statistics for industry (NACE Rev. 2, B-E) eurostat.ec.europa.eu

Industrial production of textiles has registered a continuous decline in recent years from 4391.5 million Ron in 2005, until 2009 when it reached 3228.4 lei, then a slight come back can be seen in 2010 it was 3854.5 million Ron. In terms of industrial production of clothing items, it increases continuously from 6851.8 million lei in 2005 up to 7441.9 million Ron in 2010. In the process of privatization has been a change in the structure of enterprises, from vertical integration to a horizontal expansion. Thus, after 2000 primary production continuously decreased, which generated the import of most part of raw materials and accessories.

Regarding the number of textile companies, it decreases continuously from 2162 in 2000 to 1279 in 2013; while after a positive evolution in 2000-2008 the number of apparel companies' decreases to 4378 in 2013.

Table 2. Number of T&C companies

Sector	No. of employee	Years													
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
		Number of companies													
Textile	Total	2162	2166	2211	2517	2546	2493	2440	2365	1789	1651	1499	1317	1295	1279
	0-9	1500	1451	1472	1739	1773	1727	1689	1658	1332	1227	1113	919	923	908
	10-49	344	389	399	429	438	438	453	454	305	308	273	282	269	257
	50-249	206	225	247	255	255	257	237	202	126	94	91	93	77	91
	≥250	112	101	93	94	80	71	61	51	26	22	22	23	26	23
Clothing	Total	4673	4930	5289	5242	5628	5849	5743	5698	5956	5432	4480	4111	4231	4378
	0-9	2747	2756	2966	2798	3068	3361	3331	3356	3591	3489	2713	2279	2384	2530
	10-49	970	1081	1125	1210	1305	1324	1354	1398	1467	1217	1093	1110	1133	1144
	50-249	728	843	942	959	981	921	845	764	732	586	547	594	584	578
	≥250	228	250	256	275	274	243	213	180	166	140	127	128	130	126

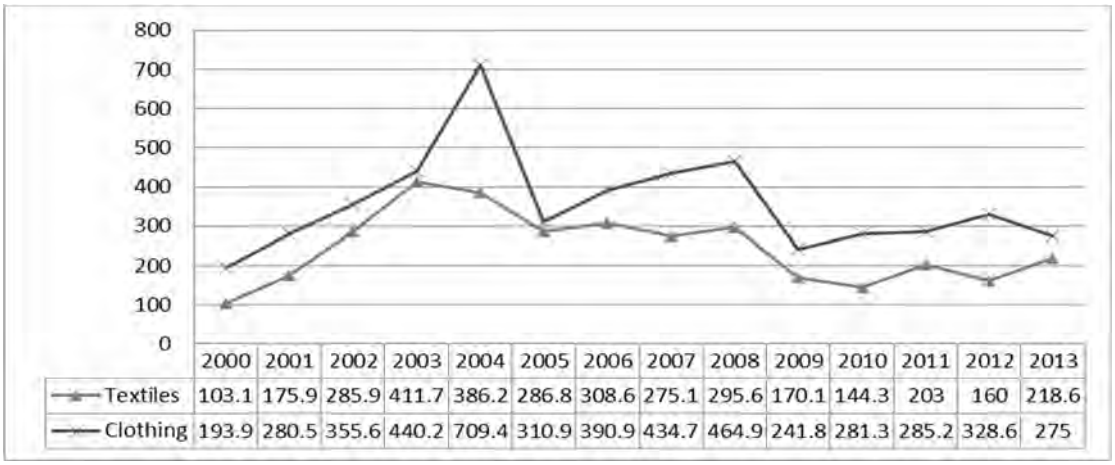
Source: *Developed by the authors on the basis of Romanian Statistical Yearbooks*

Regarding the specificities of the T&C sector in comparison to other economic and industrial sectors we can underline that it still represents a key Romanian manufacturing industry. The sector was dominated by small enterprises and SMEs mostly privately-owned enterprises with less than 100 employees, the average company shaving 15 employees. We can notice that in 2013, 70,99% out of total firms producing textiles are micro enterprises and 20.09% small enterprises, and summing up we get 91.08% out of total, and in the clothing production sector 57.78% are micro enterprises and 26.13% are small enterprises, in total they represent 83.91%. Only 1.79% of the textile companies and 3.87% of the clothing companies have more than 250 employers.

Compared to other EU states the market structure is similar to Spain, with a very large number of small companies (92,11%), and a few large foreign companies (only 1.52%textile and 2.69% clothing companies) and without state-run companies (Patora-Wysocka, 2011).

Textile production take place largely in generally automated factories, whereas apparel production is characterized by decentralized, globally dispersed production networks that are coordinated by lead firms that control design, branding, and other activities. According to Figure 6 that highlights the textiles and clothing attractiveness among investors, there is a clear difference of the investment evolution between the two sectors. Thus, if the start of the 2000th in the apparel industry there were investments of about 90 million lei higher than those in textiles, in 2003 the amounts invested for the two sectors were approximately the same. Amid the sharp rise of production in the lohn system, in 2004 the garment firms benefited from increased funds, while the funds allocated to textile firms were lower by approximately 25 million than in 2003. Investments

were made mainly in machinery and production equipments on that firms can accept external controls. This explains the decrease to less than half of this indicator in the next year as firms have already been refurbished. Continuous fluctuations followed, without a predetermined pattern that can reveal a dependency or similarity between the two sectors.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Textiles	103.1	175.9	285.9	411.7	386.2	286.8	308.6	275.1	295.6	170.1	144.3	203	160	218.6
Clothing	193.9	280.5	355.6	440.2	709.4	310.9	390.9	434.7	464.9	241.8	281.3	285.2	328.6	275

Figure 6. The Evolution of Net Investments (mil.lei)
Source: Developed by the authors on the basis of Romanian Statistical Yearbooks, www.insse.ro

The value chain analysis found that the highest value added are the links that are not part of the national chain like raw materials, accessories, marketing / advertising / branding /distribution, belonging to external customers while most small value added links in the value chain like finished products, assembling, packaging, finishing are specific for the Romanian part.

The shift from OEM to OBM and ODM is a signal of industrial modernization, which insures high value-added, increased stability in demand and even wages, improving local firm position in the productive chain. The strategy of extended the value chain had strategic and financial motives and was enabled by technological factors and regulatory factors. Strategically retailing is motivated by creating a turnover growth as well as stimulating a better feed-back from sales into product development and production. Creating national brands is a way of becoming less dependent on external orders and export also creation not only production. This involves, for example, highly specialized products, more effort in research and development and expert consultancy. For many years an example of best practice is that of Jolidon, one of the few Romanian companies with vertically integrated structure. (Cuc, 2011)

All these companies are networking within and increasingly also between Romanian but also European regions, each one contributing a specific and complementary added value along the textile value chain. Therefore, these companies within West-European value chains should be more involved in manufacturing activities to support product development and design, fabric or accessories sourcing and merchandising functions based at the head offices in Italy, Germany or Great Britain or Spain. The sources used (INSSE, 2013),have indicated that in recent years have seen a decrease in production and exports of Romanian light industry products, reduce the number of firms and number of employees and lower earnings (in manufacturing clothing articles to get the lowest average gross earnings) (INSSE, 2013) .

The T&C industry is a low-wage sector. There are, however, considerable variations with respect to wage levels throughout Europe. The average cost per hour in spinning and weaving is about 15.66 EURO in United Kingdom, whereas the cost in Hungary, Lithuania or Poland is only 3-4 EURO. In general, T&C companies located in the North-West parts of Europe have the highest average personnel costs, while Bulgaria, Romania and the Baltic states are at the lower end of

the range (see figure 7). Average personnel costs in the latter countries are only slightly higher than in Turkey or Morocco, but still considerably higher than in China, Bangladesh or India.

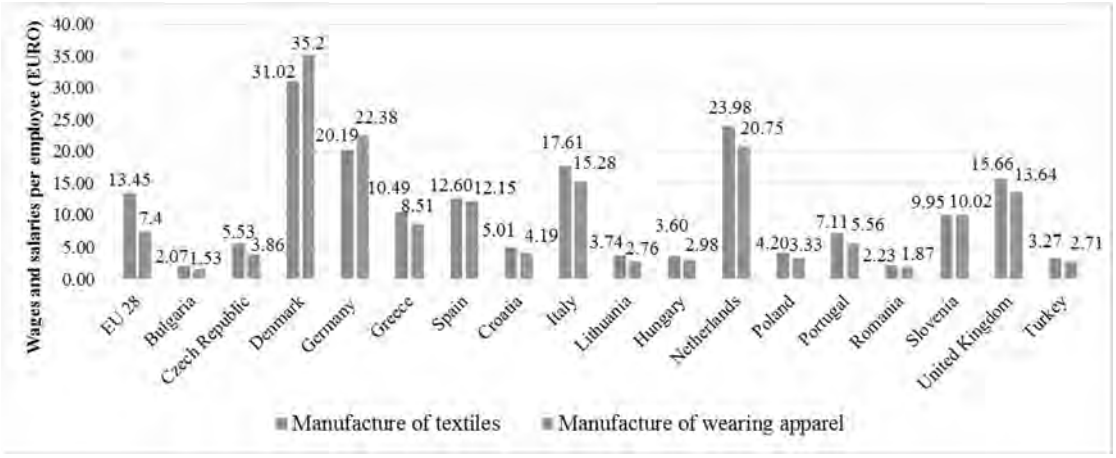


Figure 7. Wages per employee in full time units, per hour (EURO), 2013
Source: Developed by the author on the basis of Eurostat database

Table 3 and 4 presents the wage adjusted labor productivity (the apparent labor productivity by average personnel costs) in the textile and apparel sector comparative in the EU States and some of the principal European manufactures players.

The downward trend in garments is caused primarily by changes in production structure which were imposed by the evolution in the market of these products, with China's trade liberalization of clothing products. Another factor of this downward trend could be the further restructuring process, because in this sector, labor force is used intensively, new technologies having a small impact. Also, changes made in the education system (abolition of vocational schools) as well as low wages in this industry contributed to this decline, labor force, even the skilled one in this domain, prefer jobs in other areas. In plus, garment industry is greatly formed of micro and small enterprises having reduced possibilities both for technology and also for education and staff development.

Table 3. Wage adjusted labour productivity (%). Manufacture of textiles

GEO/TIME	2005	2008	2009	2010	2011	2012	2013
European Union (28 countries)	:	:	:	:	133	131	:
European Union (27 countries)	:	:	:	130.0	133	:	:
Bulgaria	:	165.3	148.0	172.8	191.7	186.1	183.9
Spain	:	118.7	110.5	124.5	121.9	123.6	128.1
Portugal	:	122.5	115.1	128.8	123.1	127.5	138.2
Romania	:	178.6	166.2	178.8	186.7	175.6	176.9
Slovenia	:	125.3	113.4	145.4	139.6	140.0	140.1
United Kingdom	:	153.7	145.4	:	155.9	194.6	189.0

Source: Developed by the author on the basis of Eurostat database

Table 4. Wage adjusted labour productivity (%). Manufacture of wearing apparel

GEO/TIME	2005	2008	2009	2010	2011	2012	2013
European Union (28 countries)	:	:	:	:	131	124	:
European Union (27 countries)	:	:	:	125.0	131	:	:
Bulgaria	:	140.6	138.4	141.4	143.5	140.7	139.6
Spain	:	126.9	120.3	120.5	123.9	116.9	114.7
Portugal	:	107.0	102.5	105.2	107.8	107.0	114.9
Romania	:	140.6	135.1	139.8	134.2	134.6	141.3
Slovenia	:	100.2	91.8	101.5	103.6	94.9	86.1
United Kingdom	:	176.9	128.5	183.6	165.8	178.2	167.5

Source: Developed by the author on the basis of Eurostat database

We can observe that in terms of textiles, things change. Companies in this industry are generally medium to large firms. The demand for technical textiles is also growing on a global scale. Moreover, a good part of companies specialized in apparel gradually made the transition towards textile products, especially technical textiles. The technical textile sector is going through important industrial change with the increasing importance of new applications (composites, medical, aeronautics, automotive, sport), and a radical move from traditional technologies like knitting, weaving, etc. to more recent ones like nonwoven technologies. Although new companies specialized in geotextile or textile automotives were created (see Faurecia SRL case study), their number and importance in economy is still insignificant.

The global context of the textile industry sings that the trend of production relocation to Asian countries is slowing down, while in developed countries, the industrial base of this sector is reestablished by off shoring activities, especially in niche domains and innovative products in parallel with the relocation process to proximity countries. Therefore, Romanian companies have a competitive wages and an experienced labor force, and they profit from the proximity to large consumer markets. The carbon footprint of sourcing strategies will become ever more relevant in view of future legislation therefore it will be important to emphasize the geographical advantages. For instance, short distances and speed of delivery are an advantage that Romanian companies must take in to account. For example, in 2008, the European Union (EU-27, including intra-EU-27 trade) accounted for nearly half (47,3%) of total world apparel imports, and the Russian Federation for 5,7%increasing from 2,7% in 2005.

Another threat is low vertical integration since most lead firms in the apparel industry are committed to significant reductions in the size and scope of their supply chains. Retailers are seeking to consolidate the number of wholesalers they purchase from and they want to buy a more complete line of clothing, from these wholesalers (Gereffi and Stacey, 2010).

The automotive industry is one of the largest single markets for technical textiles. Given the rise of the automotive industry and the fact that for the modern car today, uses about 20 to 26kgs of textiles fabric for interior and exterior purposes **(**Naikwade and Kumbhar, 2010), the needs of this customer ought to be another focus. In the drive towards lowering weight for reducing both fuel consumption and CO2 emissions, many current developments are including new uses for fabrics, and by 2020, it is predicted that the same sized car will contain 35 kg of textiles. In this way companies specializing in textiles for the automotive industry (such as air bags, safety belts, seat upholstery, carpets) can profit from the large number of new car plants being set up in Romania but also in other East European countries (Haiss et al, 2009) .These advantages are reduced by the weak market position of producers, the weak innovative culture, and lack of highly skilled professionals like designers or engineers, and raised transport costs. The opportunities for producers lie in the strategic geographical location, the short-distance transportation which may be fostered by the Europeanization of demand and cost advantages. Moreover, the increasing interest to environmental aspects (preference for local production chain doe to lower Carbon

emission) appears as a new opportunity. However, their cost position is attacked by the Asian, Nord Africa and other emerging countries competition.

During the last ten years there has been some marked changes in the customer profile; the customers have become more unpredictable in their preferences, more conscious with respect to green activities, non-toxic and environmentally friendly (Cuc, 2010) and more selective in their rates of purchase. In time of recession consumers have tended to make cuts in the clothing and furnishing budget rather than in other outgoings (Giuli, 1997). The financial crisis and the aggressive expansion of foreign fashion brands like Zara, H&M, C&A and Deichmann put a considerable burden on local market; the first dropped being the Romanian retailers who have chosen to enter into insolvency. In some cases the ending was bankruptcy not restructuring. Leonardo (footwear market leader until 2013, with over 200 stores in Romania only), Jolidon (underwear market leader with stores in 50 international markets), House of Art and Tina R are all four Romanian brands with history about two decades that have either failed- the case of the first company, or are in insolvency proceedings.

Another threat may be the skills shortages due to low attractiveness of the sector for young people. Without a clear strategy how to develop T&C industry, relocation of production might further erode the industrial basis with serious effects at economic but also social level.

4. Possibilities of increasing the competitiveness of Romanian companies from the T&C industry

The difficulty in establishing of an appropriate strategic direction is given from de high number of micro and small companies. Even if they are more flexible than large firms to environmental changes (*Levy and Powell, 1998)* are also "*most plagued by a general problem of inadequate expertise and skills at several levels - managerial, supervisory, and production employees*". (*Malecki and Veldhoen, 1993)*

Companies in the T&C industry exhibit yet a mixture of competitive strategies. If the largest companies in the industry appear to emphases either low cost production of undifferentiated products or the production of small series while maintaining cost tight with the industry, the smallest companies, because of resource limitations, have not committed to a particular strategy. In Porter's (1980) terminology, they are "*Stuck in the middle*."

Since the Romanian T&C sector is no more considered highly competitive due to several factors – higher wages, low productivity of workers, high cost of utilities and a lack of backward linkages – some of companies realized that they should moving away from traditional cost- and production-oriented strategies toward strategies that emphasize product differences while maintaining a competitive price or to develop a focus strategy and concentrated on niche products in order to create an opportunity for themselves.

Romanian firms should search for market niches where specialized goods that can be sold for a premium price by developing an effective strategy of innovation and capitalizing on its reputation for quality or focus on the production of technical textiles- even if the achievement of a greater differentiation means higher costs. The difficult in developing a niche strategy is given from the fact that it that requires a long term strategic commitment, the development of specific skills, a deep implanting in demanding markets and an active policy in developing and protecting intellectual property rights. In general a niche market strategy requires an active export policy given that a niche is generally too small at the level of one single country to reach critical mass.Romanian can respond by developing an effective strategy in innovation in agro textiles (Agrotech) or automotive textiles (Mobiltech) and capitalising its agricultural potential (and proximity with agricultural countries like Ukraine, Russia, Turkey, Bulgaria etc) and the high level of intern automotive production (Cuc, Bungau, 2014).

Thus, creating a brand image and/or improving quality through investments in advertising and modern technologies can result in efficiency improvements thanks to a greater market share and

an accumulated production volume. Environmental management, through pollution prevention, can allow the firm to save and control costs, input and energy consumption, and may additionally increase the demand from environmentally sensitive consumers through the acquisition of a good ecological reputation. Quality management and environmental management are business practices with which it may be possible to improve both position in costs and in differentiation.

All these strategies ask for sophisticated skills, knowledge of local and global markets, and flexible production facilities. For that purpose many textile firms must invest in quality improvement, innovation, design, marketing, and retailing. As the T&C sector is very fragmented so networks should be built for identifying suppliers, potential beneficiaries and retail outlets, and for making use of e-commerce facilities. They should improve their cooperation for innovation purposes with universities and research centers. Even if high education has maintained well for a while it is now shrinking in size. Low interest and demand for textiles study led to the ending of a few specializations within some Romanian universities (HG 493/2013). The existing education curricula do not align with the skills needed by industry; it is focused more on technological aspects.

There are a large number of examples which show practical application of industrial cluster model and policy measures in the EU countries. A model like Triple helix (Leydesdorff, and Etzkowitz, 1996) could increase the synergic effect of industrial clusters through relations of competition and collaboration among universities and research centers as providers of products, innovative technologies and services, SMEs which absorb the offer for innovation and authorities responsible to facilitate this process (ministries, regional authorities). The Triple helix provides also the ideal way for a traditional university to develop into an entrepreneurial university. A first step was made by creating four textile clusters: ASTRICO NE (North - East)-2012, Romanian Textile Concept (Bucharest - Ilfov) - 2011 and Traditions Manufacturing the Future - TMV Southeast (South - East)-2011, Transylvania Textile & Fashion (Central Region) - 2012.

Table 5. Innovative Textile Clusters in Romania

	ASTRICO TEXTILES CLUSTER	CLUSTER TRADITIONS MANUFACTURE FUTURE TMV	ROMANIAN TEXTILE CONCEPT CLUSTER BUCHAREST	TRANSYVANIA TEXTILE&FASHION
Year of establishment	2012	2011	2011	2012
Development Region	North – East	South - East	Bucharest –Ilfov	Central Region
City	Săvineşti	Focsani	Bucuresti	Sfantu Gheorghe
Field of activity	Textiles	Textiles	Textiles Clothing Footwear	Textiles Clothing Fashion
Members: • Companies • Universities • Research institutes • Public authorities • Other	24 1 1 1 -	10 2 2 1 -	28 4 1 - -	13 - 3 3 5
Turnover (Euro)	160.000.000	12.000	80.300.000	1.600.000
Exports(Euro)	120.000.000	8.600	69.650.000	1.668.287
Number of employees	2591	1000	3042	128
Number of researchers	59	,	71	-
Investment costs	-	,	120.000	275.000

*Source:*Developed by the authors on the basis of Romanian Cluster Association,stand of data 2013, Ministerul Economiei, Comerţului şi Mediului de Afaceri, Direcţia Generală Politici Industriale şi Mediu de Afaceri - Politica de Cluster

In order to identify potential agglomerations of economic clusters and to compare the local area characteristics such as employment rates to the national characteristics Astalos and Iordanescu (2015) examined the coefficient for locating the clusters of textile and clothing industries in Romania, and calculated the location quotient (LQ). This coefficient basically reports the share of the employees in a particular field at regional level to the share of the employees in that area at national level (Miller et.al, 1991). For now, the LQ values for the Romanian textile clusters, between 0 and 1, but slightly over 0, indicate a weak concentration and, therefore, that the existing clusters are small and under the potential of the regions where they are located (Astalos and Iordanescu, 2015). We must consider, however, that they are in the early stages of development, compared with others in the EU countries. Therefore most of their role is limited to cooperation between member firms regarding supplying raw materials, selling products, making the presentation materials for the association used in different events.

Conclusions

Shifting market requirements, intensifying global competition and rapid technological change have confronted the Romanian textile and clothing sectors. Many companies have been forced into bankruptcy or are working on minimum limit of subsistence. In responding to these, companies have to develop more creative, and more flexible operational arrangements. Today textile and clothing industries are radically different, in terms of their strategies, business scope, technological intensity, organizational structure, and supply chain relationships.

For industry's transformation and upgrading, it is necessary to boost the industry's core competencies: flexible manufacturing through rapid changeovers, high quality products, experience and highly skilled workers.

The new global economic circumstances force Romanians textile industry to adjust its development mode through transformation and upgrading. This desideratum requires solutions for a series of challenges to be appearing during the development, such as resource decreasing and environment demands, cost control or reduction, enhancement of productivity, adaptation at the global supply chain. All of these will rely on improving innovative research and development capacity, enhancing the development of IT, improving the contribution rate of science and technology.

Results of this study could be used by textile engineers and academic researchers to analyze factors effective to use globalization strategies, notice the perception of important problems in the external business environment and identify the strategies which contributed to a company's success inside the Romanian T&C industry and global business environment. It offers also a suggestion for policy makers in universities to revise their curricula and create formal and informal linkages between university researchers and entrepreneurs.

Case study. Faurecia Seating Talmaciu SRL

Faurecia Seating Talmaciu SRL, car upholstery manufacturer, is present in Romania since 2003 opened its location at Talmaciu, county Sibiu which is a declared disadvantaged mountainous area. Thus it takes of administrative advantages and also of cheap labor. It has an average number of 730 employees and a profit growth even during the economic crisis. Faurecia's seat assembly plants have followed most of the car manufacturers around the world. Often located on-site, these factories are able to deliver to car production lines in less than 3 hours, thus optimizing manufacturing and logistics costs. Starting 2011 Faurecia Seating Talmaciu applied a growth strategy by opening branches in the geografical proximity of the two car plants: Pitesti (Dacia and Renault) and Craiova (Ford) and it affected the consolidated financial statements.

Faurecia Seating Talmaciu SRL is part of French group Faurecia which is one of the largest international automotive parts manufacturers in the world. It is the the world's third largest supplier of automotive seats, second-largest supplier of acoustic packages and the leading

supplier of floor carpet and package trays (OEM Suppliers,2009) , with PSA Peugeot Citroen majority shareholder. Faurecia is present in 34 countries, with 320 plants and 40 Research&Development centers covering all of the world's major automotive markets. In Romania, Faurecia is present with three divisions: Faurecia Seating Talmaciu SRL with extensions in Craiova (in 2011), Râmnicu Vâlcea (in 2012), Mioveni (in 2014) (Automotive Seatings), Piteşti (Interior Systems) and Craiova (Emissions Control Technologies).

Registered employees increased by 0.5% in 2014 to 82.382 from 81.995 in 2013. In Europe, the number of registered employees grew by 1.3% overall, with a 1.6% increase in operators and workers, a 3.2% decrease in technicians, foremen and administrative staff and a 4.3% rise in managers. In Western Europe, the number of registered employees fell by 2.2%, in particular in France (-4.1%), Germany (-1.9%) and Spain (-3.2%). In Central Europe, the number of registered employees increased by 10.4%, mainly in Poland, Romania and the Czech Republic. Hires on fixed-term contracts were mainly in Spain (20.3%) and Romania (19.3%) to respond to fluctuations in business activity.

This increase mainly related to operators and workers. Hires on fixed-term contracts were mainly in Spain (21.9%) and Romania (20.0%) to respond to fluctuations in business activity. In Europe, hires of operators and workers rose by nearly 15%, mainly in Spain, the United Kingdom, the Czech Republic and Romania as a result of the upturn in business in these countries. The average number of training hours was unchanged at 22 hours per employee Group-wide in 2014.The total number of training hours in 2014 increased by nearly 4.5% over the period, positively impacted by sustained training programs in Asia (China), North America (USA and Mexico) and in Europe (Poland and Romania). (Faurecia, 2014)

An average family car uses over 33 qm of textiles, and about 15 to 18 qm are used in the passenger compartment. The car seat, as an important component, has major usage, between 6 and 8 qm. (Jerkovic et al., 2013).

The Romanian company's customers include automotive manufacturers like Peugeot, Audi and Nissan. The Mioveni plant started in 2014 the production of leather cutting/sewing and PVC covers for Volvo (XC60/ S60), Land Rover (Range Rover) and Ford (Focus). The figure 8 shows the evolution of annual turnover and profit of the company Faurecia Seating Talmaciu S.R.L. in 2006 - 2014.

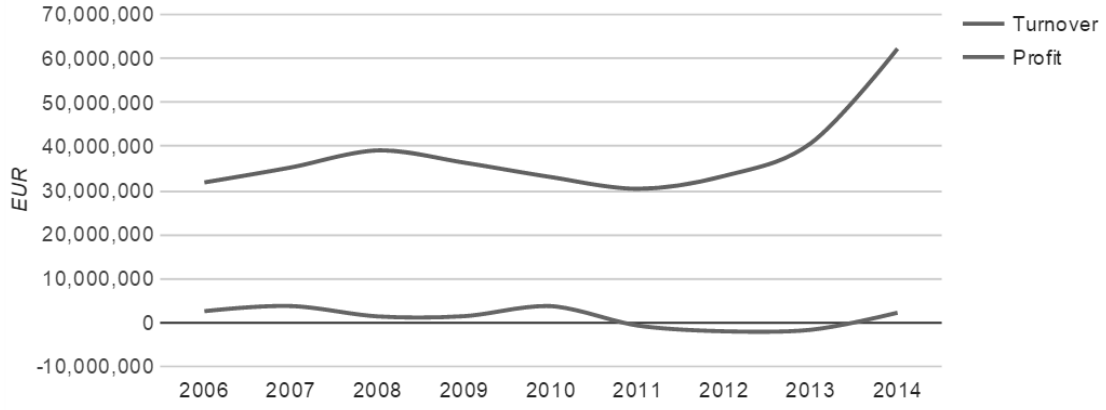


Figure 8.. Case study Faurecia
Source:Romanian Minstry of Finance, The National Trade Register Office

Locations in Romania are engaged in trans-national networks of educational guidance, career counseling and practice correlated with the labor market, in the society of knowledge. Since 2007 Faurecia has been partnering with the University of Pitesti, organizing student's guidance and

practice with the support of Faurecia mentors, through internships in logistics, human resources, technical, quality, to ensure a better chance of training in line with reality. (Faurecia, 2013)

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THE CORRELATION BETWEEN THE LABOR MARKET NEEDS AND THE OUTPUT OF THE EDUCATION SYSTEM, A LEADING SOLUTION FOR THE JIU VALLEY CONURBATION CRISIS

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Abstract

Purpose – Jiu Valley, a former mining region, is facing today with a very difficult situation called depopulation. This made us to look for some solutions to solve this problem, solution that must come from our area of competence, management in the field of education. The purpose of this research was to find solutions to sensitize the students about the need to be actively involved in various professional contexts, to be part of the contexts of work, but also to seek feedback on the work conducted, and to gain a clear and integrated future in the labor market.
Methodology The study set sights on over 29 of the most important employees from the Jiu Valley, and 39 of the leading graduates of the University of Petrosani. Data were collected in 2016 year, through a survey oriented as well as for the employees and graduates. The instrument used for collecting data is a quantitative questionnaire. The research based on the quantitative questionnaire was structured on 21 questions for the employees and other 25 questions for the graduates.
Findings - Through this research we have tried to capture the employee views over the possibility of improving the level of communication between education and the business environment, in order to initiate joint projects in the coming years, and also to increase the employability of our university graduates.
Originality - The paper has a high degree of novelty, this management analysis aimed to correlate the labor market needs and the output of the education system, is the first of its kind performed in the Jiu Valley. The study will represent the foundation of a process which aims to transform the University of Petrosani in an informal leader of the Jiu Valley conurbation.
Key Words: Management, Education, Labor Market

1. Theoretical Framework
Education, Personnel and Labor Market in Romania

Romania is already known for its skilled and ambitious personnel. According to the Romanian Institute for Statistics 16.3% of the population has a university degree. Characterized by cultural and ethnic diversity, in Romania the most spoken foreign language is English, followed by French, and in a lower degree also Italian and Spanish. German speaking people are available to a lower degree and the majority of Hungarian speaking people are mostly in Transylvania.

1.1. The Migration of the Labor Force of Jiu Valley

Compared to other EU countries, Romania is still mostly a country of emigration with an estimated number of 2.2 to 3 million citizens living outside its borders on a temporary or permanent basis (Calea Europeana 2014). The main factors that pushed Romanians to migrate

consist in the deficiencies of the labour market (high rate of unemployment, lack of jobs, undeclared jobs, low wages, etc.), due to the heavy deindustrialization that characterized the transition period. Currently, Romania is considered to be one of the most important workers' remittances recipients in the EU (Stanley 2015), with large amounts coming from Italy, Spain, Germany and the United Kingdom.

While during the 1990s and beginning of 2000s the remittances were used for investments on a local level (construction, opening small businesses, etc.), in the last decade, with the Romanian market being saturated, these monetary resources have been invested mostly in consumption, covering the basic needs of the migrants' families (Feraru 2011). Although many have qualifications and skills, Romanian emigrants are willing to accept low skilled or unskilled jobs, precarious working conditions and lower wages, thus being more vulnerable to exploitation and rights violations. The main sectors of the labor market occupied by Romanian migrants are in construction (mainly in Germany, the UK), domestic care (Italy, Spain, Austria, Germany), agriculture (Italy, Spain, Greece), manufacturing and services. According to several studies and statistics, a high number of Romanian migrants are engaged in the informal economy, a situation that is most common in sectors such as domestic care and agriculture (European Commission 2014). The testimonies of numerous migrant workers relay similar information.

In a research, conducted by the sociology collective from our university, across the Jiu Valley they found that the main factor generating unemployment in the Jiu Valley is the unstimulative wages (26.8%). Whether the unemployment benefits are satisfactory by their amount, people prefer "to stay unemployed, whether their claims about the wages versus work are exaggerated. Thus, what is installed here can be called the laziness culture", which many have accepted it as true, even trying to justify it. A second reason they found in the hierarchy, with a noticeable difference closed to the first one, is the inability to find a job suitable for the training available (26.1%). They couple this with the low educational level of those who seek employment (3.3%), and get a percentage of almost 30% and a mismatch between the job and the applicant. This discrepancy shows that most of the jobs are unattractive because they don't require from the employee the full potential available, years of training and multiple personal efforts, in this regard it is seen as void, and useless if the employee accepts a job below his competence scale. Only thirdly the effective lack of employment (18.8%) is seen as a factor that generates mass unemployment (Fulger, 2011).

1.2. Priorities of the Education and Training in the Romanian Strategy for 2020

According to the OECD (PISA 2006 and PISA 2009), Romania is among the countries with the lowest scores recorded by 15 years old students in the EU in international tests of skills in reading and writing, mathematics and sciences. In PISA 2009, four in ten students (40.4%) were below level 2 performance in international testing compared to the EU25 average (19.6%). This means that a high percentage of Romanian students aged 15 years have low skills in reading and lecture. Romania had similar scores at math and sciences: in 2009, almost half of Romanian students (47%) had very low scores in math, compared with the EU average (22.2%). For sciences, the percentage of low achievers was slightly lower (41.4%), but it was well above the EU average (17.7%). As in other European countries, in Romania there were discrepancies of performance by sex and area of residence. However, compared with PISA 2006, Romania is one of the EU countries with the most important improvement in results from PISA 2009. In view of 15% the European target in 2020 for children with low achievers in PISA tests, Romania shall to do endeavor for significant improving of the quality of education in the coming years to reduce current disparities. (Romanian Education for all, Review Report, Bucharest, October 2014)

Government Programme 2013 - 2016, the European documents of the programmatic field (Europe 2020 Strategy, framework ET 2020) and the National Reform Programme, are the base of main strategic guidelines of the Ministry of National Education. Are targeted the following priorities of the education and training: Ensuring equal access and participation in education for every child in Romania, Curriculum revision and assessment modernization, Quality assurance for all levels and forms of education, Development of vocational and technical education; linking education and

training system with the labor market, Supporting education in minority languages, Expanding the use of new technologies, Increased autonomy of schools; the encouraging of partnerships, community representatives participate in school life and strengthening the social dialogue, Improving the training of the teachers, Encouraging the lifelong learning, Prevention of Corruption and Violence in Schools, European cooperation and international development, Increased absorption of structural funds and Improving educational infrastructure

2. Methodology and research

2.1. The labor market needs in the vision of the employer

One of the motivation of this part of the research is closely linked to the improving of the communication between two areas, the academic area of the University of Petrosani and the economic area of the 29 companies, as well as the opportunities provided by the collaboration between the two environments. The 29 organizations where selected during the workshop organized on 16 of June 2016 by the center for the relation with socio economic environment and the center of counseling and career guidance for students of the University of Petrosani, supervised by the management vice Rector. The socio-economic crisis that crosses the Jiu Valley in recent years, made the three important pillars in the development of this area - business, university and local government - to sit at the discussion table to determine which are business requirements in terms of human resource that provides university and how can local governments to support two media mentioned above, however the idea he wants to lay the foundations for sustainable development of the area Valley Jiu. The main question raised was that young people choose to leave this area to operate in other parts of the country. University requires from the businesses company owners, to create the conditions for young people to stay in Jiu Valley, and from the local governments the requirement was to create a conducive environment for investors that want to do business in this region. (http://gazetadedimineata.ro/comunitate/triunghiul-care-poate-salva-valea-jiului-mediul-de-afaceri-administratia-locala-si-universitatea-din-petrosani-la-masa-discutiilor/, http://www.avantulliber.ro/2016/06/16/cum-vad-primarii-dezvoltarea-vaii-jiului/)
That 29 organizations that we investigated were mostly private organizations (private and own organizations) but also public one.

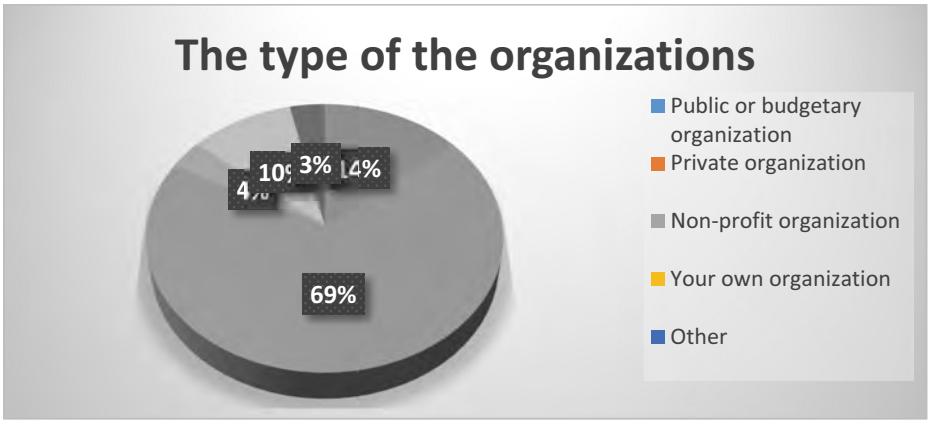

Figure 1. The organizations investigated

We have asked the managers *"What is the level of the training of the employees from your company?* (the share or quota of employees)

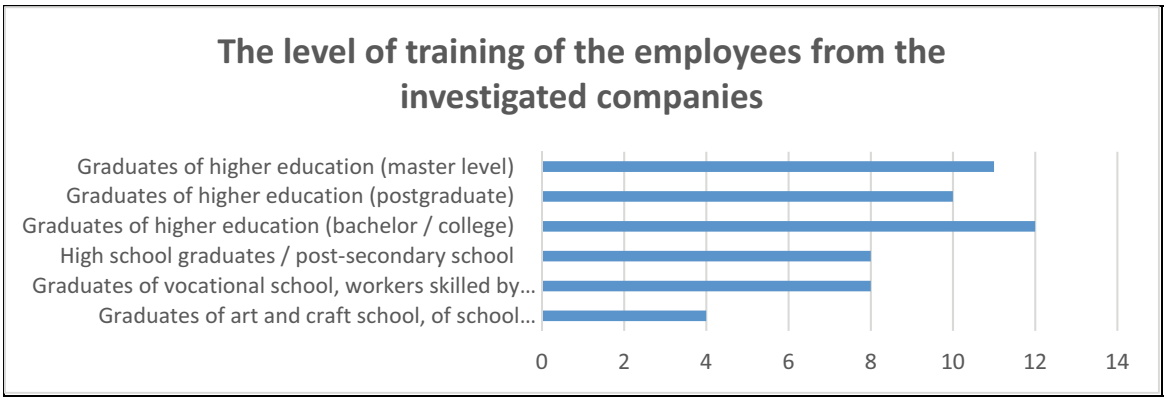

Figure 2. Level of the training of the employees from the 29 organizations

From this question we have reached the conclusion that 62% of the employees of the 29 companies investigated have at least a bachelor degree.

We have asked the manager presented on the workshop *"Which are the main modalities of attracting the candidates from among the graduates of the faculty, to choose the existing vacancies from your company?"*

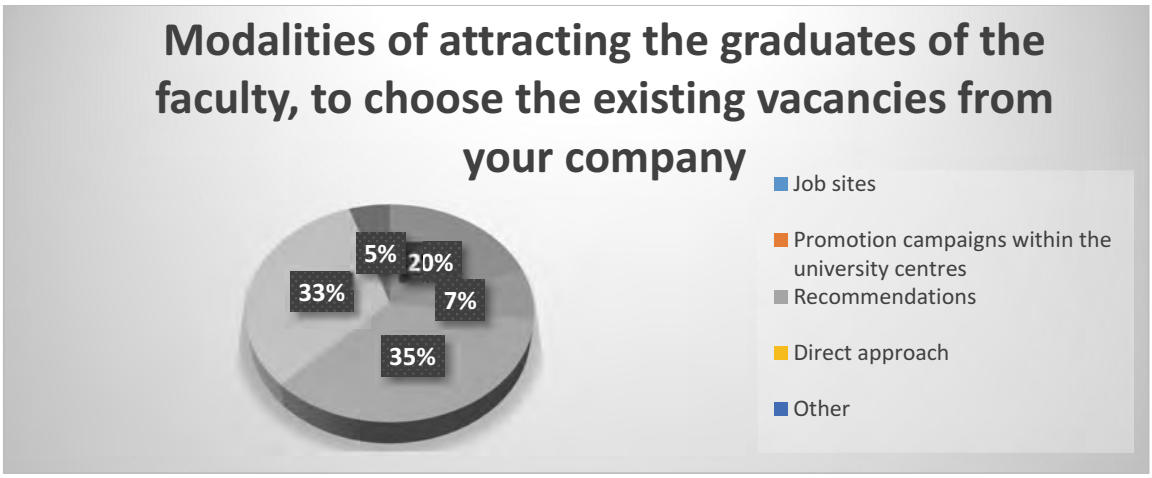

Figure 3. Main modalities of attracting the candidates from among the graduates

From this question we have reached the conclusion that the personal contacts, direct approach and recommendations are more frequently a solution for finding an employee for the companies than using modern methods such as job sites or promotion campaigns. This was possible in a medium competitive area such as Jiu Valley, but probably not applicable in a very competitive area.

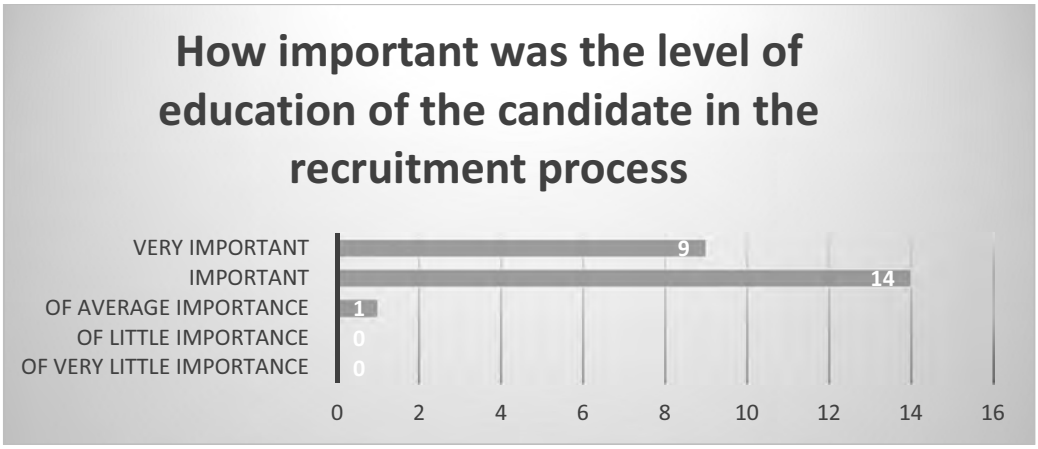

Figure 4. Level of education of the candidate

Figure 5. Practical experience of the candidate

We can conclude that the level of the education of the candidate is more relevant than the practical experience, even the graduates are very afraid of the lack of practical experience.

We have asked the manager presented on the workshop *"To what extent the higher education institutions from Romania should place a greater emphasis on the following aspects of education?"*, and they emphasize the ability to work in a team and the ability to coordinate activities, two abilities that are rarely educated and trained in the Romanian universities.

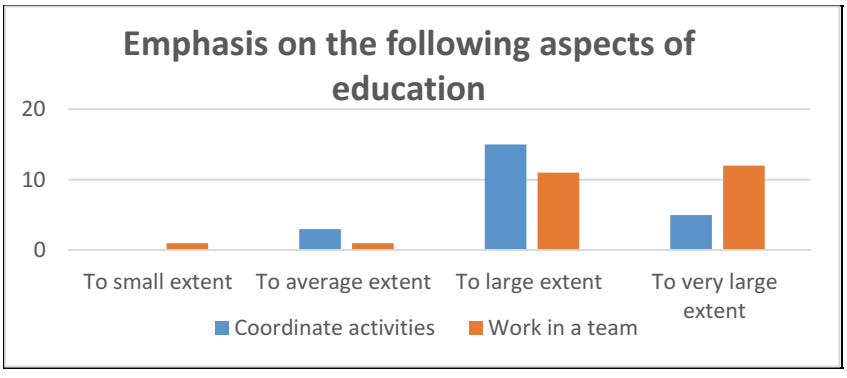

Figure 6. Aspects of education expected by the employers from the education system

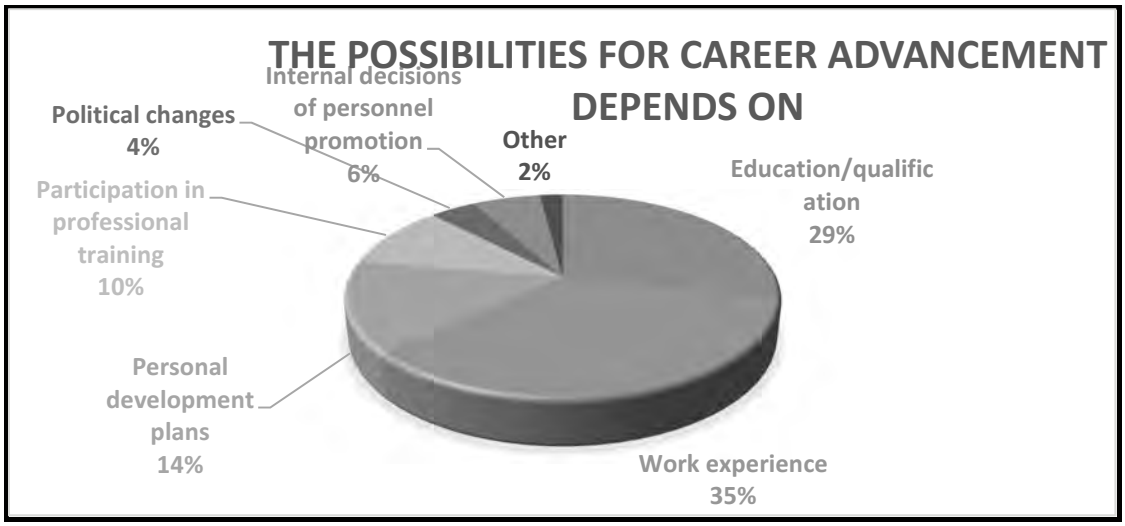

Figure 7. Possibilities for career advancement in the vision of the employers

Even if the managers conclusion was that "*the level of the education of the candidate is more relevant than the practical experience, even the graduates are very afraid of the lack of practical experience"*, when we speak about the possibilities for career advancement the work experience in the company become more relevant then the qualification.

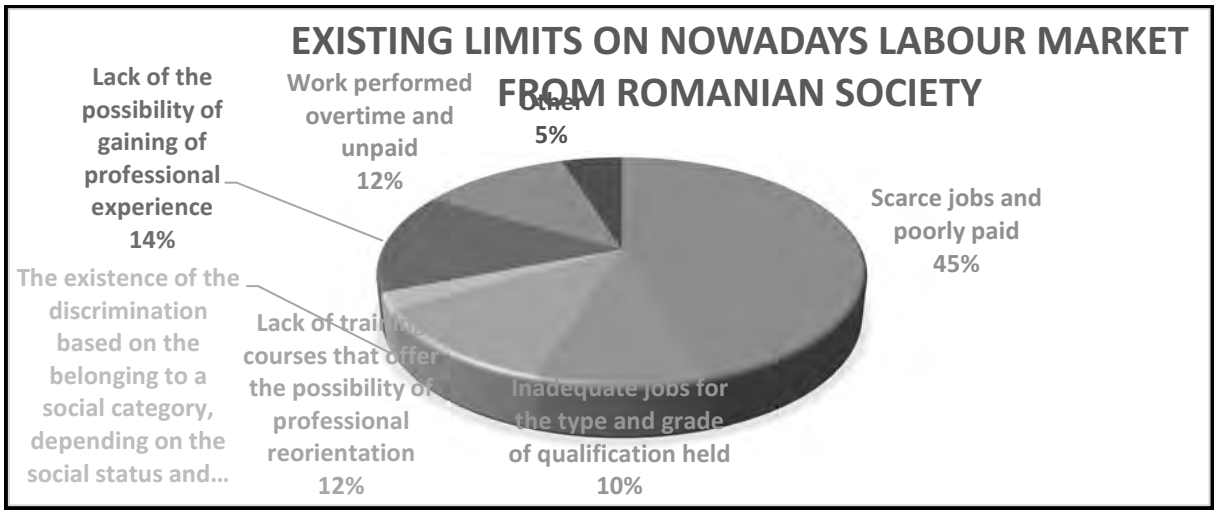

Figure 8. Limits of the labor market in the vision of the employers

The most fearful reason for the employee must be the jobs poorly paid, the inadequate job for the employee qualification and the possibility of gaining experience, in the vision of employers.

2.2. The students, the output of the educational system, and their expectations from the labor market

The purpose of this part of the research was to sensitize students about the need to be actively involved in various professional contexts, to be part of the contexts of work, but also to seek feedback on the work conducted to gain a clear and integrated oneself as a human being active in the labor market. The 39 students that have answered to the questions were selected from the

group leaders from each specializations of the university. They are probably the best students or respected leaders of the students.

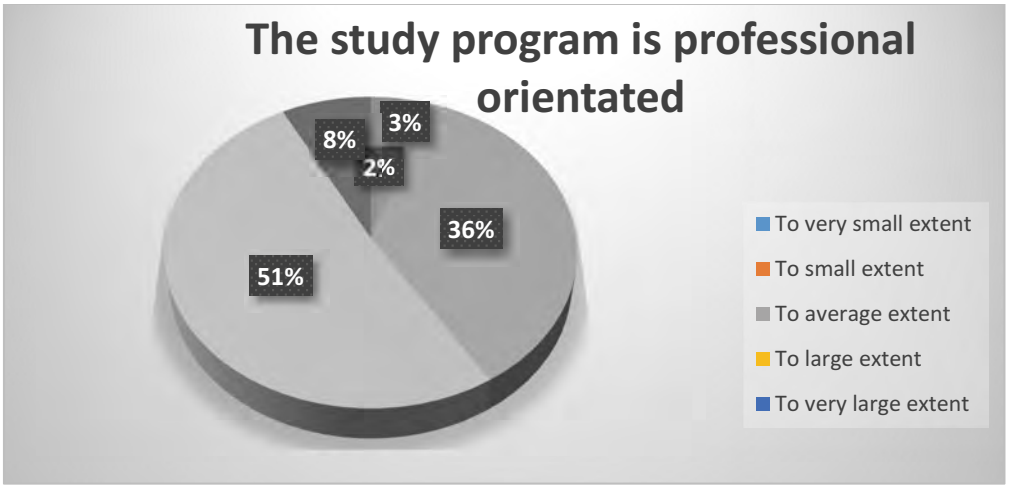

Figure 9. The professional orientation of the study program in the vision of the students

The optimism of the students and future graduates is visible in the answers given to the question related to the correct orientation, in fact curricula of the professional program that will graduate.

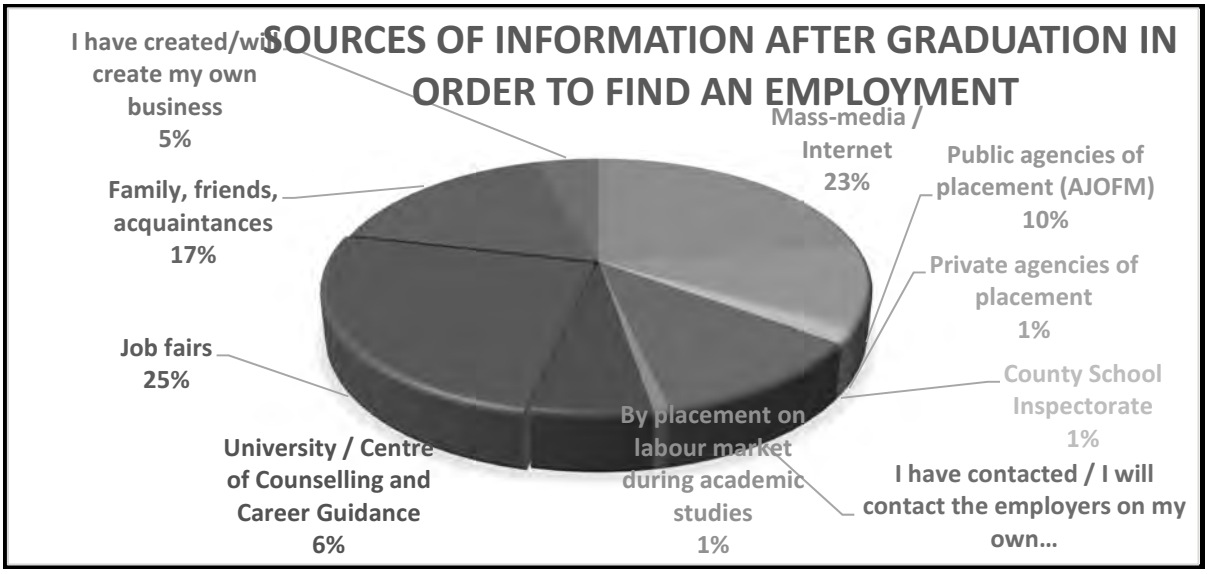

Figure 10. Sources of information for a future job

Students are very realistic on their future, expect an information regarding a future job from the information gained on Internet and Job fairs, but also their hopes are related to the family and their personal contacts with the employers.

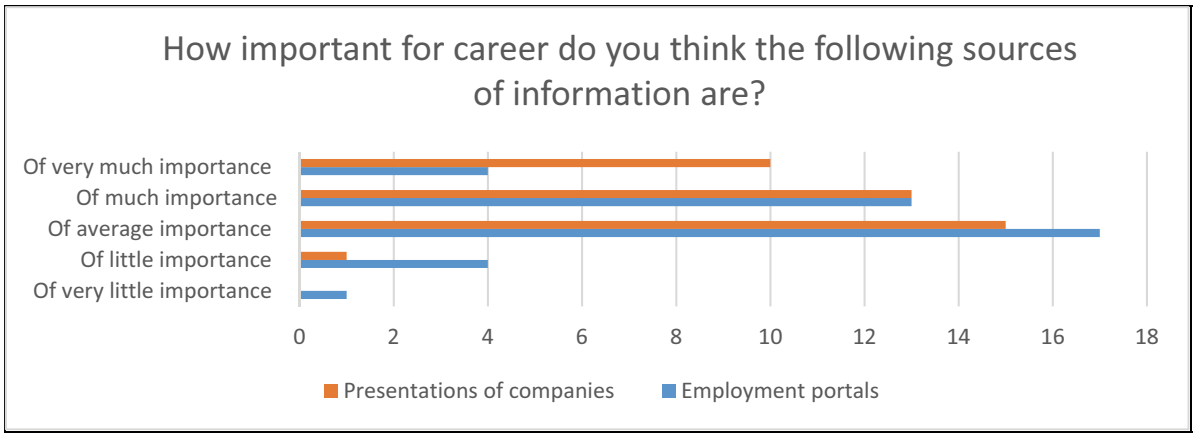

Figure 11. Employment portals versus a company presentation in the student vision

As a source of information they are targeted more on the companies than on the employment portals.

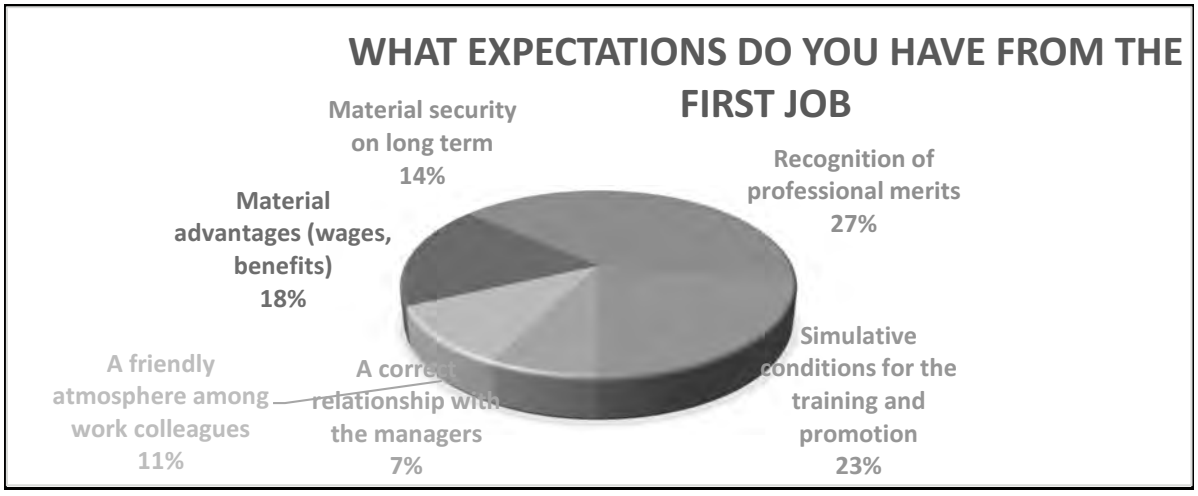

Figure 12. Expectations from the first job for the students

Another realistic position of the future distinguished graduates, is the importance granted to the recognition and promotion in the behalf of material benefits.

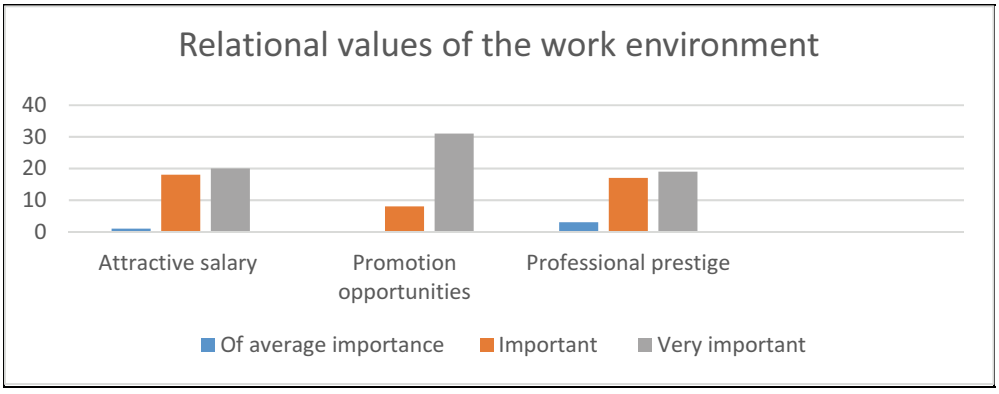

Figure 13 Relational value of the work environment in the student vision

We can conclude once again that promotion opportunities and professional prestige have an important influence as a relational value of the work environment.

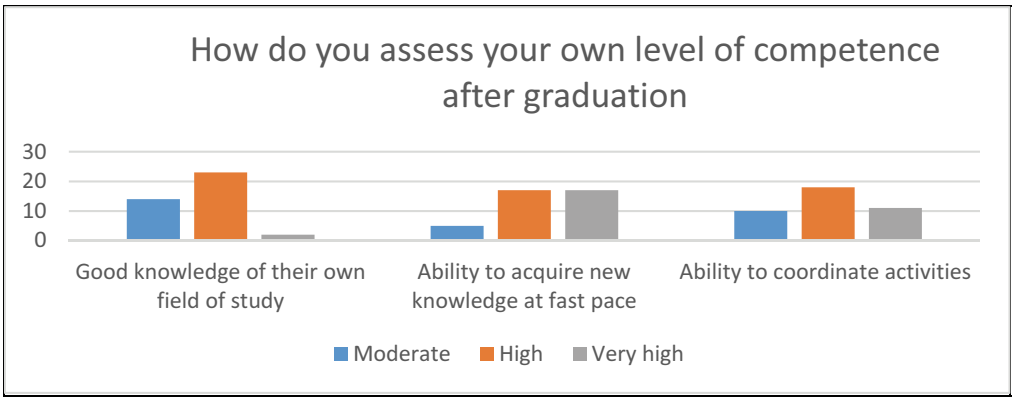

Figure 14 Auto evaluation of the competence

Students consider themselves capable of acquire new knowledge and capable to coordinate activities, but mostly they consider that have medium knowledge in their field of graduation.

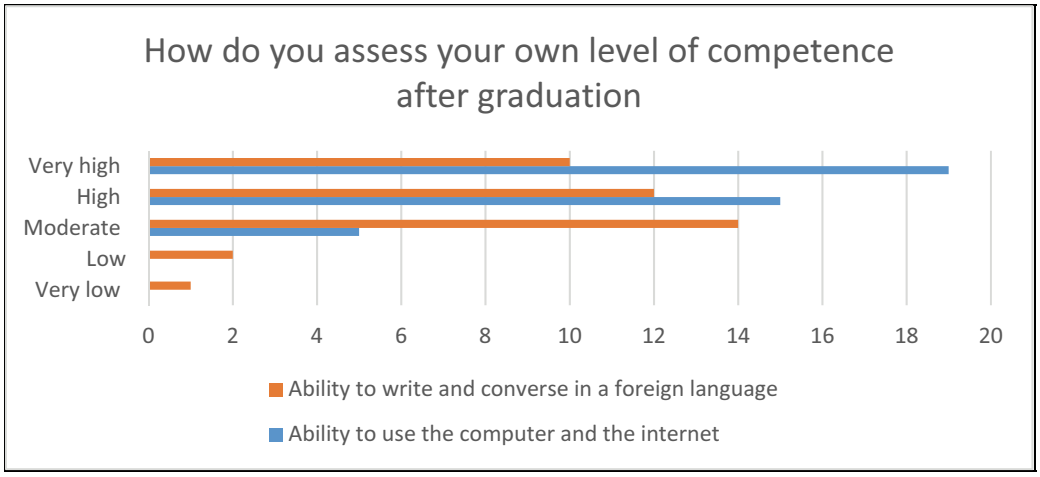

Figure 15 Auto evaluation of the IT and language competence

Related to the IT and foreign language competencies, they consider themselves good on IT and moderate on foreign language competences.

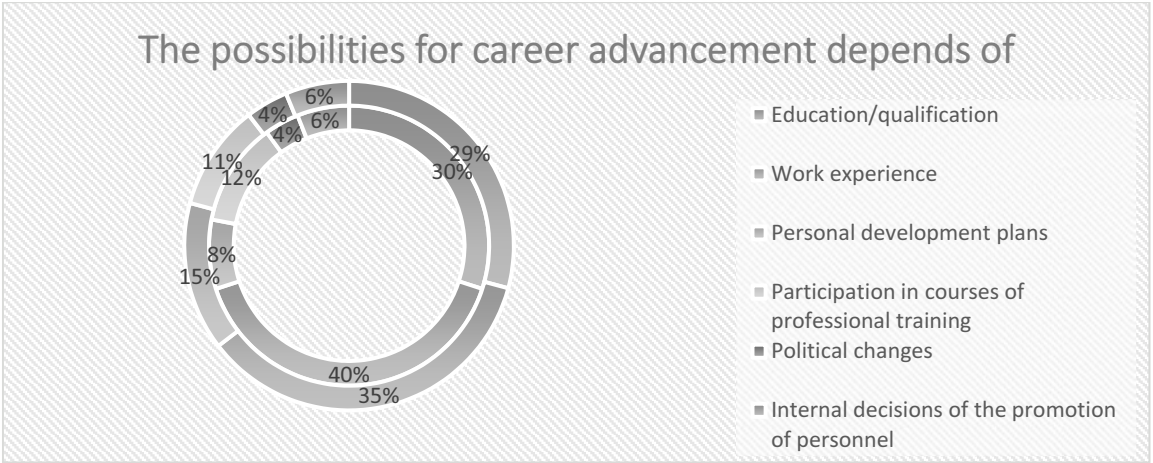

Figure 16 Career advancement in the vision of managers and students

We could make a comparison on the same question linked to the career advancement, between the answers drawn by the students (in the inside area) and the employers (in the outside area), and we can say that the expectation are relatively the same.

Figure 17 Limits of the Romanian labor market in the vision of managers and students

We could make also a comparison on the same question linked to the limits of the Romanian labor market, between the answers drawn by the students (in the inside area) and the employers (in the outside area), and we can say that the expectation are relatively the same, except the fear of the employers in the problem of scarce jobs and their payment (47%>34%), and the optimism of the graduates in the problem of gaining professional experience.

Conclusions

If we want that Student Centered Education (SCE) implementation to be successful, we have to understand that: the main stakeholders who are the customers for a High Education Service (HEI) are the student, the employers and the society in its whole; the student must be treated by the HEI in which he studies as a customer, product and partner, to offer him a superior value in terms of the acquired skills and experience during the study years.

In our opinion University of Petrosani have to take a coordinating role in the relation with the business environment, the local government authorities and the state, for trying to save the Jiu Valley. The university must create this quadrangle where structural European funds can be a solution. The university wants to be involved to create an informal conurbation for the Jiu Valley, where mayors must think about a common future for the Jiu Valley community, a future where mining will remain just a partial solution. Also, it is clear that we must do something to stop the depopulation of the Jiu Valley and students no longer leave this area, but stay here and try to rebuild the Jiu Valley.

In July 2016 in a meeting with the top management of the university, the Romanian vice premier Vasile Dîncu said “We want to build here, first of all, a strategic center, where we want that University of Petrosani must write projects and participate alongside local government to a development center for the Jiu Valley.”

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THE WORKING CAPITAL AND LIQUIDITY'S ROLE IN EXPLAINING THE ITALIANS' FIRMS PROFITABILITY AROUND THE RECENT FINANCIAL CRISIS

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Abstract

Purpose *–We investigate the impact of the working capital and liquidity on the firms' profitability, re-assessing thus the profitability – liquidity nexus.*
Methodology/approach *– For the paper's purpose we adopt a cross-sectional approach to investigate the impact of the working capital and liquidity on the firms' profitability for 141,670 Italian companies, over the period 2005 to 2011.*
Findings *– Our results show that the working capital, computed as the difference between current assets and liabilities, positively influences the profitability level. However, a trade-off appears between profitability and liquidity during the pre-crisis period, when the current liquidity ratio is employed. This evidence remains the same trough different phases of the business cycle, although the role of working capital diminishes after 2009. The robustness of these findings are obtained using different indicators to assess the level of profitability, but also by using alternative measures for liquidity and working capital.*
Research limitations/implications *– The results does not capture in general the change in the financial management strategy which usually takes place during crisis periods. In addition, our research does not consider the sectorial particularities which might influence the firms' behavior and their financial strategy.*
Practical implications *–These findings have practical implications for financial managers who should rely on firms' liquidity in order to maximize the firms' value and profitability in the long-run.*
Originality/value *– The novelty of this paper resides in the use of a large data sample, and of an empiric technique which allows the estimation of this relationship in different moments in time, highlighting thus the effects of the recent economic downturn on firms' financial management.*
Key words: *working capital, liquidity-profitability nexus, cross-sectional analysis.*

Introduction

The recent financial crisis has generated many defaults for firms and has brought at the same time a renewed focus on the working capital management. The liquidity risk's manifestation was considered the main cause of companies' defaults. For the survival firms, the level of liquidity and working capital suddenly became very important for maintaining an acceptable level of profitability.

Previous literature assesses the importance of the working capital from different perspectives. On the one hand it is assessed the impact of optimal inventory management on firms' profitability. On the other hand, the way of managing accounts receivable is assessed, in order to maximize profitability. In all the cases, however, the working capital decisions should ensure that the firm is

able to meet its operating expenses or short-term obligations, with impact on its performances (Smith, 1980).

The approaches of working capital management fall into two competing categories (Baños-Caballero et al., 2014). First, it is believed that higher working capital levels allow firms to increase their sales, to obtain greater discounts for early payments and to increase therefore their profitability (Deloof, 2003). Second, a more conservative and dominant view considers that higher working capital may ensure sound liquidity but endangers profitability, highlighting the possible trade-off which exists between liquidity and profitability. If the company is too liquid in the static sense, this situation will affect negatively its profitability since some capital is blocked in current assets (Bolek and Wilinski, 2012).

However, in practice both situations can be met. In economic downturn periods it is important to have an acceptable working capital level in order to continue the business and to ensure its profitability. It is well-known that recessions put pressure on liquidity and working capital positions, and firms may react differently to macroeconomic uncertainty and financial conditions (Korajczyk and Levy, 2003).

Against this background the working capital management plays a significant role in the overall corporate strategy (Baños-Caballero et al., 2014). As Alshubiri (2011) notes, during unexpected economic changes, firms that efficiently manage their working capital are likely to react quickly to the change in market conditions. Nevertheless, the empirical studies show that the linkages between profitability on the one hand, and liquidity and working capital on the other hand, are not straightforward. While some studies indicate that the working capital influences the liquidity level (Kim et al., 1998; Opler et al., 1999), other studies underline its impact on firms' profitability (Shin and Soenen, 1998; Deloof, 2003; Lazaridis and Tryfonidis, 2006; Ukaegbu, 2014), while a different strand of the literature (i.e. Awad and Jayyar, 2013) shows their interdependences and multi-directional causality.

Different from previous works, this study makes an earnest endeavor to investigate the relationship between firms' profitability, liquidity and working capital, using an exhaustive data set. Therefore, the first contribution of our work to the existing literature consists in the analysis of this relationship on an annual basis, considering 141,670 Italian companies over the period 2005 to 2011, using AMADEUS data (Bureau van Dijk).

The second contribution relies in the assessment of the recent financial crisis impact on the profitability – liquidity nexus. The importance awarded to liquidity and working capital might be different in normal and in turbulent times. At the same time the effect of liquidity on the profitability level might increase when the companies' access to credit is limited, that is, in crisis periods. In order to make this investigation, we apply a cross-sectional analysis on an annual basis, different from linear panel data analysis used by previous papers, applied on small data samples.

Third, we contribute to the existing literature using the working capital ratio (current assets minus current liabilities, divided by total assets) as explanatory variables. While most of the previous studies associate the working capital with the cash conversion cycle (CCC), we consider that our ratio is more appropriate for estimating firms' capacity to face current obligations, compared to their size. In addition, we use the general liquidity ratio (LR) as explanatory variable, which is considered similar but not identical to the working capital ratio (no multicollinearity problem was detected). As Bolek and Wolski (2012) note, firms' liquidity management is connected to the working capital, which is determined by decisions made at the level of cash, receivables, inventory, and payables. Nevertheless, while the working capital ratio considers the level of available liquidity compared to the firm's size, the liquidity ratio shows the weight of current assets to current liabilities, underlining the balance sheet structure. Practically, the working capital management's goal is to find the best balance between profitability and liquidity (Smith and Begemann, 1997).

Finally, we check the robustness of our findings applying different specification for profitability and liquidity, and we also use the operating cash flow to total assets ratio as a proxy for the working capital ratio. This is the third contribution of our paper to the previous literature.

The rest of the paper is structured as follows. Section 2 is dedicated to the literature review. Section 3 presents the data and methodology. Section 4 highlights the main empirical results, while Section 5 shows the robustness check results. The last section concludes.

Literature review

The complexity of the relationship between profitability, working capital and liquidity is given by the existence of different financial management approaches to handle the working capital. The conservative approach shows that firms use short-term liquidity sources only when unexpected situations appear, while the long-term sources are usually used in the day-to-day activity. A more aggressive approach shows that firms are determined to have a small amount of current assets (i.e. cash, inventories and trade receivables) in order to increase the profitability, but this approach may negatively affect their liquidity. The moderate approach makes a distinction between fluctuating current assets and permanent current assets (Ukaegbu, 2014). In this case the short-term sources are used to finance fluctuating current assets while long-term source finance permanent current assets.

Further, there are two different views for dealing with the liquidity (Uyar, 2009). The static view measures the level of liquidity at different moments in time and supposes the use of conventional ratios, like working capital and liquidity ratios. The dynamic view considers the firm's ongoing liquidity position and supposes the use of the CCC as a popular way of measuring the working capital. The CCC is defined by Sathyamoorthi and Wally-Dima (2008) as the number of days between the cash expenditure for purchasing raw materials, and the collection of cash from the sale of the product.

Most of the existing empirical studies which investigate the profitability – liquidity nexus are firm-level oriented, and many of them make appeal to the CCC for assessing the working capital management. In this category, a first, consistent set of studies, apply secondary data for a limited number of companies, usually listed on emerging stock exchanges. For example, Smith and Begemann (1997) examine the linkages between traditional and alternative working capital measures and the profitability for industrial firms listed on the Johannesburg Stock Exchange, applying a stepwise regression. They discover that the traditional working capital leverage ratio (current liabilities divided by cash flow) displayed the greatest influence on the return on investment (ROI). Very interesting, the current liquidity ratio (CLR) and the quick liquidity ratio (QLR) registered an insignificant impact on the profitability level.

Similar studies are conducted by Eljelly (2004), Raheman and Nasr (2007), Gill et al. (2010), Akinlo (2011), Mohammad (2011), Mona (2012), Mosa et al. (2012), Vural et al. (2012), Awad and Jayyar (2013), Singh et al. (2013) and Akhtar (2014). With the exception of Gill et al. (2010) who use data for 88 US firms over the period 2005 to 2007 and discover that the CCC negatively influence the profitability level, all the other studies are performed on emerging Asian markets. In this line, Raheman and Nasr (2007) investigate the impact of the working capital on profitability for 94 Pakistani firms, using different specifications for the working capital, namely the average collection period, the inventory turnover, the average payment period and the CCC. In all the cases they report a negative relationship between the working capital and profitability. Similar, Mohammad (2011) examines the same relationship for a set of Iranian industrial firms between 2001 and 2006 and reports a negative influence of the CCC on the gross operating profit, while Akinlo (2011) reports the existence of a long-run relationship for 66 firms from Nigeria, applying a Pedroni cointegration test.

Mosa et al. (2012) study in their turn the association between the working capital and the profitability for 33 food companies from Tehran, over the period 2006 to 2011. Using debt ratios and log sales as control variables, the authors discover a negative impact of increasing collection cycle, debt payment period, inventory turnover and CCC on firms' profitability.

In addition, Vural et al. (2012) use secondary data for 75 manufacturing firms listed on Istanbul Stock Exchange, over the time-span 2002-2009. Applying a dynamic panel data investigation, they show that it is necessary to diminish the collection period of accounts receivable and cash

conversion cycle in order to increase the gross operating profit. More recently, Awad and Jayyar (2013) make appeal to a panel co-integration approach to assess the directional effect of the working capital management and liquidity on the profitability level for 11 listed manufacturing firms, over the period from 2007 to 2012. They discover a bidirectional causal relationship between the working capital and profitability and, a unidirectional causality from liquidity to profitability.

While all the above-mentioned papers find in general that an increased CCC negatively affects the firms' profitability, no significant relationship is reported by Akhtar (2014) who makes an investigation for 27 chemical firms listed at Karachi Stock Exchange in Pakistan, covering a period from 2005 to 2011. As slight different analysis included in the same category of studies is conducted by Mona (2012), who investigates the impact of aggressive and conservative working capital policies on the profitability level, for 57 Jordanian firms over the interval 2001-2009. The author reports that firms using aggressive investment policy and having long-term investment strategies record a negative effect on their profitability.

A second category of studies investigating the profitability – liquidity nexus employ large datasets. Within this group of papers, the work by Shin and Soenen (1998) relies on the net trade cycle (the CCC to sale ratio) as a proxy for the working capital. The study is conducted for 58,985 firms from 1975 to 1994 and finds that a reduction of the net trade cycle improves the profitability. A similar study is that by Dellof (2003), who examines the association between the profitability and CCC for 1009 Belgian firms over the time-span 1992-1996. Dellof (2003) finds that there is a significant negative association between gross operating income and accounts receivable days, in line with the previous literature.

A different strand of literature applies either macroeconomic analyses, or case studies to deal with the profitability – liquidity relationship. For example, Ukaegbu (2014) performs a macro-level comparison analysis for 102 large firms from Egypt, Kenya, Nigeria and South Africa. Data extracted from the ORBIS database for the interval 2005 to 2009 are investigated base on a fixed effects panel data model. Their findings reveal that there is a strong and significant negative relationship between profitability and CCC, for all the countries under investigation.

A case-study analysis is conducted by Mitra and Nandi (2013). The authors perform an analysis of the liquidity, risk and profitability interactions, using monthly data from 2000-01 to 2010-11, for the Eastern Coalfields Ltd. Other studies (i.e. Merville and Tavis, 1973; Wang, 2002; Baños-Caballero et al., 2014) underline the role of business cycles in assessing the profitability – liquidity nexus. For a sample of non-financial UK companies, Baños-Caballero et al. (2014) reports the existence of an inverted U-shaped relation between investment in working capital and firms' performance, underling thus the effect of the business cycle.

Assuming the existence of the business cycle effects, our study adds to the existing literature and applying a cross-sectional analysis for Italian firms over the period 2005-2011, allows the assessment of the crisis effect. A cross-sectional analysis was performed by Gill and Mathur (2011) in order to examine the impact of board size and liquidity on the profitability of 75 Canadian service firms listed on Toronto Stock Exchange, for a period of 3 years (from 2008-2010). Singh et al. (2013) investigate in their turn the interaction between liquidity and profitability for 166 non-financial listed companies in India, whit a particular emphasis on the pre- and post-recession period. In addition, Enqvist et al. (2014) discover that the impact of business cycle on the profitability – liquidity relationship is more pronounced in economic downturns relative to economic booms.

In addition, we tested the effect of both the working capital and liquidity ratio on the profitability level. As Bolek and Wolski (2012) show, the liquidity management is connected to the working capital management. However, on the one hand, a greater liquidity means more net working capital invested and blocked in a company, and a lower level of profitability. On the other hand, an increased liquidity means more flexibility, especially in crisis times, and companies can easily adapts their sales strategy in order to obtain additional incomes for their business. We investigate these concurrent hypotheses for 141,670 Italian companies over the period 2005 to 2011.

Data and methodology

Data was extracted from the AMADEUS database, which contains statistics for about 200,000 Italian firms. However, complete data on profitability, liquidity and the working capital over the entire time-span are available only for 141,670 companies. All the indicators and ratios are extracted from AMADEUS.

As empirical approach, we use an ordinary least square regression and a cross-sectional analysis. The general equation, tested for each year of our sample is:

$$Y_t = c + \beta_1 X_{1,t} + \beta_2 X_{2,t} + \varepsilon_t \quad (1)$$

Where: Y_t is the dependent variable, namely the profitability ratios; c is the intercept; $X_{1,t}$ represents the liquidity ratios; $X_{2,t}$ represents the working capital ratios; β_1 and β_2 are coefficients; ε_t is the error term.

In order to see if the empirical results are influences by the way the profitability is computed, in all the analyses we use three alternative measures for the profitability, namely the return on total assets ratio (ROTA), the return on investment ratio (ROI) and the return on equity ratio (ROE). These ratios are represented by the Eq. (2)-(4).

$$ROTA(\%) = \frac{EBIT}{TNA}\% \quad (2)$$

Where: EBIT are the company's earnings before interest and taxes; TNA are the total net assets.

$$ROI(\%) = \frac{NI}{TI}\% \quad (3)$$

Where: NI is the company's net income; TI is the total investment.

$$ROE(\%) = \frac{NI}{E}\% \quad (4)$$

Where: E is the total shareholder equity level.

Our dependent variables are first the general liquidity ratio (LR) and second, the working capital ratio (WCR), represented by the Eq. (5)-(6).

$$LR(\%) = \frac{OA}{CL}\% \quad (5)$$

Where: OA are the operating assets; CL are the current liabilities.

$$WCR(\%) = \frac{WC}{TA}\% \quad (6)$$

Where: WC is the net working capital, computed as the difference between current assets and current liabilities; TA are the total assets.

In the second step, we apply supplementary robustness checks, using the operating cash flow ratio (OCFR) as a proxy for the working capital, and the current liquidity ratio (CLR) as a proxy for liquidity (Eq. (7)-(8)).

$$OCFR(\%) = \frac{OCF}{TA}\% \quad (7)$$

Where: OCF is the operating cash flow, namely the difference between the amount of cash a company generates from the revenues, and the costs associated with long-term investment.

$$CLR(\%) = \frac{CA}{CL}\% \quad (8)$$

Where: CA are the current assets, namely the difference between OA and non-current assets.

Results

The main results of our study are presented in Table 1.

Table 1. Impact of liquidity and working capital on profitability

	2005	2006	2007	2008	2009	2010	2011
ROTA							
c	3.048***	3.373***	3.609***	3.046***	1.312***	0.007	-1.919***
	(0.045)	(0.044)	(0.043)	(0.050)	(0.059)	(0.069)	(0.099)
LR	2.000***	0.923***	1.120***	0.592***	1.949***	2.366***	3.151***
	(0.034)	(0.039)	(0.034)	(0.039)	(0.040)	(0.047)	(0.065)
WCR	1.117***	8.813***	7.700***	10.79***	0.772***	0.758***	-0.038***
	(0.042)	(0.121)	(0.079)	(0.109)	(0.016)	(0.011)	(0.003)
DW	1.945	2.094	1.984	2.013	1.921	1.794	1.805
R^2	0.033	0.062	0.082	0.071	0.025	0.035	0.012
ROI							
c	8.072***	8.214***	8.366***	7.579***	5.990***	5.530***	5.459***
	(0.052)	(0.045)	(0.042)	(0.040)	(0.041)	(0.040)	(0.039)
LR	0.208***	0.467***	0.388***	0.327***	0.466***	0.641***	0.607***
	(0.045)	(0.040)	(0.034)	(0.031)	(0.028)	(0.027)	(0.025)
WCR	2.704***	1.721***	1.117***	1.096***	0.020***	0.000***	-0.000***
	(0.159)	(0.131)	(0.092)	(0.080)	(0.009)	(0.000)	(0.000)
DW	1.941	1.944	1.928	1.959	1.954	1.917	1.865
R^2	0.007	0.005	0.003	0.003	0.002	0.004	0.004
ROE							
c	6.944***	7.419***	8.718***	7.505***	4.622***	5.298***	4.188***
	(0.118)	(0.116)	(0.114)	(0.110)	(0.111)	(0.108)	(0.107)
LR	2.111***	1.663***	1.730***	1.803***	1.562***	1.473***	2.267***
	(0.088)	(0.103)	(0.092)	(0.087)	(0.082)	(0.077)	(0.069)
WCR	0.415***	4.244***	3.323***	4.970***	5.185***	3.464***	0.438***
	(0.108)	(0.347)	(0.252)	(0.262)	(0.252)	(0.208)	(0.061)
DW	1.981	1.988	1.981	1.980	1.966	1.933	1.876
R^2	0.004	0.005	0.005	0.008	0.007	0.005	0.006

Notes: DW represents the Durbin–Watson statistic which shows in all the cases the absence of autocorrelation in the residuals (value close to 2).

Several comments can be made based on these findings. First, in all the cases we notice a positive impact of both liquidity and working capital on the Italian firms' profitability, with two small exceptions (in 2011 for the WCR). This evidence remains unchanged after the appearance of the financial crisis and highlights the absence of a trade-off between liquidity and profitability.

Second, even if the results are consistent under different measures of the profitability level, we observe that the impact of the liquidity upon the profitability increases after the outburst of the crisis (the coefficients' values increase). However, the impact of the WCR diminishes, except for the last series of results (ROE as dependent variable). All in all the results underline the trade-off absence and the impact of the crisis on the working capital management in Italian firms. In addition, in line with Enqvist et al. (2014), we discover that the relationship between the liquidity and profitability becomes stronger during economic downturns.

Finally, in agreement with Gill and Mathur (2011), we report that corporate liquidity positively impacts the profitability.

Nevertheless, the explanatory power of our models is very reduced (see the R^2 level). This means that other variables influence the level of profitability during the analyzed period. Therefore, in order to see if the discovered effect of liquidity and working capital on profitability

remains the same, we use alternative specifications for our independent variables for robustness purpose.

Robustness check

The first robustness test supposes the use of OCFR as an alternative measure for the working capital (Table 2).

Table 2. Robustness check based on OCFR

	2005	2006	2007	2008	2009	2010	2011
ROTA							
c	0.801***	2.814***	2.172***	2.775***	1.215***	-0.015***	-1.797***
	(0.031)	(0.044)	(0.036)	(0.051)	(0.057)	(0.065)	(0.098)
LR	0.626***	2.165***	1.297***	2.225***	1.866***	2.079***	3.022***
	(0.023)	(0.033)	(0.027)	(0.036)	(0.039)	(0.044)	(0.064)
OCFR	78.62***	9.886***	48.87***	0.986***	9.125***	16.65***	2.831***
	(0.200)	(0.132)	(0.172)	(0.029)	(0.073)	(0.092)	(0.041)
DW	1.985	2.138	2.065	2.007	1.883	1.782	1.815
R^2	0.533	0.064	0.348	0.026	0.090	0.155	0.035
ROI							
c	5.965***	6.228***	7.201***	7.575***	5.977***	5.529***	5.459***
	(0.051)	(0.044)	(0.041)	(0.040)	(0.041)	(0.040)	(0.039)
LR	-0.213***	-0.134***	0.044***	0.477***	0.459***	0.639***	0.607***
	(0.036)	(0.032)	(0.030)	(0.029)	(0.028)	(0.027)	(0.025)
OCFR	67.07***	70.81***	42.92***	0.111***	0.762***	0.123***	-0.000***
	(0.574)	(0.514)	(0.381)	(0.019)	(0.046)	(0.017)	(0.000)
DW	1.966	1.955	1.951	1.960	1.954	1.917	1.865
R^2	0.153	0.158	0.101	0.002	0.004	0.004	0.004
ROE							
c	3.872***	-0.330***	1.362***	7.444***	4.611***	3.106***	3.242***
	(0.115)	(0.104)	(0.103)	(0.110)	(0.111)	(0.105)	(0.106)
LR	0.731***	-2.096***	-1.793***	2.513***	2.305***	1.101***	1.993***
	(0.083)	(0.076)	(0.074)	(0.078)	(0.074)	(0.068)	(0.067)
OCFR	82.26***	228.9***	210.5***	0.841***	0.000***	64.34***	26.01***
	(0.674)	(0.970)	(0.885)	(0.061)	(0.000)	(0.497)	(0.315)
DW	2.036	1.989	1.999	1.979	1.966	1.930	1.867
R^2	0.103	0.279	0.267	0.007	0.005	0.090	0.043

Notes: DW represents the Durbin–Watson statistic which shows in all the cases the absence of autocorrelation in the residuals (value closed to 2).

From Table 2 it is evident that the explanatory power of our model improved, as the R^2 considerably increased, especially for the pre-crisis period. As in the previous case, the impact of liquidity and working capital on the profitability level of Italian firms is in general positive. While the effect of the liquidity increases after the crisis, the impact of the working capital decreases. This means that the ratio between operational assets and current liabilities becomes more important that their difference compared to the size of the company.

However, in this case we notice that the liquidity sign is negative for 2005-2006 or for 2006-2007 when the profitability is assessed to ROI or ROE. A possible trade-off appears in boom periods. In this context, we check the robustness of the first set of results by using a different specification for the liquidity, namely the CLR.

The last set of results is presented in Table 3 below. When we use the CLR as explanatory variables, we notice a clear existence of the profitability – liquidity trade-off before the crisis, while after the crisis a positive influence is observed.

Otherwise said, when we take off non-current assets from equation (i.e. investments in other companies, intangible assets, plant and equipment), we see that in economic boom periods, not using liquid assets negatively affect the profitability level (this affirmation is true regarding the way we measure the profitability). In crisis times on contrary, it is recommended to have more cash which ensures the necessary flexibility to maintain the profits. As in previous cases we see a positive impact of the WCR and this impact decreases after 2009.

Table 3. Robustness check based on CLR

	2005	2006	2007	2008	2009	2010	2011
ROTA							
c	3.339***	5.550***	4.903***	4.565***	1.079***	-0.473***	-2.990***
	(0.052)	(0.055)	(0.051)	(0.059)	(0.067)	(0.079)	(0.112)
CLR	1.253***	-1.319***	-0.205***	-0.808***	1.548***	2.024***	3.009***
	(0.031)	(0.041)	(0.032)	(0.038)	(0.035)	(0.041)	(0.058)
WCR	1.190***	14.21***	9.226***	13.49***	0.761***	0.751***	-0.039***
	(0.044)	(0.151)	(0.087)	(0.125)	(0.016)	(0.011)	(0.003)
DW	1.943	2.066	1.989	2.005	1.868	1.771	1.791
R^2	0.021	0.069	0.080	0.076	0.023	0.034	0.013
ROI							
c	9.664***	9.990***	9.468***	8.397***	6.511***	6.047***	5.938***
	(0.065)	(0.056)	(0.051)	(0.048)	(0.047)	(0.046)	(0.044)
CLR	-1.369***	-1.353***	-0.636***	-0.404***	0.001***	0.130***	0.142***
	(0.050)	(0.043)	(0.033)	(0.029)	(0.024)	(0.023)	(0.022)
WCR	7.565***	6.924***	3.049***	2.271***	0.030***	0.000***	-0.000***
	(0.201)	(0.171)	(0.107)	(0.090)	(0.009)	(0.000)	(0.000)
DW	1.944	1.948	1.933	1.964	1.952	1.914	1.870
R^2	0.018	0.015	0.007	0.005	0.000	0.000	0.000
ROE							
c	8.502***	10.81***	11.12***	9.761***	6.563***	7.078***	5.346***
	(0.137)	(0.145)	(0.136)	(0.131)	(0.130)	(0.126)	(0.122)
CLR	0.443***	-2.070***	-0.745***	-0.600***	-0.435***	-0.266***	0.938***
	(0.081)	(0.113)	(0.091)	(0.087)	(0.082)	(0.075)	(0.063)
WCR	0.843***	14.17***	7.224***	9.359***	8.667***	5.661***	0.562***
	(0.111)	(0.443)	(0.286)	(0.304)	(0.289)	(0.227)	(0.062)
DW	1.979	1.986	1.981	1.977	1.960	1.928	1.873
R^2	0.000	0.007	0.004	0.007	0.006	0.004	0.002

Notes: DW represents the Durbin–Watson statistic which shows in all the cases the absence of autocorrelation in the residuals (value closed to 2).

Conclusions

This paper adopts a cross-sectional approach to re-assess the profitability – liquidity nexus. For this purpose we use a large dataset of 141,670 Italian companies over the period 2005 to 2011, and we test the effect of the liquidity and working capital ratio on different profitability specifications.

Our results are in line with the previous estimations regarding the impact of the working capital on the profitability level. While the existing literature shows that reducing the CCC positively impacts the level of profitability, we discover that the WCR has a similar effect. In the case of the liquidity ratio we show that, when the general liquidity is considered, the effect on the profitability level is positive. This happens because a higher amount of operating assets compared to current liabilities shows the firms' capacity to make profits.

However, a more interesting result is obtained when we use the CLR instead of LR as explanatory variables. Apparently the trade-off between profitability and liquidity manifest in boom periods, when it is not recommended to block cash in order to increase profitability (in line with

the general findings of the existent literature). However, after the outburst of the crisis, liquidity helps companies to make profit, which seems reasonable. All in all we show that both the liquidity and working capital have a positive influence on the profitability, impact which differs in intensity in boom compared to economic downturn periods.

These findings have practical implications for financial managers who should rely on firms' liquidity in order to maximize the firms' value and profitability in the long-run. The financial managers should also change their financial and investment strategies in crisis periods. Our findings have however several limits. On the one hand, we do not consider the potential endogeneity which may exists between profitability and liquidity, endogeneity underlined by recent studies, and which can influences the empirical estimations. On the other hand, it is important to note that the working capital management policies need to take into account the industry characteristics.

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INDIVIDUAL RISK EARLY WARNING SYSTEMS AS A MANAGEMENT INSTRUMENT TO HANDLE CRISES

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Abstract

Purpose *– The paper's purpose is to demonstrate how the Risk Early Warning Systems can be suitable instruments to eliminate unwanted risks and crisis situations.*
Methodology/approach *- Analysis and comparison of the previous four types of screening approaches of risks will be presented in general, and the observations will be taken into consideration for the selection of the specific company indicators based factors (proposed approach). Through interviews and analysis, the model will be evaluated.*
Findings *– The newly defined process approach enables the identifying of key risk indicators (KRIs) in the case of a specific business environment.*
Research limitations/implications *– The current state of literature on Risk Early Warning Systems is used as a basis for the study. The KRIs were selected only from standard indicators.*
Practical implications *– The new approach allows companies to analyze risks in early stage by using company specific indicators in a new EWS model; critical business risks can be detected earlier.*
Originality/value *– The added value of the newly defined approach is the objective and qualitative analysis of risks based on the specific business environment. This will determine reactions, in time, to risks on strategically and operationally levels.*
Key words: *Early Detection; Crises Management; Key Risk Indicators.*

Introduction

Today's highly competitive business world is dominated by international markets, public, political and financial crises, a progressive technological development, social changes and increasingly strong globalization (Krystek, 2007). These different factors can have both positive and negative effects on businesses. Purposeful information at the right time allows a company to take informed and transparent decisions, so that the future planed actions can be initiated early in order to mitigate risks. Furthermore, this will secure and expand organization's market position in short and long term. Risk Early Warning Systems (EWS) are suitable instruments to eliminate risks and to identify trends towards potential crises. EWS will not only protect the current business position, but it will recognize trends, opportunities or threats of future business success, too. Companies use index and calculation oriented for designing early enlightenment systems. They use past data for long term identification of risks and opportunities that is a difficult process (Ratingaktuell, 2005). Because companies are aligned differently and address various aims, specific business indicators can be an advantage for the crises early detection. However, until now it was not found a good answer to this problem (Weinreich, 2012).

The presented research looks in detail at the performance of the existing EWS models and compares the advantages and disadvantages of them. The aim is to provide a model to set up a

“Real Time EWS” with company specific indicators for the early warning and crises detection. This will support better the management processes and transform crises into business opportunities.

Scientific basis of the research

The origin of the term “crisis” comes from the Greek "krisis" that means "turning point" or "Decision" (Krystek, 2007). From a general perspective, crisis is associated with a breakdown in a system that creates shared stress (Coombs, 2015) or a period of disorganization ensures, a period of upset, during many abortive attempts at absolution are made” (Kanel, 2015). Gerald Caplan described crisis as “an obstacle that is, for a time insurmountable by the use of conventional methods of problem solving (cite by Ireland (2011)). Caplan definition, in conjunction with the following characteristics of crises, creates the basis of crisis process perception in the presented research context. The following factors characterize crises: (Schreyögg, 2004; Burmann, Freiling and Hülsmann, 2005; Großmann, 2014): existence hazard; ambivalence of the output; hazard dominant goals; process character; control issues; surprise; time pressure; loss of opportunities for action; force metamorphosis. In addition, there can be considered that the existence hazards and objectives as well as control problems can lead to an increased stress level in the company. This can cause the loss of options for action.

In our research there is considered the first phase of the crisis process (the potential corporate crisis), as presented by Krystek (2007), and shown in Figure 1. In the first crisis phase, company has no obvious signs of crisis marks (starting period of enterprise risks development).

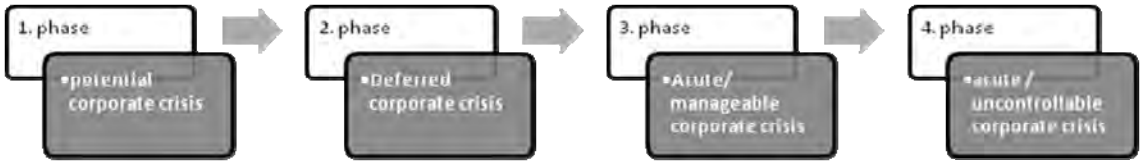

Fig. 1. Stages of the general crisis process according to U. Krystek (2007)

EWS theoretical models’ analysis

The early enlightenment approach can be differentiated according to operational and strategic applications, on one site, and three stages of development, on the other site (Figure 2).

application	stage of development	Function of Enlightenment
operativ	Oriented metrics and extrapolation	1. early warning
	indicators oriented	2. early detection
strategically	Potential success-oriented	3.strategic issue analysis
Operativ & strategically	Holistic approach	4. integrative EWS

Fig. 2. Typology of EWS generations

Based on Aguliars concept of "Environmental Scanning", the early detection Approach of the first generation were initiated in Germany in the early ‘70s (Bertram, 1993). This generation is primarily described as an operational EWS focused, particularly, on the early detection, warning of hazardous and latent risks of the company (Szyperski, 1973). Initially, main researches were focus on concepts development through computer based planning and control systems. The resulting performance measurement systems established reporting procedures to do early warnings at the over - or underflow of previously defined thresholds notifications. At the same time, so-called planning extrapolations allow a comparison between planned target value and actual projected value (Krystek, 1993).

The second generation of EWS, named "Key risk indicators”, which are described as early detection, characterizes an extending planning horizon. A key component of this system is the systematic search and consideration of relevant developments within and outside the company with specially designed indicators which should identify early future risks and opportunities (Krystek, 2007). Compared to the first generation, the second one is used to identify future developments (Welsch, 2010). The early detection is assigned to the operational area too, because more short term, operational, quantitative results and liquidity-oriented sizes serve as reference systems (Welsch, 2010).

In the development of the third generation (from 1979) the so-called "strategic issue analysis", the focus was on the strategic area. The model basic assumption is that all discontinuities in the internal and external environment indicates of so-called "weak signals" and do not occur suddenly. This allows forecasts with sufficient advance notice (Ansoff, 1976). Therefore, a company should already reflect on alternatives when receiving weak signals and not if the issue is specific (Welge, 2008). Ansoff refers generally to weak signals that only information rudiments are present and which may have the following features (Nagel, 1994): (a) Usually only a vague sense of opportunities or risks; (b) Sources and causes are often identifiable vaguely; (c) Response strategies and possible effects are not available initially; (d) Weak signals increasing over time through the accumulation of similar events; (e) Weak signals are only relevant for businesses if these intensify over time.

A two-step process by scanning and monitoring has been established to identify weak signals (Krystek, 2007). The scanning approach can be compared with a "360 degree, radar" who seeks randomly weak signals (Welge, 2008). Reports, newspapers, research institutes, expert discussions, exhibitions, and specific web pages for trends and risks are used as sources (Krystek, 2006). If weak signals were found, the monitoring process is carried out in the second step. Monitoring is seen as signals long-term observation, with the aim of collecting specific information in order to analyze and interpret better the signal and to determine the occurrence probability (Krystek, 2007). If the signal have relevance for the company, than the next step will be the scenario analysis of signal development - analyze effects on the strategic objectives and the company strategy process (Welge, 2008).

Based on business pulses which have evolved from the practice in the middle of ‘80s, Fillipiuk (2008) describe the EWS fourth generation. The aim was to bring the first three generations together in a holistic operational and strategic approach of EWS (Weigand, 2000). The central focus of the so called “integrative EWS” is on development and formulation of methodological guidelines for using EWS in practice. The approach of Gomez, connects network thinking with the concept of early detection (described in (Fillipiuk, 2008)). This “integrated EWS” model used indicators to identify the problems main sources of corporate activities. Trends are perceived as weak signals and are assessed from their strategic relevance. By combining these two EWS generations, it should be possible to analyze the dynamic parameters of the company and their relationships (Gomez, 1983).

It can be considered that the early warning focuses on threats and the risk during the early detection take on both the risks and opportunities identification. The strategic issue analysis at the third generation takes over the early detection of risks and opportunities in the initialization process as appropriate countermeasure. The operational fields and the strategic approach to the

fourth generation, the integrative EWS, are merged. In addition, to the early warning generations discussed, it can be also, differentiated according to the intrinsically oriented and foreign-oriented, inductive and deductive or overall business-related or area-related concepts (Gehra, 2005). A consistent use of the preamble has not been able to prevail. For this work, the term of the EWS is used with regards to the fourth generation as described with the operational and strategically alignment.

Criticism on the scientific basis of the Early Enlightenment approaches

According to Baisch early detection is critical considered since its approaches have been set up (Wippel, 2014). Van Vught (2000) stated in 1987, that future development is not predictable. The basic object of uncover anomalies and discontinuities been criticized due to the strong subjective definition of indicators and the perception of trends (Gehra, 2005). The undirected weak signals search and the indicators subjective choice done to analyze the company's internal and external information, are manual processes feasible with a lot of effort. Furthermore, literature critics focus on the risk indicators determination as a challenge action, as mention by Weber and Kunze (cite by (Globocnik, 2010)). Lessons learned is another critical point that should be repeatedly turned as practical knowledge in the scanning process and combined with new early information to continuously search for new patterns and contexts (Baisch, 2000). Besides the two mentioned critic reviews additional critical comments may be collected, like the signals relevance assessment evaluation.

The research methodology

For the proposed EWS evaluation and analysis for risks in the business environment, the basic generation of EWS were considered and set in relation. Based on the independent survey could be analyzed that the fourth generation is applied to 77.5% in practice. In addition, the selection and definition of company risk indicators is rated with 62% as the main basis for identifying risks. Based on these information, the selection and definition process of company's Key Risk Indicators (KRI) is provided. Further studies confirm this important role of KRIs in risk management (Moldenhauer, 2004). In addition, the theoretical and the intuitive approach as well as the model of Haubenstock, Mastro, Immaneni (2004) with the Six Sigma method for developing KRIs were analyzed and compared. These approaches were set in relation to the standard method for identification of KRI while using the Balance Scorecard with four directions: Customer view, Budget view, Process view and Potential view (Romeike, 2003).

Approach for identifying company's specific KRI

Based on different approaches analysis, an advanced model was developed with an informed, objective and company's specific identification of KRI. Already in 2004 a structured approach was conducted to define appropriate KRI as part of an analysis with Six Sigma support (Haubenstock, 2004). The new defined model is based on the fourth generation of the EWS and includes the operational and strategic orientations. The modular approach of Ansoff for weak signals identification by scanning and monitoring, will be considered; the processes of the first generation are performed in order to get a holistic approach. The identification of the KRI has been reorganized and adjusted through a top-down and a bottom-up approach as described in the method of Haubenstock (2004). By consider both approaches, it is possible to combine the strategic and operational perspective. In addition, a corporate core processes analysis is recommended, to identify the value-add processes in order to mitigate their associated risks, and to avoid their impact on the company results. Based on the identified core processes the strengths, weaknesses, opportunities and threads of the enterprise will be investigated. Due to the sequentially methods application, the subjectivity in establishing the KRI indicators is reduced. After the analysis, the definition of the indicators in a fifth step process takes place (Figure 3). Indicators definitions can be explained like: (1) Identifying of existing metrics; (2) Asses gaps; (3) Improve the metrics for the new analysis; (4) Validate and determine a base

value and trigger thresholds; (5) Establish a control plan for the Indicators. As part of the integrated approach of the EWS fourth generation, the operational and strategic analyzes are performed and the results are compiled in a structured overview. Inventory information from the previous analysis should be used in addition to identify the risks development.

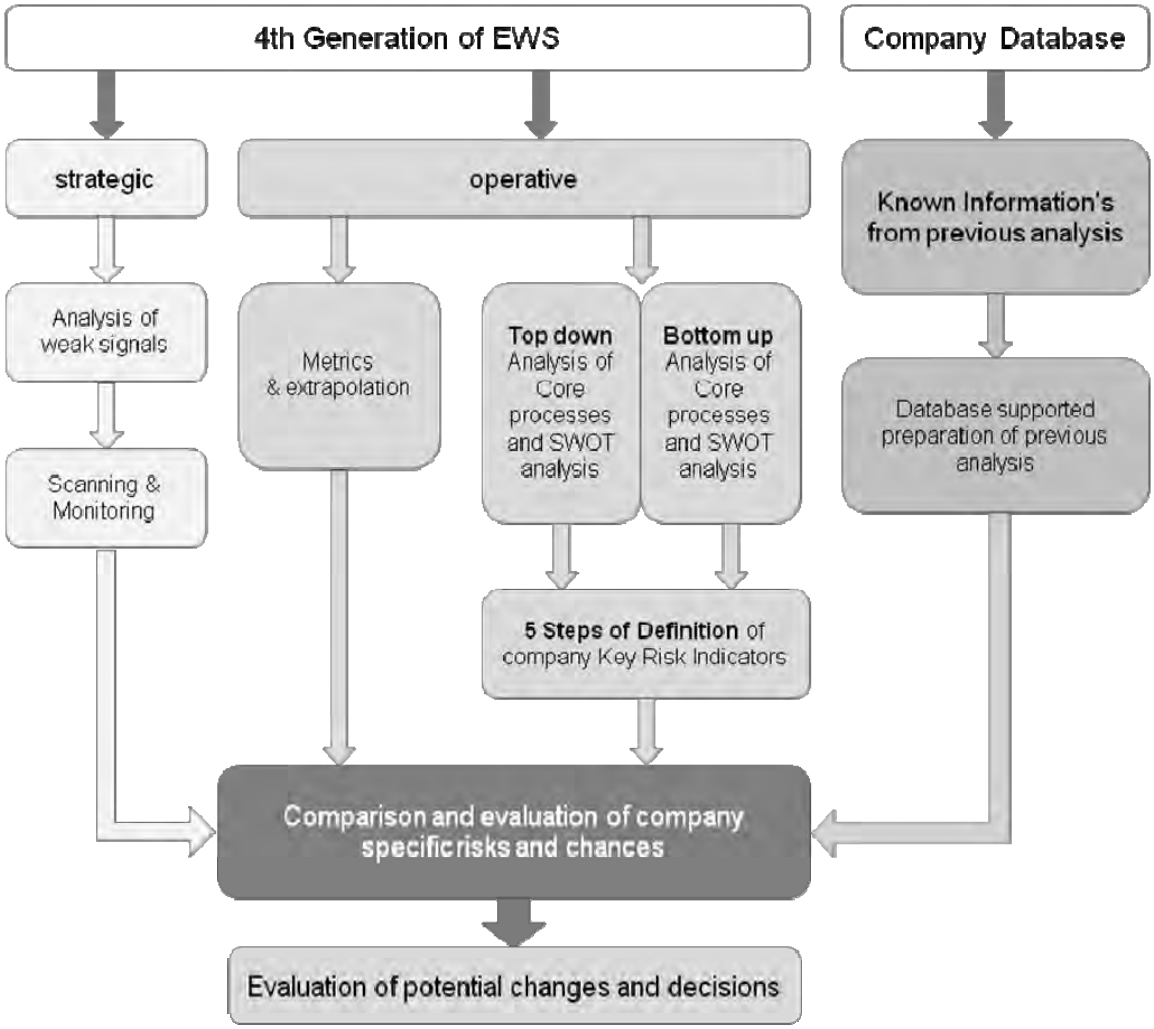

Fig. 3. Methodology of company's specific risks

Study detailed description

The proposed model was tested on 30 companies (10 small, 10 medium-sized and 10 large companies). Previously there was a KRI analysis. In order to compare the collected data, an evaluation was made after the KRI analysis by both methods. Through the evaluation result of the surveyed companies, there can be found if there was a significant improvement on identifying the KRIs. The survey was carried out in two steps. Previously, the investigation scenario has been described in the context of an event with the participating companies. The use of the business process standard to analyze the KRI and the analysis duration have been the study's aims. Characteristics of the survey done:

- 30 companies with two executive managers and each three division and department heads, overall 150 persons in different roles;
- The survey was conducted in English language;
- First analysis: survey of the EWS and processes used in the business with the identification of the roles and the most important factor for EWS;

- Second analysis: the first survey results for analyzing KRI by the standard process in companies;
- Third analysis: the second survey results of analyzing KRI by the new approach: Two months after the first one; Bottom-up and top-down approach of analyzing KRIs by different managers; Layers; Same volunteers like the first analysis;
- Evaluation of the results of the two analyzes of KRI one week later;
- The 150 respondents were 28-56 years old, being 79% male and 21% female;
- A blank document for documenting the analysis of KRI procedure has been designed and introduced to the participants;
- Finally, an anonymous resulting document was created and the evaluation of the KRI was done by the same volunteers of the company;
- All participants have experience in the analysis and identification of risks.

In order to support the survey development, a software tool was developed. By uploading data, the tool categorize and analyze the data; the results are shown by charts and data tables.

Research results

The initial description of the subject in different companies has already shown that local conditions has to be considered. In addition, the study shows that with a growing size of the company the experience of risks and risk assessment increases. In large companies often a team is employed with the identification and evaluation of risks. In small and medium-sized enterprises, the risk assessment is taken directly from the management and department heads. Among the 150 respondents, 88% of them rate that risk management as important and very important for the company, while 32% perceive this as less important. In order to define the most important factor for risk analysis, pain points and critical points of the literature were applied (Figure 4). While trend reports, controlling of key figures and extrapolations still occupy a high priority with 24-26 of 30 possible points, KRIs are the most important factor for risk management, as the study results show (28 points). This result indicates that the analysis of specific KRIs takes a high priority for companies. After the volunteers have conducted the first analysis of key risk indicators, an inventory analysis was performed.

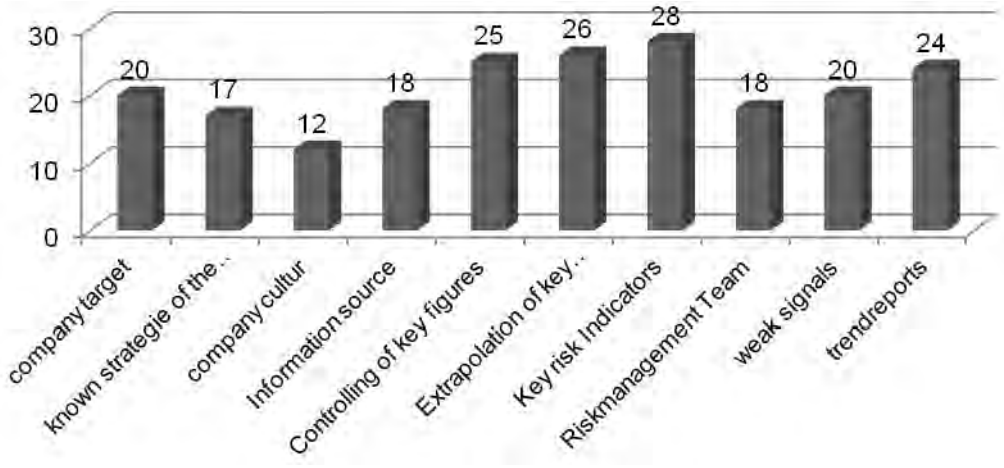

Fig. 4. Important factors for risk management – research results

In the second analysis phase, the new process description was sent to the participants in advance in order to become familiar with it. The second analysis was supported by a mentor, which answered questions in advance and assisted the subjects' processes, too. In the compared evaluation of the two KRIs analysis results it became clear that by using the new method, a more

focused approach of KRIs indicators will be possible (see results in Figure 5). An average increase of 1.55 points in the systematic identification of indicators could be achieved; for large companies, the improvement of more than two points was possible. Furthermore, the reducing of indicators in mean value of 11.5 is achieved. Fewer and specified indicators allow the company a better use of the resources in monitoring the indicators.

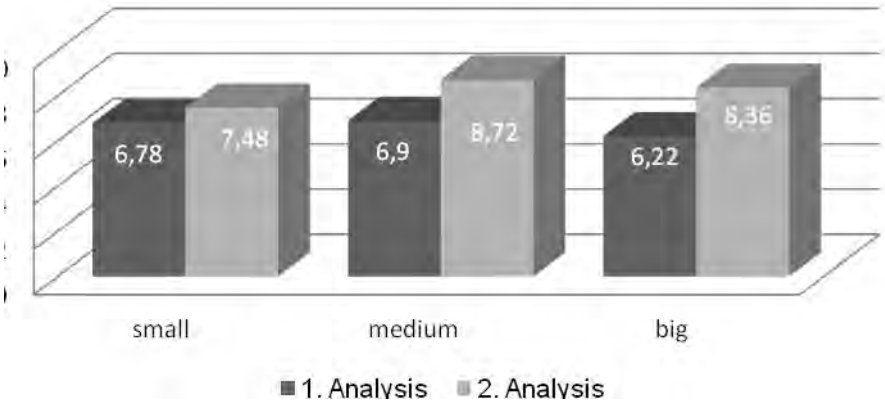

Fig. 5. Assessment of indicators in relation to the company – research results

Conclusions

The criticisms of the EWS show the complexity of the risk mitigation processes in the business environment. The described generations of EWS are the core issue in science, which show the practical relevance of the study, too. Due to the large number of uncontrollable external business factors, it has become even more important to identify potential risks and align the enterprise accordingly. Based on the survey results there have been seen that the respondents developed a higher valuation of the KRIs analyzed using the new approach. From this it can be concluded that the extension of the 4th generation of the EWS allow a specific focus on the company's core processes. Furthermore, the proposed method support the identification of company's specific trends, risks can be analyzed in early stages and their impact on the core processes can be determined. This enables company to gain competitive advantage. Based on the collected data (experimental research) it could be proven that the KRIs play a decisive role in identifying risks. The specific analysis of indicators based on the new method, support a better focus on the company's key risks. The achieved early focus on business-related risks, allows carrying out timely measures, in order to manage company's specific risks and transform then in opportunities.

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PERFORMANCE MEASUREMENT SYSTEMS, METHODS AND INDICATORS FROM THE PERSPECTIVE OF TIME-BASED MANAGEMENT

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Abstract

Purpose *– This study identifies a performance indicator set that can be used for time-based management within business organizations. Performance measurement has been, for a long time, the purpose for theoretical research, as well as management practitioners.*
Methodology/approach *- This process sets of by determining the steps required to build a system to monitor business processes whereby the critical success factors, referring to generating value for the consumers from the used resources and capabilities and meeting the requirements of the company's main interest stakeholders, are identified.*
Findings *– Time is a universal trait for any activity and any process type. In agreement with the principles of time-based management, the information regarding time is easier and faster to obtain than information regarding costs. Thus managers must be encourages to switch from cost control, typical for the classic management accounting system, to an action set typical for time management, that leads to a customer oriented organization which is more perceptive to market requirements.*
Practical implications *– Starting from the idea and the need for an indicator set for the company's global performance, the described model identifies the main value delivering process, which can be associated to an indicator set used to evaluate the process, which is determined by identifying key success factors, for the process itself but also for the organizational global performance. Time is a significant element with string valence and is one of the procedural success factors of any business organization.*
Originality/value *– This process was accomplished by taking into account two managerial syllogisms based on time, a more established one – quality, cost, delivery time and a newer one – time, value, performance. Thus time becomes the most important element for organizational performance systems and the performance viewed through the „temporal lens" focuses on an indicator system specific to business processes, whereby specific success factors are determined.*
Key words: *time, performance, management, process.*

Introduction

Performance measurement has been, for a long time, the purpose for theoretical research, as well as management practitioners. Therefore it comes as no surprise that there is a wide range of alternative approaches and models which differ based on origin, on measurement systems and complexity. The approaches are built around three important aspects: Costs, ***Time***, and Quality.

Two generic measurement models, which may represent performance indicators, can be introduced. These are:

- Process-oriented measurement: attention is payed to monitoring and improving the process. These models are directly linked to current and operational performance.

- Intellectual capital measurement: human, structural and customer capital assessment within the organization (Edvinsson Cf., Brüning L. G., 2000). Measuring the intellectual assets leads to determining a company's current and future capabilities.

Different authors try to compare the features of different systems and processes based on practical requirements, but this type of approach doesn't create clear distinctions between the different system and process categories. Thus, the classification of a performance measurement systems design processes is not an easy thing to do, as some of them are a simple description of a series of requirements, whereas others discuss a single instrument and only a few are consistent process descriptions.

The Fraunhofer Institute for Production Systems and Design Technology in Berlin has developed an approach for designing a performance measurement system based on the „Integrated Enterprise Modeling Method" (Spur G., Mertins K., Jochem R., 1999) and a process map. Starting from this premise, a value chain and a process map can be produced. These can be used to identify the success factors, which then determine the necessary performance indicators, in order to give a unitary perspective on:

- financial results;
- market structure, regarding consumers, products and competitors;
- business processes, regarding volume, value, quality, time and costs;
- innovation and learning.

The performance indicators will be developed within a process made up of six steps which are represented in figure 1, based on the Mertins and Krause affirmations (Mertins K., Krause O., Schallock, 1999).

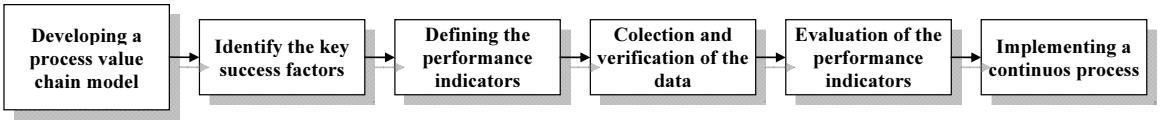

Fig. 1: Stages for building an indicator set in the Fraunhofer Approach

The key points of this approach are:

- it is based on the fundamental model;
- it is facilitated by the learning process which occurs, while drawing up the process maps;
- it recognizes the need for planning the performance measures built around the record sheets of performance measures.

Therefore it is important to emphasize, that starting from the idea and need to identify an indicator set for assessing the organization's overall performance, the presented model identifies the main value delivery process, to which an indicator set for process assessment can be assigned, which are determined by identifying the key success factors, for the process itself but also for the company's global performance. *Time* is an important element with strong valence, from this point of view. It is one of the procedural success factors of any business organization.

Furthermore, time, from a time-based management viewpoint, is one of the significant pillars on which the modern concepts for process improvement rely. It is part of the established trinomial *quality-cost-delivery time*, or of another trinomial, which evolved from the former, *time-value-performance* (Miricescu D, 2008, pp. 20, 2014, pp. 82).

As this paper will demonstrate, *time is a universal feature of any activity and process type and, in agreement with the time-based management principles, information regarding time is much easier and faster to obtain*, than even information about costs. Thus managers must be encouraged to switch from cost control to an action set which is characteristic of time

management and which leads to a client-oriented organization that is more perceptive to market requirements (Stalk G., Hout T. M., 1991, Stalk G., 1988).

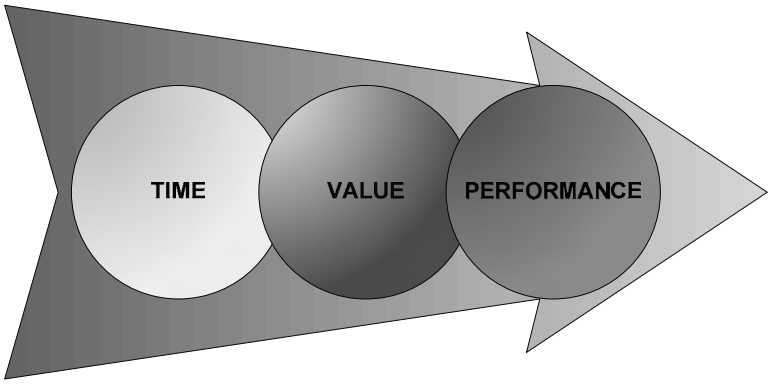

Fig. 2: The Trinomial time – value – performance
Source: Miricescu D, The signs and the marks of time on the contemporary management, 2014, p. 82

Time-based management offers a much higher value to the used resources, by excluding wastefulness during business processes while trying to improve activity management, optimize the assigned time and increase the speed of processes. The aim is to achieve manufacturing cycles which are as short as possible and the ultimate goal is to create higher value for potential customers, which in the end will lead to increasing the company's overall performance. Therefore the syllogism ***time – value – performance*** (Fig. 2), underlies the theories and approaches regarding the time dimension on humans, organizations, the economy or society in general.

Performance – the main anticipated result of time management and general performance monitoring systems, methods and indicators

An increasing number of managers understand the fact that time is an important cost inducer and an extremely important influence factor on organizational profitability. Time is money due to:

- time dictates the pace at which goods and services, including the rhythmicity of income, are produced
- time establishes the blocking period of resources within the production process and the time during which these are unavailable to other income generating activities;
- time delays often determine the accumulation of increasing amounts of stock, leading to growing storage costs which will be reflected in the final product costs;
- the innovation process and time are important success factors on some markets where the competition takes place in the area of reducing the time for designing new products or production time, therefore any delay can lead to loosing current or potential customers.

Thus, along with a strict cost management, that implies special attention to time wasting, *time itself can be seen as a decisive source for competitive advantages. „**Time is the best diagnosis measure and the best available design parameter.** If the products desired by the customers are be delivered and time is simultaneously compressed, then the problems regarding costs and quality within processes that deliver value will be resolved!",* affirms George Stalk in Competing Against Time (Stalk G., Hout T. M., 1991).

Time management focuses on reducing and compressing the execution time of any business process, starting from developing a new product and up to production and every necessary activity for delivery or distribution. Therefore time-based management considers time to be the first and foremost criterion for management decisions.

Time is a universal trait of any activity and any type of process and in agreement with the concepts of time-based management, information regarding time is much easier and faster to obtain than cost information. So, managers must be encouraged to switch from cost control, typical for the classic management accounting system, to an action set which is characteristic of time management and which leads to a more client-oriented organization that is more perceptive to market requirements. Time management, similar to cost management, requires identifying and eliminating activities which don't add value to the product. Time management results have to reflect low costs and increased quality, but time is the main element of this concept and the focus is on time. The main goals are reducing time for new product development, reducing time for production cycles or other typical business processes and reducing delivery time (Mouritsen J., Bekke A., 1999, pp. 59–80).

Assessment indicators for time usage in an organization

Although many organizations do not adopt or implement all principles of time-based management, they agree on the importance of time by measuring and operating both of the following factors:

- time necessary for developing a new product or service;
- time necessary for carrying out (honoring) orders for new products or services.

Time and profitability in developing new products or services – As previously demonstrated, the innovation process can be an extremely important source of ensuring the competitive advantage. The faster a product is launched on the market, the bigger the advantage over other competing companies is. Therefore many organizations measure the development time of new products (known as *time-to-market*), which is the elapsed time from identifying a new concept until its launch on the market for sales.

Break-even time – BET measures the time which elapses from identifying a new opportunity, regarding a new product or service, until it is placed on the market and generates sufficient income to cover the initial investment. The BET is an important efficiency indicator for the research-development process (Kaplan R.S., Norton D.P., 1996). This indicator was introduced by the company Hewlett-Packard and emphasizes the importance of speed, efficiency and profitability for the development processes of a new product. *However, the break-even time encourages the incremental development to the detriment of major investments due to the fact that these incremental developments imply lower development costs and faster income, are easier to carry out and have a simplistic predictability.* Major innovations mean a longer life-cycle with significant income over a longer time period. Another disadvantage of this indicator is the fact that it cannot be calculated and used in real time. It can be estimated at the end of a research-development cycle.

Time required to carry out an order – Another aspect taken into account by time management is the time required to respond to and fulfill a customer's order for a product or service. This time period is assessed by indicator called customer response time

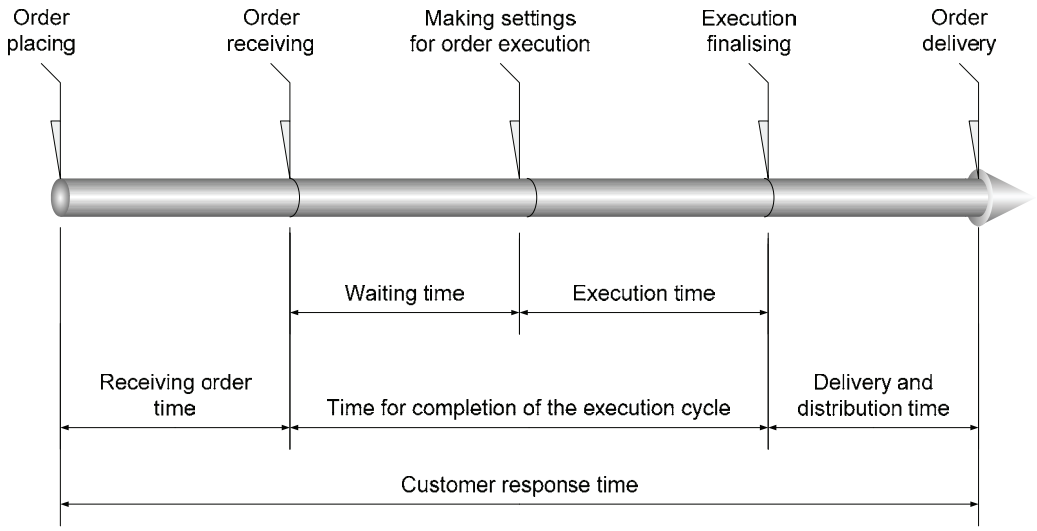

Fig. 3: Customer response time

This indicator is made up of three major elements:

- receiving order time – the time which elapses from the moment in which the sales department receives the customer's order until the moment the order is transmitted and registered at the production department;
- time for completion of the execution cycle – the time period between registering the order at the production department until the finished products are ready for delivery. This time period can be divided into two distinct elements:
  - waiting time – the time between receiving the order at the production department (time waiting for different resources to become available so the production process can set off – materials, production capacity);
  - execution time – the actual duration of the production process;
- delivery or distribution time

Delivery schedule reliability – The efficiency degree for carrying out and fulfilling a customer's order can be measured by means of another indicator called *delivery schedule reliability***,** which determines a company's accuracy in keeping programmes and schedules for delivering and fulfilling orders.

Identifying and managing factors influencing time management

Each of the previously described factors monitors the efficiency of time management. However, managers have to identify and understand *time inducers* in order to improve the organization's time management. These *time inducers are any factor that can intervene and change the duration for carrying out a process.* Table 2 describes some of the most common time inducers and also suggests possible ways to coordinate them.

It can be observed that many approaches typical for time management are similar to the activities typical for cost management. The reduction or removal of non-value adding activities, or the reengineering of the business processes, leads to better handling, and to saving time and money. Also, production flow management and production tact management focus on increasing the manufacturing speed with remarkable effects on the growth of asset turnover speed, faster profits and lower costs. Quality management reduces delays in business processes and reduces production costs for these processes.

Table 1: Main time inducers for an organization

Time inducers	*Possible management approaches*
Weakly structured organization, production and delivery processes	• *Initiating and carrying out the value analysis to identify and remove non value adding activities;* • *Implementing new processes targeting continuous improvement;* • *Using the re-engineering process for a total redesign of the processes.*
Bottlenecks (tight areas) in organization, production and delivery processes	• *Process management by identifying and solving bottleneck and tight area sources;* • *Trying to minimize high variations and grow predictability of customer demand.*
Low quality	• *Developing an organizational culture based on total quality management, supported by identifying new suitable indicators for costs and other aspects regarding quality.*
Ineffective stocks management	• *Improvement of supply chain management in order to reduce delays caused by unsuitable supplies or inadequate quality.*
Weakly structured processes within the research-development activity for developing new products	• *Applying the „target costing" method to determine product design management costs and process development costs.* • *Ensuring that value engineering minimizes time and production costs.*

Source: own

Utilization degree of performance indicators specific to time-based management in business organizations

Starting from these assumptions, we have tried to identify the degree to which these elements of performance assessment, centered on the process analysis and especially the optimal capitalization of time, are used by some business organization's management. Thus the research was based on an ample questionnaire which targeted managers and other practicing specialists within business organizations in Romania. It's pursued the assessment of the most important factors which influence the judicious usage of time within organizations and the degree to which time-based management is implemented in Romanian organizations. The following results and conclusions are based on the answers received from general managers and other managerial representatives from 33 business organizations set in some of the most important economical locations in Romania (Sibiu, Bucureşti, Timişoara, etc.), having different fields of activity (manufacturing, services, trade, transport profile).

The research structure relied on tracking seven main goals, whereby the answers of three significant questions were selected, subordinated to the objective: *Time and its implications on the main organizations functions.*

The centralization of the results was carried out using the program SPSS 13.0 for Windows and the work files from the program Microsoft Excel.

Three major elements, which are the basis for establishing and building a system of performance indicators centered on the optimal management of time, were selected.

Perceptions of time inducers within processes

A major theme, as indicated in the previous paragraph, refers to the management team strictly and pertinently identifying possible time inducers within processes. Their identification can lead to reorganizing or redesigning the process in order to significantly decrease the execution cycle time, with major implications on productivity growth and cost reduction. Thus, the question raised deals with identifying and assessing some of the factors (listed in Table 1) that lead to an inappropriate usage of time within the organization.

The analyses of the results lead to the following significant conclusions.

Identify and assess the importance of the following factors which cause the inappropriate usage of time in your organization:

The factors within this question, specific to many manufacturing organizations, are the most important causes for time waste or inappropriate usage of time in organizations.

Table 2: Assessment of importance of factors which cause the inappropriate usage of time

In percent (%)	F.R.	2	3	4	5
Weakly structured organization processes		12,1	24,2	36,4	27,3
Weakly structured production processes	6,1	6,1	33,3	39,4	15,2
Bottlenecks (narrow areas) in the processes of organization, production and delivery	6,1	12,1	15,2	45,5	21,2
Quality issues	6,1	12,1	24,2	33,3	24,2
Ineffective stocks management	6,1	12,1	33,3	27,3	21,2
Slow pace and structure of research–development activities	3,0	18,2	42,4	24,2	12,1

The most important factors among the ones exposed are *bottlenecks (narrow areas) in the process of organization, production and delivery* (66,7%), *weakly structured production processes* (63,7%) and *quality issues* (57,5%).

The narrow areas (Fig. 4), present in production processes are apparently the biggest concern for managers in manufacturing organizations. This factor is important for 80% of the respondents from this environment. The attention is justified because these narrow areas (bottlenecks) consume important organizational resources: growth of production volume during manufacturing, introducing variability into the system and leading to process time growth up to unacceptable values – hockey stick effect (Suri R., 1998, pp. 162 – 165, Miricescu D., 2008, pp. 101 – 104).

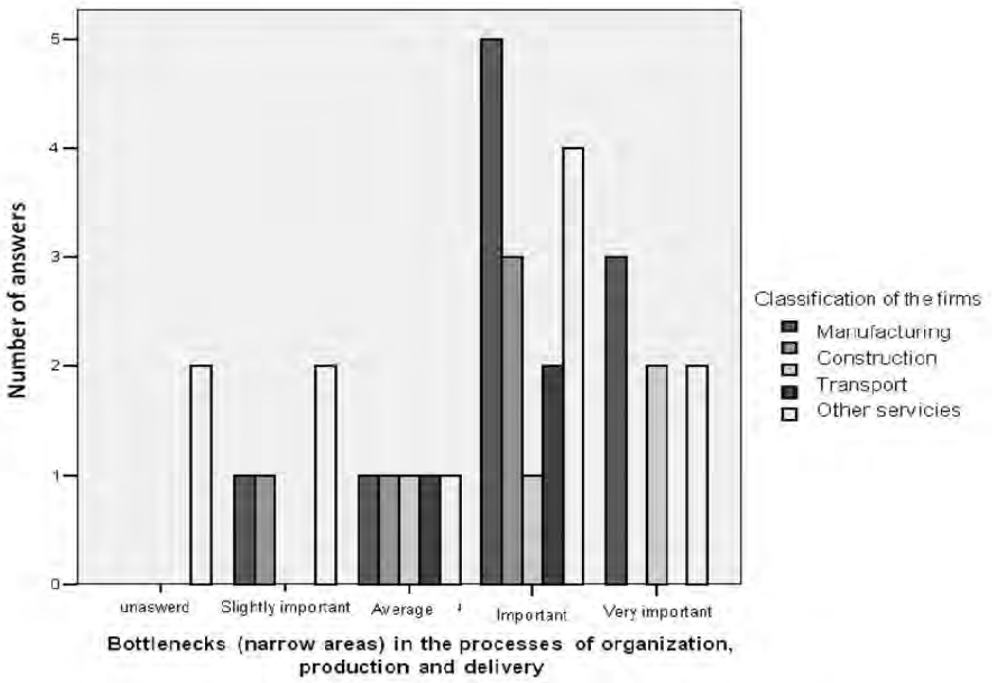

Fig. 4: Bottlenecks in the processes of organization and production

The fact that relatively low attention is payed to stocks management should be emphasized. This type of management is one of the primordial elements on which optimal time and cost management and activity rhythm, from the research activity and launch of new goods and services, relies.

Financial indicators that provide information regarding time usage

A second major theme which was analyzed regards the attention given to specific financial indicators that are traditionally used for an economical-financial analysis, but which contain extremely interesting elements about time usage within business organizations. From the perspective of time, these financial indicators (Table 3) provide the bases for decisions on strict time management. Thus the question concentrates on identifying the degree to which these indicators (Table 3) provide more information regarding temporal influences on an organization.

The answer analysis highlights the following issues.

Which of the following indicators provides more information regarding temporal influences on an organization's capitals?

Table 3: Indicators that provide information regarding temporal influences on the organization's assets

In percent (%)	F.R.	1	2	3	4	5
The average debt collection period		6,1	3	24,2	21,2	45,5
Inventory turnover speed	6,1	3,0	6,1	6,1	48,5	30,3
The rotation speed of total assets	3,0	3,0	6,1	21,2	48,5	18,2
The speed of rotation of assets	6,1	3,0	12,1	30,3	39,4	9,1
Employee productivity	3,0		3,0	12,1	51,5	30,3

Time usage efficiency reflects in the financial panels of the organization. A series of financial indicators, that estimate the efficiency with which the firm used its assets, can be calculated based on the financial results of a certain period. They aren't very relevant unless their evolution in time is tracked. Thus the firm can set a basis for making decisions and assessing the efficiency and effectiveness of past activities.

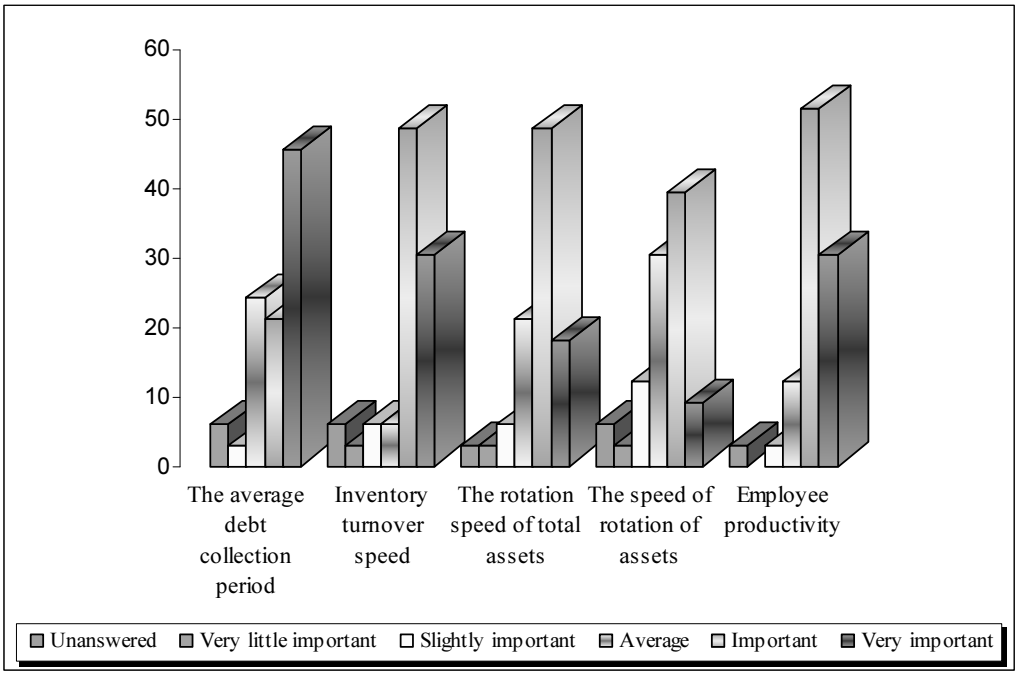

Fig. 5: Financial indicators regarding temporal influences on an organization

Five of the most used indicators which are applied for the economical-financial analysis, that can also provide information on temporal influences on the organization's assets, were selected.

After analyzing the answers to this question (Fig. 5), the best indicator for expressing temporal efficiency turned out to be the employees' productivity. It obtained 81% of the responder's answers. Not far from it is the inventory turnover speed (78,8%), which proves that, yet, managing stocks is an important element for the circumstances for introducing time-based management. Farther from it, but having the same weighting factor (66,7%), are two classic indicators which are often used in the economical analysis: the average debt collection period, that registered the most votes under item 5 an the evaluation scale (45,5%), and the rotation speed of total assets.

Indicators specific to introducing and monitoring time-based management

Some of the performance parameters connected to time, described in the beginning of the paper, are the central point of the last major subject to be debated herein. These are indicators with a non-financial tint, which provide an extremely clear view on the temporal performance of a business organization and especially on the performance of processes which target the execution part of some marks. The responders were challenged to choose no more than four of the listed indicators which are specific to introducing and monitoring time-based management (Fig. 6) and which are used more often by the managing team for performance analysis.

Time is a universal trait for any activity and any process type. In agreement with the principles of time-based management, the information regarding time is easier and faster to obtain than information regarding costs. Thus managers must be encourages to switch from cost control,

typical for the classic management accounting system, to an action set typical for time management, that leads to a customer oriented organization which is more perceptive to market requirements.

Although it cannot be said that the surveyed organizations apply a coherent time-based management, the presentation of a panel of indicators specific to monitoring activities with regard to the temporal influences and creating a hierarchy of their usage was attempted.

Thus it can be noticed, according to the chart (Fig. 6), that the main concern of the surveyed managers is *delivery reliability (the percentage of orders delivered on time)* – 63,6% and *safety in compliance with planned delivery dates* – 54,5%, both focusing on the organization – customer relationship and the customer's satisfaction degree related to the delivery time planned when the order was launched. Two temporal indicators regarding the speed of the business process are also of high importance: the time required to honor an order (57,6%) and the cycle time (45,5%).

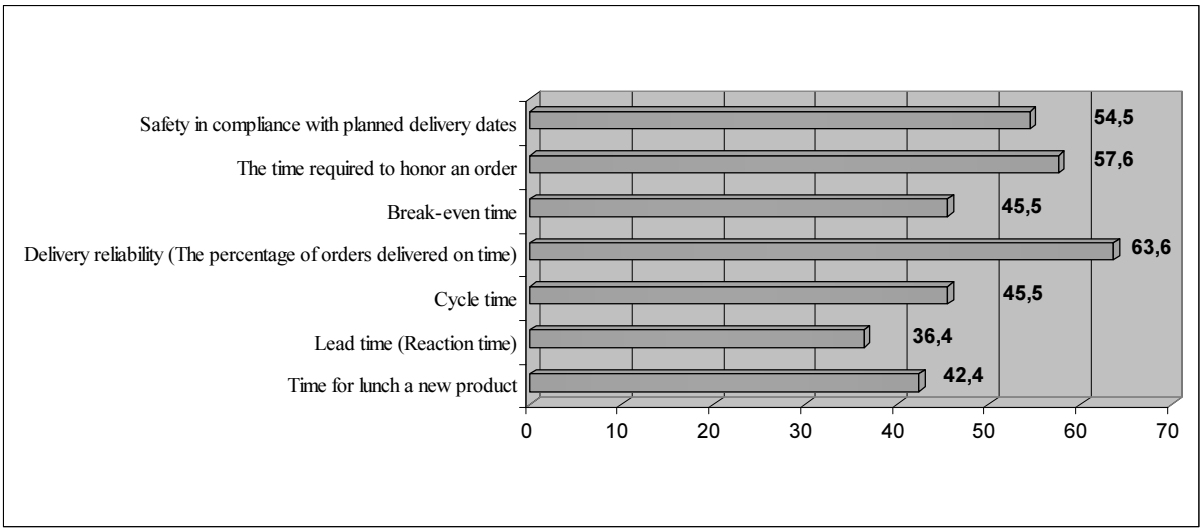

Fig. 6: Indicators specific to introducing and monitoring time-based management

An interesting fact is that two indicators regarding introduction of new goods or services on the market and evaluating the moment in which these start to register income, are quite significant: time for launching a new product (42,4%) and the break-even time (45,5%) – this proves that the innovation and research activity is not completely neglected, although the information obtained from answers to several questions connected to this activity are somewhat contradictory.

Discussion and conclusions

This study identifies a set of performance indicators which can be used for time-based management in business organizations. In this process, the steps necessary for building a system to monitor the business processes are determined first. In this regard, the critical success factors which refer to generating value for the consumers from the used resources and capabilities and the requirements of the company's main interest holders are identified. Thus among the main success factors are: the time necessary for a production cycle, the information and management system for knowledge, innovation, know-how, adaptation to customer requests and efficiency of the activities.

As a result of the questionnaire analysis, the most important success factors are adapting to customer requests and the efficiency of the activities. The time period of a production cycle is also highly important– 61,7%. This proves that the responder's perceive time as a possible factor

for achieving performances. On this basis an indicator system for monitoring the temporal and global performances could be built.

On these grounds, three indicators for evaluating time usage within an organization were proposed: break-even time – BET, time required to honor an order and safety in compliance with planned delivery dates.

At the same time, the main factors which influence time management were identified and management solutions for their coordination were described. The managers must identify and understand *time inducers*, so that they can improve the organization's time management. These *time inducers are any factor that can intervene and determine changes in the time period which is necessary for a process.*

Among the time inducers proposed within the questionnaires (Tab. 2), the following are the most important for management: bottlenecks (narrow areas) in the processes of organization, production and delivery, weakly structured organization processes and quality issues.

The answers received from the management teams regarding five essential time indicators (Tab. 3) were analyzed. This was due to the fact that the economical-financial analysis offers a classic overview of organizational performances and an indicator set, from which the most important regarding time, can be selected. The indicator that, according to the responders (81%), best describes time efficiency is the employees productivity.

One of the important indicators which reflects a relatively low level of stocks (with major influences on the cycle time – Little's Law) is the inventory turnover speed, which registered a high percentage (78,8%). This proves that stock management is an important element for the efficiency of the analyzed organizations (Anupindi R,, Chopra S., et al., 1999, pp. 41 – 44).

Although it cannot be said that the surveyed organizations apply real-time-based management, the presentation of a panel of indicators specific to monitoring activities with regard to the temporal influences, most of which were described in paragraph 2.1, and creating a hierarchy of their usage was attempted. Surprising elements emerge from analyzing the answers. The main concern for the managers is *delivery reliability (the percentage of orders delivered on time)* – 54,5%, both indicators are essential to time-based management. This proves that the managerial intuition works and these essential indicators analyses are based on intuition. The second version is: market pressure and the need to maintain traditional clients force the companies to seriously consider these indicators, which in the end are an extremely useful measure for evaluating customer's satisfaction levels. Therefore, market and time pressure put their mark on business organizations which have to rethink and redesign their performance measurement systems in order to consider the process elements which can lead to global value increase for the business.

In conclusion, the main novelty aspects of this paper are connected to identifying *indicators which build a time-based measurement system for the organizational performances*, which is made up of relatively new indicators combined with the classic indicators of the economical analysis of the organization. This process was accomplished by taking into account two managerial syllogisms based on time, a more established one – quality, cost, delivery time and a newer one – time, value, performance. Thus time becomes the most important element for organizational performance systems and the performance viewed through the „temporal lens" (Ancona D., et al., 2001) focuses on an indicator system specific to business processes, whereby specific success factors are determined.

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ASPECTS REGARDING THE USE OF MARKETING RESEARCH AS A SUPPORT FOR THE INVESTMENT DECISIONS

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Abstract

Purpose *- This article could represent a pleading supporting the special importance of the marketing research for substantiating certain feasible decisions using as a support the computer software and the statistical analyses.*
Methodology/approach *- The goal of this research objectives has been that of obtaining certain information regarding the opportunity of an investment objective. Within the research, the survey method has been used, while the applied instrument has been the omnibus questionnaire. The descriptive research performed on a sample of 401 individuals in the city is random, the method used being the multistage one, thus representative.*
Findings *- By means of applying this marketing research, we aimed at revealing the most important aspects that become a support for the decision-makers who are interested in this investment objective.*
Practical implications *- As a support of the research, certain statistical analyses have been carried out, with the help of the SPSS upon the data obtained as a result of the primary random-type selective marketing research. One of the most important analyses performed in SPSS is the cluster analysis.*
Originality/value *- The novelty of this research consists of revealing the particularities of marketing decision substantiating within certain organizations, based on performing a marketing research carried out among individuals*
Key words: *Marketing research, decision, investment, statistical analyses.*

Applied research used as a decisional support for an investment objective

The goal of this research objectives has been that of obtaining certain information regarding the opportunity of an investment objective. By means of formulating the objectives, the operational level, the necessary information for the decisional alternative sustantiation are specified.

Within the research, the survey method has been used, while the applied instrument has been the omnibus questionnaire, which has been pretested on a small group of 15 respondents, who haven't been included later on in the sample and thus we were able to operate the highlighted modifications, which gave us the possibility to draw up the final questionnaire.

The descriptive research performed on a sample of 401 individuals in the city is random, the method used being the multistage one, thus representative. This sample has been created by means of drawing lots, at Cluj-Napoca neighborhood and street level, according to a database containing the polling stations and the assigned streets; as a practical methodology for the selection of the targeted homes, we have establish a set of rules, on the streets where people live in houses, we have chosen, for instance, the house number 4 and then we have continued with the 3 step etc.; on the streets where people live in blocks, the second block on the street has been chosen, the first floor and the odd number apartment; then the next apartment, if the investigation is not successful and then we passed on to the next block, first floor a.s.o.; the adult

person has been investigated, among the available ones in the respective residence, who had his/her date of birth closet to the date of the survey.

For a sample size of approximately 385 subjects, (thus, even more for the 401 subjects investigated in our case), we can extrapolate or extend the results obtained, at the level of the entire targeted population, in the city, with a probability of approximately 95% and a limit error of ±5%.

Thus, we wanted to highlight the necessity of an organization's interest in the marketing research and the role of the marketing decision as far as the investment objective is concerned. By means of applying this marketing research, we aimed at revealing the most important aspects that become a support for the decision-makers who are interested in this investment objective.

As a support of the research, certain statistical analyses have been carried out, with the help of the SPSS upon the data obtained as a result of the primary random-type selective marketing research. One of the most important analyses performed in SPSS is the cluster analysis (Moutinho, 2008, pp.170-221). It is performed depending on the answers of the subjects regarding the sports activities performed at the investment objective. The clustering algorithm is created as follows: subject 106 is grouped with subject 129 at stage 1. Further, to their group, at stage 65, subject 18 joins them, at stage 103, subject 6 joins a.s.o. In the end, all the subjects who are part of the research, will group in a single cluster.

Table 1. Grouping algorithm

	Cluster Combined			Stage Cluster First Appears		Next
Stage	Cluster 1	Cluster 2	Coefficients	Cluster 1	Cluster 2	Stage
1	106	129	.000	0	0	65
2	124	128	.000	0	0	3
…						
64	58	70	3.637	0	50	74
65	18	106	4.045	0	1	103
66	36	44	4.547	54	55	80
…						
102	52	102	60.281	86	7	121
103	6	18	64.445	99	65	118
104	40	65	68.867	92	0	116
…						
130	2	3	423.114	126	129	131
131	1	2	531.393	127	130	0

After analyzing the grouping algorithm, we have decided to divide the respondents in 3 clusters. Their distribution is shown in the following chart.

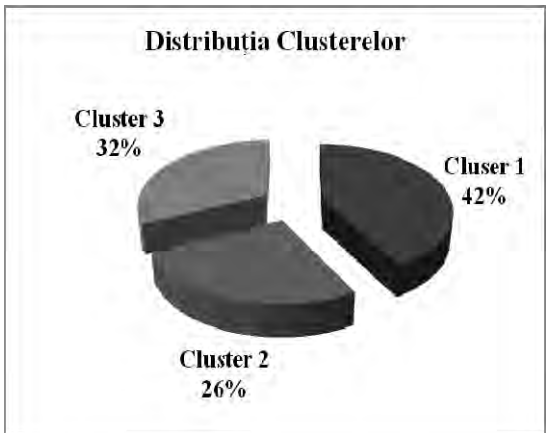

Figure 1. The distribution of the 3 clusters

Based on the respondents' assertions, a profile of the individuals participating in this study has been created. Thereby, with the help of the Cluster Analysis, we have been able to determine 3 Clusters, which have allowed the characterization of these persons. Depending of a few variables, each cluster will be characterized:

A. Cluster characterization depending on the subjects' interest regarding their desire to take part in various sports activities

Table 2. The characteristics of the clusters depending on the subjects' desire to take part in various sports activities

	1	2	3	Total
	Average	Average	Average	Average
atletism	2.32	2.76	2.79	2.58
fitness	2.16	3.76	3.48	2.99
gymnastics	2.07	3.94	1.95	2.52
boxing	2.32	1.44	1.90	1.96
fights	2.46	1.44	1.64	1.94
fencing	2.18	1.91	1.57	1.92
tennis	2.32	3.35	3.71	3.03
bodybuilding	2.32	1.32	2.17	2.02

Table 3. The testing of the statistical significance depending on the various sports activities

	1	2	3
	(A)	(B)	(C)
athletics			
fitness		A	A
gymnastics		A C	
boxing	B		
fights	B C		
fencing	C		
tennis		A	A
bodybuilding	B		B

The individuals included in **cluster 1** distinguish themselves through their desire to take part in "tough" sports activities - boxing, fights, bodybuilding, fencing.

Cluster 2 comprises those persons who show interest in "fine" activities: fitness, gymnastics, tennis, athletics.

Within **cluster 3** we find those persons who prefer activities such as tennis, bodybuilding, fitness, athletics.

All these characteristics belonging to the 3 clusters regarding the desire of the subjects to attend various sports activities can be seen in the following three charts as well.

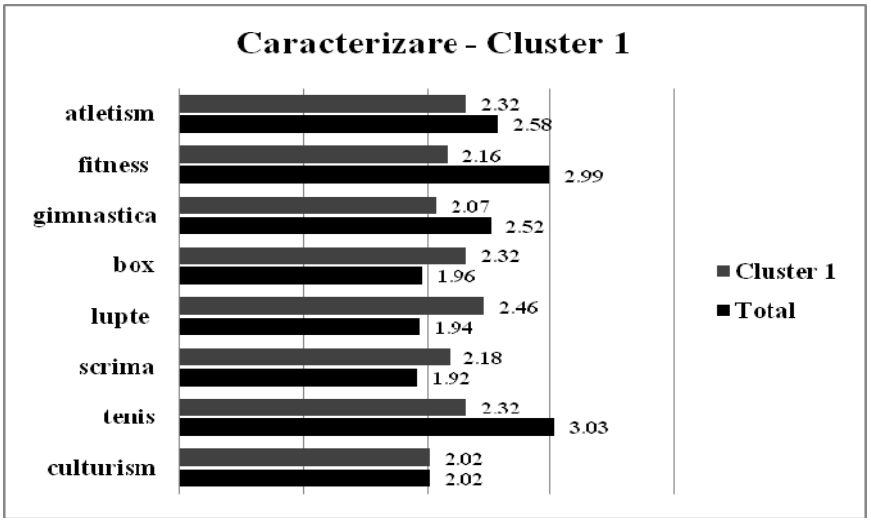

Figure 2. The characteristics of Cluster 1 depending on the respondents' desire to attend various sports activities

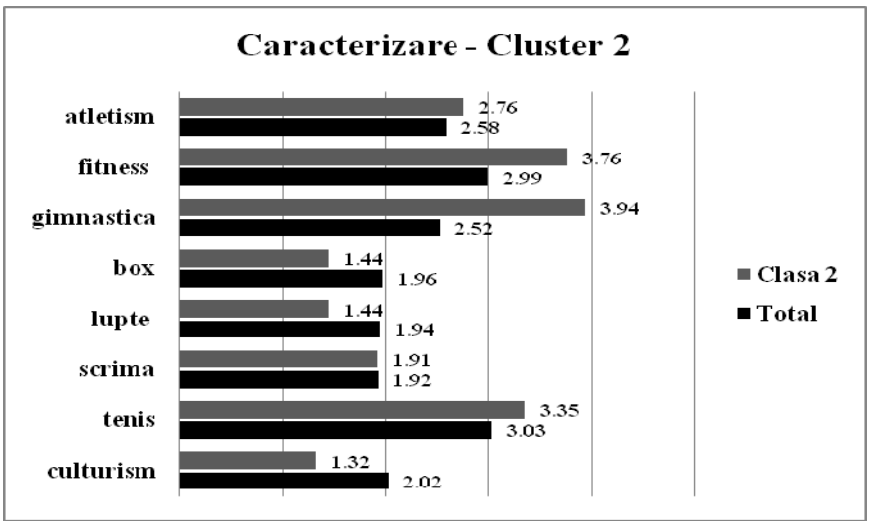

Figure 3. The characteristics of Cluster 2 depending on the respondents' desire to attend various sports activities

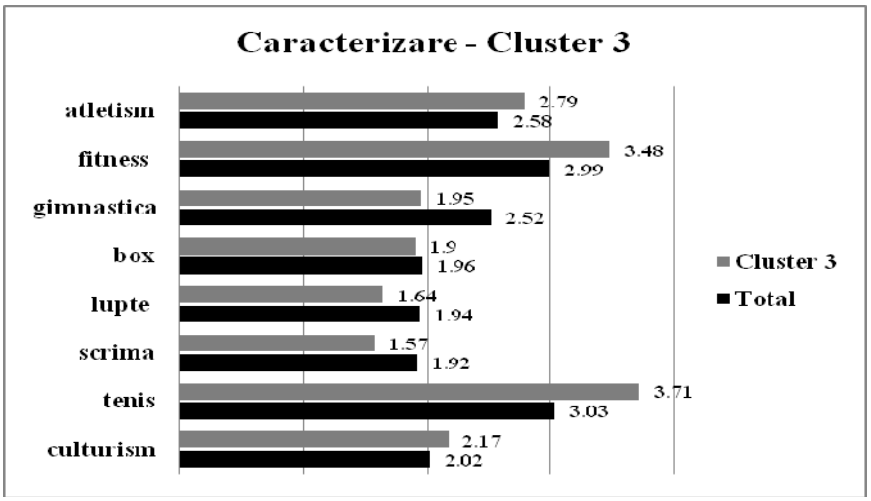

Figure 4. The characteristics of Cluster 3 depending on the respondents' desire to attend various sports activities

B. Cluster characterization depending on a few identification variables:

Table 4. The characteristics of the clusters depending on the identification variables

		1	2	3	Total
		Column N %	Column N %	Column N %	Column N %
Sex	male	72.7%	29.4%	63.4%	58.5%
	female	27.3%	70.6%	36.6%	41.5%
	total	100.0%	100.0%	100.0%	100.0%
Age	under 18	1.8%	2.9%	2.4%	2.3%
	between 18-25	40.0%	38.2%	42.9%	40.5%
	between 25-40	25.5%	41.2%	33.3%	32.1%
	between 40-60	20.0%	17.6%	16.7%	18.3%
	over 60	12.7%	.0%	4.8%	6.9%
	Total	100.0%	100.0%	100.0%	100.0%
Education	elementary school	2.1%	.0%	.0%	.8%
	secondary school	2.1%	.0%	.0%	.8%
	Junior Certificate	.0%	.0%	.0%	.0%
	vocational school	6.4%	3.0%	5.3%	5.1%
	high school	27.7%	15.2%	23.7%	22.9%
	university degree	53.2%	72.7%	65.8%	62.7%
	postgraduate studies	6.4%	9.1%	5.3%	6.8%
	other	2.1%	.0%	.0%	.8%
	Total	100.0%	100.0%	100.0%	100.0%

Table 4. highlights aspects specific to each cluster depending on the identification variables:

Cluster 1: can be characterized as follows: males, over 40 years of age, with a higher percentage in the 60+ age group, high school being the last school they have attended.
Cluster 2: includes females, between 25 and 40 years of age, having university and postgraduate studies.

Custer 3: comprises males, between 18 and 40 years of age, generally with secondary education and university degrees.

These characteristics of each cluster, depending on the identification variables, can be seen in the following charts as well.

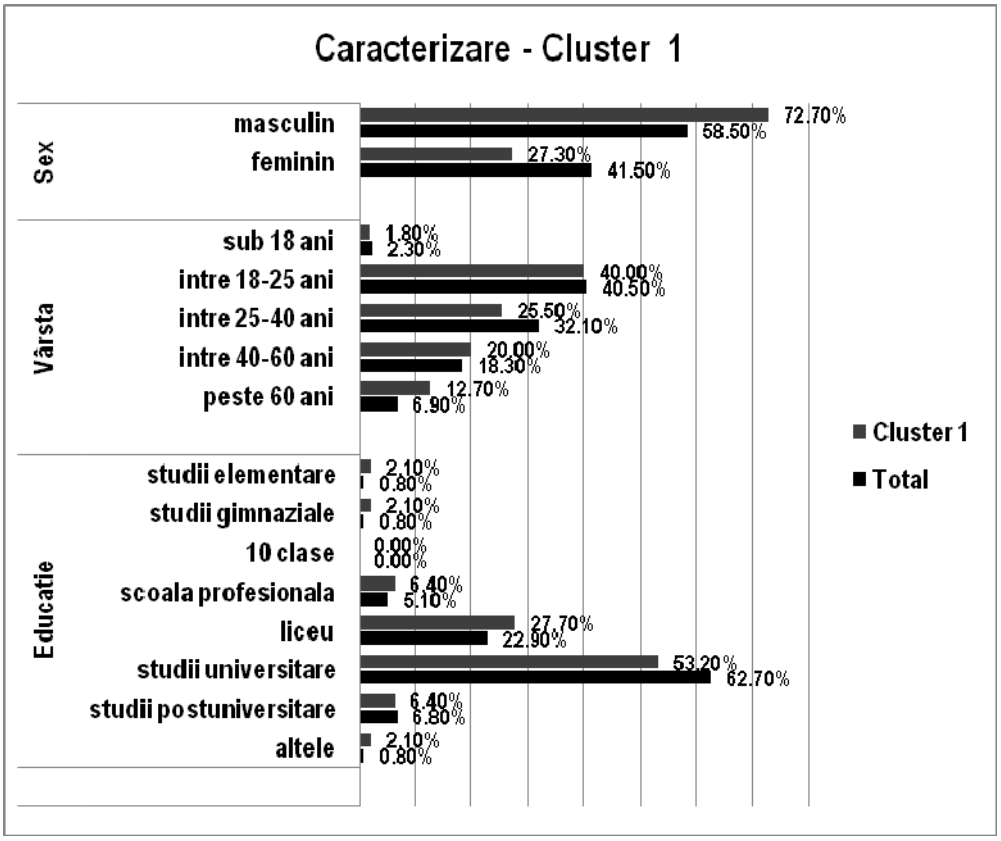

Figure 5. The characteristics of Cluster 1 depending on the identification variables

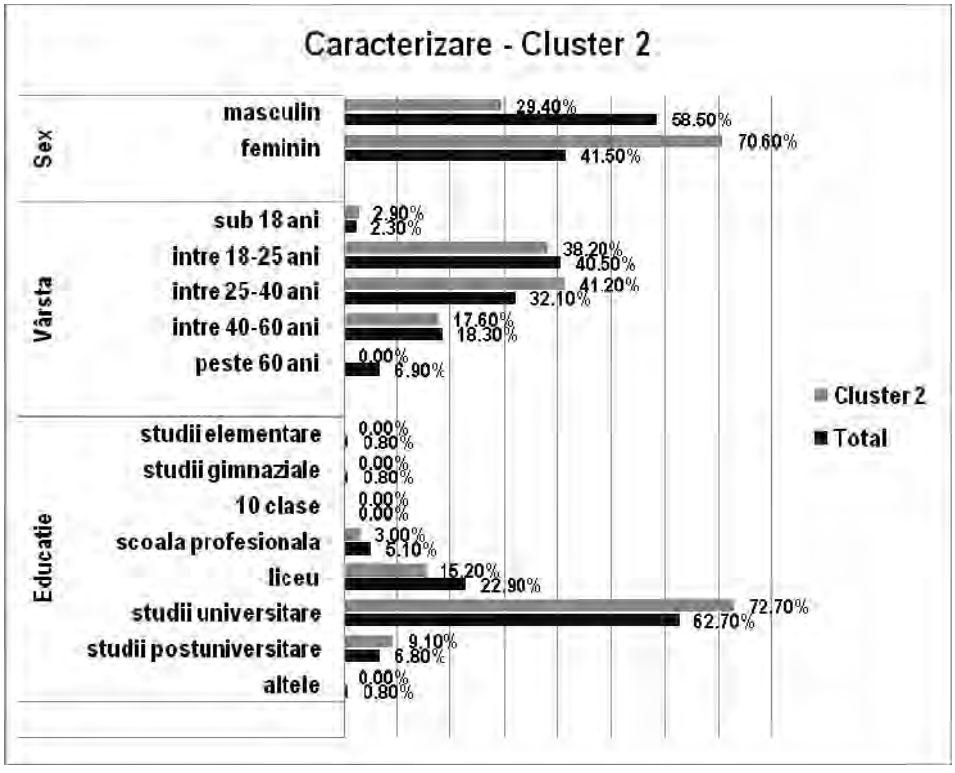

Figure 6. The characteristics of Cluster 2 depending on the identification variables

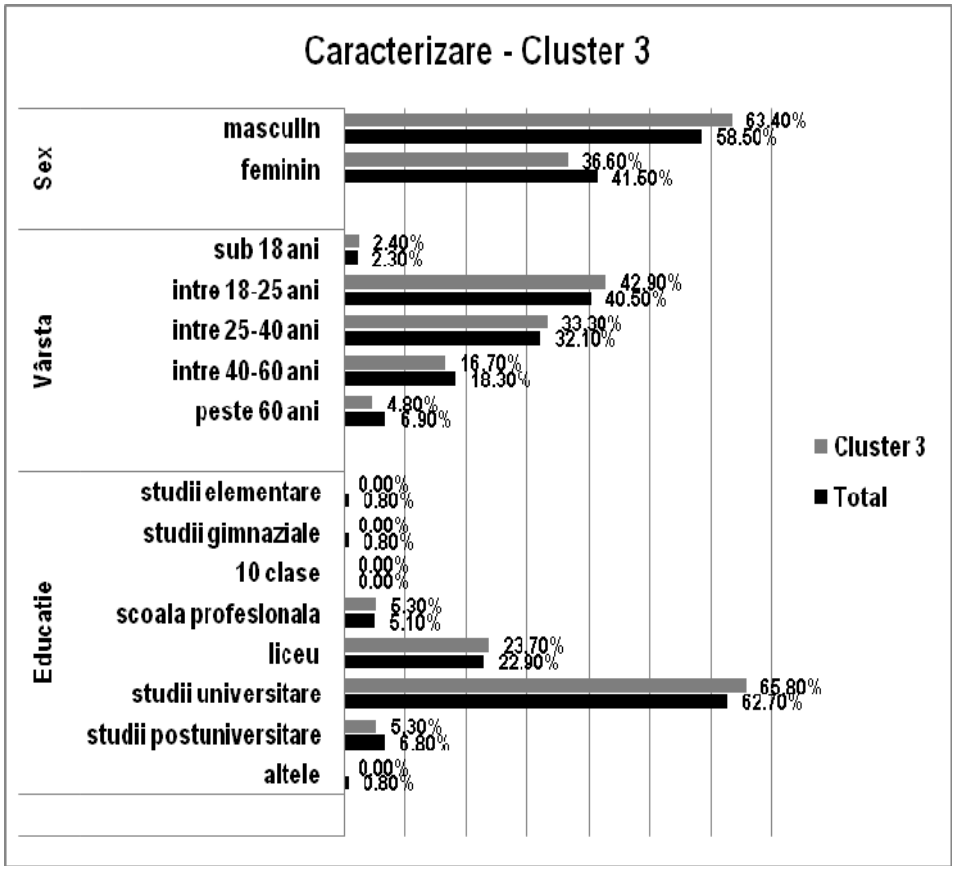

Figure 7. The characteristics of Cluster 3 depending in the identification variables

C. Depending on how much the subjects think that building the investment objective is advisable and their opinion regarding the location of the investment objective

Table 5. The characteristics of the clusters depending on how much the subjects think that building the investment objective is advisable and their opinion regarding the location of the investment objective

		1	2	3	Total
		Column N %	Column N %	Column N %	Column N %
I2. Do you think that the building the new objective in Cluj-Napoca is advisable?	yes	78.6%	76.5%	100.0%	84.7%
	I don't know	7.1%	11.8%	.0%	6.1%
	I'm not interested	10.7%	8.8%	.0%	6.9%
	no	3.6%	2.9%	.0%	2.3%
	Total	100.0%	100.0%	100.0%	100.0%
I3. Where should the new investment objective be built?	on the old location	77.8%	71.0%	87.8%	79.4%
	another part of the city	1.9%	3.2%	2.4%	2.4%
	outside the city	9.3%	22.6%	9.8%	12.7%
	I don't know	7.4%	3.2%	.0%	4.0%
	I'm not interested	1.9%	.0%	.0%	.8%
	other opinions	1.9%	.0%	.0%	.8%
	Total	100.0%	100.0%	100.0%	100.0%

Due to the fact that the respondents of **cluster 1** do not consider advisable or are not interested in the building of investment objective A, they cannot have an opinion regarding the location of such investment objective.

Cluster 2 comprises those people who consider that the building of the investment objective is not advisable. As for the location of the objective, those who think that the building of the objective is advisable, they want its location to be either in another part of the city or outside the city.

Cluster 3 is characterized by those subjects who think that building the investment objective on its old location is 100% advisable.

D. Cluster characterization depending on the types of concerts the subjects prefer and how much are they willing to pay for a concert ticket

Table 6. The characteristics of the clusters depending in the desire of the subjects to attend various types of shows

		1	2	3	Total
		Column N %	Column N %	Column N %	Column N %
$I10	Rock music concert	42.0%	33.3%	39.0%	38.7%
	House music concert	30.0%	15.2%	26.8%	25.0%
	Pop music concert	32.0%	66.7%	39.0%	43.5%
	Electronic music concert	.0%	15.2%	14.6%	8.9%
	Traditional music concert	14.0%	36.4%	22.0%	22.6%
	Other options	14.0%	6.1%	14.6%	12.1%
	Total	100.0%	100.0%	100.0%	100.0%

Table 7. The characteristics of the clusters regarding the price of the ticket

		1	2	3	Total
		Column N %	Column N %	Column N %	Column N %
I11. How much are you willing to pay for a ticket to such a concert?	less than 10 lei	18.4%	9.4%	12.5%	14.0%
	10-30 lei	36.7%	40.6%	40.0%	38.8%
	30-50 lei	28.6%	31.3%	25.0%	28.1%
	50-100 lei	12.2%	6.3%	17.5%	12.4%
	100-150 lei	4.1%	12.5%	.0%	5.0%
	150-200 lei	.0%	.0%	5.0%	1.7%
	more than 200 lei	.0%	.0%	.0%	.0%
	Total	100.0%	100.0%	100.0%	100.0%

Cluster 1 comprises those respondents who want to attend rock shows and House shows as well, being willing to pay up to 10 lei for the ticket or between 30-50 lei, depending on the type of concert.

In **cluster 2** we find those people who prefer pop music, electronic music and traditional music concerts. Depending on the type of show, the subjects of this class are willing to pay between 10-50 lei or between 100-150 lei for a ticket.

In the structure of **cluster 3** are included those persons who want to attend concerts, less pop music and traditional music concerts and are willing to pay either between 50-100 lei, or between 150-200 lei, depending on the show.

E. Depending on the interest shown by the subjects in attending not only the football games, but also the athletics competitions organized at the investment objective

Tab. 8. The characteristics of the clusters depending on the interest shown by the subjects in attending both the football games and the athletics competitions organized at the investment objective

		1	2	3	Total
		Column N %	Column N %	Column N %	Column N %
I4. Would you be interested in attending the football games that are to take place at the investment objective?	certainly yes	26.8%	17.6%	57.1%	34.1%
	probably yes	30.4%	35.3%	26.2%	30.3%
	I don't know	10.7%	5.9%	.0%	6.1%
	probably no	7.1%	29.4%	4.8%	12.1%
	Certainly no	25.0%	11.8%	11.9%	17.4%
	Total	100.0%	100.0%	100.0%	100.0%
I6. Would you be interested in attending the athletics competitions organized at the investment objective?	certainly yes	30.9%	30.3%	40.5%	33.8%
	probably yes	18.2%	45.5%	33.3%	30.0%
	I don't know	20.0%	12.1%	14.3%	16.2%
	probably no	10.9%	9.1%	2.4%	7.7%
	certainly no	20.0%	3.0%	9.5%	12.3%
	Total	100.0%	100.0%	100.0%	100.0%

Cluster 1 comprises those subjects who don't want or don't know exactly if they will attend the football games or the athletics competitions organized at the investment objective.

The respondents included in **cluster 2** are characterized by the fact that some of them will probably attend the football games or the athletics competitions, depending on the type of activity performed at the investment objective.

Cluster 3 includes those persons who will certainly attend both activities, not only the athletics competitions, but the football games as well, if these events are organized at the investment objective.

The conclusions of the statistical analyses

The profile of the cluster 1 subjects comprises people over 40 years of age, with a higher percentage in the 60 + age group, high school being the last school they have graduated. They want to attend "tough" sports competitions - boxing, fights, bodybuilding, fencing, but they do not want or do not know exactly if they will attend the football games or the athletics competitions organized at the investment objective. The respondents of cluster 1 do not think that building the investment objective is advisable or are not interested in the matter and they don't have an opinion regarding the location of such investment objective. From the point of view of their willingness to attend certain shows, they are more attracted to the rock music and house music concerts, being willing to pay for the ticket up to 10 lei or between 30-50 lei, depending on the type of concert.

Cluster 2 represents females of 25-40 years of age, with university and postgraduate education, who are interested in "fine" activities: fitness, gymnastics, tennis and athletics. They will probably attend the football games or the athletics competitions, depending on the type of activity

organized at the investment objective. They are persons who are attracted by the pop, electronic and traditional music concerts. Depending on the show type, the subjects of this class are willing to pay between 10-50 lei or between 100-150 lei for a ticket.

The last Cluster is characterized by those respondents who prefer activities such as tennis, bodybuilding, fitness, athletics; they are males, their age ranging between 18-25 years, some of them having secondary education and some of them a university degree. They think that building the objective is advisable and are persons who want to attend concerts, less pop or traditional music concerts and the amount of money they are willing to pay for the ticket ranges between 50-100 lei and between 150-200 lei, depending on the concert.

These information have represented a support for the cost-benefit analysis regarding the investment objective and is a support for the decision-makers who manage this objective.

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A NEW MODEL FOR PRICE FLUCTUATION IN A SINGLE COMMODITY MARKET USING MATHEMATICAL THEORY

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Abstract

Purpose *– The private sector underlies any country's economy. A good functioning of the private system brings benefits both to the national economy and to the companies itself.*
Methodology/approach *- Mathematical models are at the foundation of many of the economical theories. Price fluctuation and their evolution in a single commodity market is studied by applying mathematical models.*
Findings *– This paper main results relate to the study of concrete models, behavior, existence and uniqueness of the solutions of those mathematical models that simulate the price fluctuations.*
Research limitations/implications *– External factors that influence the price and the fluctuation changes that occur after, have been studied during time by different experts. The research problem proposed is the study of the price fluctuation in a single commodity market.*
Practical implications *– In this dynamic global market it is important to be competitive and to adapt to the increasing demands of the market. The price fluctuation study and understanding based on economical-mathematical models stand as a useful management instrument to predict market evolution and how private business is profitable during crisis and in periods of economical growth.*
Originality/value *– We use the theory of Picard operators for a functional Volterra-Hammerstein integral equation in two independent variables. The main contribution is a new mathematical model for price fluctuation in a single commodity market.*
Key words: *price fluctuations, theory of prices, single commodity market.*

1. Introduction

Specific to the market economy is the positioning of the company at the forefront of economic activity because it starts from the idea that if companies are profitable, everyone involved will benefit from that.

By the cost of production and the price at which the economic goods are sold depends the economic power.

The price appeared together with the production of economic goods and it is the expression of monetary value for exchanging economic goods or services.

Fluctuation of prices affect the purchasing power of the currency. Exchanges taking place by revaluing the currency (appreciation or depreciation) determine price variations.

Classical theory says that the price has its support in the economic value of economic goods traded, value which is determined by production factors and their value.

The subjective theory of pricing says that price reflects the economic value determined by the marginal utility and scarcity of the product.

While the contemporary theory, that belongs mainly to the Cambridge school, is based on the assumption that the two previous theories are not opposed, but are only partial solutions, and the price is determined by factors of production and consumption of marginal utility and scarcity of the product.

Monetary fluctuations are mainly due to inflation, which is manifested by a continued rise in prices, resulting in decreased purchasing power. There are also situations in which monetary fluctuations are a result of anti-inflationary measures that increase the purchasing power.

Changing in demand and supply of individual goods, leads to variations of prices. Modifying the prices of individual economic goods are normal in a market economy even when prices are stable overall.

There are a variety of definitions of stability, but the most common being the one of the American economist Alan Blinder, saying that “price stability is when the population ceases to speak and be worried about inflation”.

Price stability occurs when prices remain stable over time, meaning neither increase nor decrease. The prices stability allows us to determine variations of economic goods relative to other economic goods. It has a positive role in raising overall living human standards.

In the theory of price fluctuation many models lead to functional-integral equations with deviating argument (Lungu, N., Ciplea, S.A.,2012, Mureşan, A.S.,1993, Rus, A.I., Iancu, C.,2000). In this paper we consider the Ulam-Hyers-Rassias stability for a functional Volterra-Hammerstein integral equation, model for price fluctuations.

J.B. Belair and M.C. Mackey (1989) have studied the following model

$$\begin{cases} x'(t) = f(D(x_d), S(x_s))x(t), & t \geq 0 \\ x(t) = \varphi(t), & t \in [-\tau, 0] \end{cases} \tag{1.1}$$

where $D(\cdot)$ is the demand function, $S(\cdot)$ is the supply function, $x(t)$ is the current market price, x_d is the demand price, x_s is the supply price. They compared this model with J.B.S. Haldane’s model

$$p'(t) = -Ap - B\int_0^{\infty} g(x)p(t-x)dx \tag{1.2}$$

where p is the deviation of commodity price of equilibrium value. The present paper is motivated by this model for a unbounded domain.

Here we consider the following model:

$$u(x) = g(x, h(u)(x)) + \int_0^x f_1(x, s, u(s))ds + \int_0^{\infty} f_2(x, s, u(s))ds, \quad x \in [0, a), \tag{1.3}$$

in order to study the dynamics of price, production and consumer for some particular commodity governed by the equation (1.3). The second part of equation (1.3) represent demand function and the supply function. The function u(x) is the price (demand) established by the dynamics of consumption and the price (supply) established on the dynamics of supply.

2. Existence and uniqueness of solution

In what follows we consider the integral equation

$$u(x) = g(x,h(u)(x)) + \int_0^x f_1(x,s,u(s))ds + \int_0^\infty f_2(x,s,u(s))ds \tag{2.1}$$

and $(\mathbf{B},|\cdot|)$ a (real or complex) Banach space, $f_1 \in C([0,a)^2 \times \mathbf{B},\mathbf{B})$, $f_2 \in C([0,a)^2 \times \mathbf{B},\mathbf{B})$, $g \in C([0,a) \times \mathbf{B},\mathbf{B})$, $a \in (0,\infty]$. Here exists the positive and increasing function $\varphi \in C([0,a),\mathbf{R}_+)$.

Let $\tau > 0$ and

$$X_\tau := \{u \in C(\mathbf{R}_+,\mathbf{B}) \mid \exists M(u) > 0 : |u(x)|e^{-\tau x} \le M(u)\}. \tag{2.2}$$

On X_τ we consider Bielecki's norm

$$\|u\|_\tau := \sup_{x \in \mathbf{R}_+}(|u(x)|e^{-\tau x}). \tag{2.3}$$

In this case $(X_\tau,\|u\|_\tau)$ is a Banach space.

Relative to (2.1), we consider:

(a_1) $h : X_\tau \to X_\tau$ and exists $\ell_h > 0$ such that

$$|h(u)(x) - h(v)(x)| \le \ell_h \|u - v\| e^{\tau x};$$

(a_2) $\exists \ell_g > 0 : \quad |g(x,e_1) - g(x,e_2)| \le \ell_g |e_1 - e_2|, \forall\, e_1,e_2 \in \mathbf{B}$;

(a_3) $\exists \ell_{f_1}(x,s) > 0 : \quad |f_1(x,e_3) - f_1(x,e_4)| \le \ell_{f_1}(x,s)|e_3 - e_4|, \forall\, x \in \mathbf{R}_+, \forall\, e_3,e_4 \in \mathbf{B}$;

(a_4) $\exists \ell_{f_2}(x,s) > 0 : \quad |f_2(x,e_5) - f_2(x,e_6)| \le \ell_{f_2}(x,s)|e_5 - e_5|, \forall\, x \in \mathbf{R}_+, \forall\, e_5,e_6 \in \mathbf{B}$;

(a_5) $\exists \ell_1,\ell_2 > 0$ such that

$$\int_0^x \ell_{f_1}(x,s)e^{\tau s}ds < \ell_1 e^{\tau x}, \quad \int_0^\infty \ell_{f_2}(x,s)e^{\tau s}ds < \ell_2 e^{\tau x}, \forall\, x \in \mathbf{R}_+;$$

(a_6) $\ell_g \ell_h + \ell_1 + \ell_2 < 1$;

(a_7) $\int_0^\infty \ell_{f_2}(x,s)|u(s) - v(s)|ds \le \int_0^x \ell_{f_2}(x,s)|u(s) - v(s)|ds$;

(a_8) $\exists m > 0$ such that $\int_0^x [\ell_{f_1}(x,s) + \ell_{f_2}(x,s)]ds \le m$.

Theorem 2.1. Under the condition (a_1)-(a_6) the equation (2.1) has in X_τ a unique solution $u^*(x)$.

Proof. In what follows we consider the operator A by second part of (2.1):

$$A(u)(x) = g(x,h(u)(x)) + \int_0^x f_1(x,s,u(s))ds + \int_0^\infty f_2(x,s,u(s))ds \tag{2.4}$$

We have that the operator A is a contraction in X_τ with respect to Bielecki's norm (2.3).

Indeed, for $u,v \in X_\tau$ from (a_1)-(a_6) it follows

$$|A(u)(x)-A(v)(x)| \le |g(x,h(u)(x))-g(x,h(v)(x))| + \int_0^x |f_1(x,s,u(s))-f_1(x,s,v(s))|\,ds$$

$$+\int_0^\infty |f_2(x,s,u(s))-f_2(x,s,v(s))|\,ds \le \ell_g |h(u)(x)-h(v)(x)| + \int_0^x \ell_{f_1}(x,s)|u(s)-v(s)|\,ds$$

$$+\int_0^\infty \ell_{f_2}(x,s)|u(s)-v(s)|\,ds \le \ell_g\ell_h \|u-v\| e^{\tau x} + \int_0^x \ell_{f_1}(x,s)\|u(s)-v(s)\| e^{\tau s}ds$$

$$+\int_0^\infty \ell_{f_2}(x,s)\|u(s)-v(s)\| e^{\tau s}ds \le \ell_g\ell_h\|u-v\| + \ell_1\|u-v\| e^{\tau x} + \ell_2\|u-v\| e^{\tau x}.$$

Then,

$$\|A(u)(x)-A(v)(x)\| \le (\ell_g\ell_h + \ell_1 + \ell_2)\|u-v\|$$

for all $u,v \in X_\tau$. From (a_6) result that A is a contraction. Hence A is a c-Picard operator, with

$$c = \frac{1}{1-\ell_g\ell_h-\ell_1-\ell_2}.$$

Then the equation (2.1) has a unique solution in X_τ.

3. Ulam-Hyers-Rassias stability of equation (2.1)

In what follows we consider the equation (2.1) and the inequality

$$\left|u(x)-g(x,h(u)(x))-\int_0^x f_1(x,s,u(s))ds-\int_0^\infty f_2(x,s,u(s))ds\right| \le \varphi(x) \qquad (3.1)$$

Theorem 3.1. In the conditions (a_1)-(a_8) and in plus

(i) there exists $N>0$ such that

$$|h(u)-h(v)| \le N|u-v|;$$

(ii) $\ell_g \cdot N < 1$.

Then, if u is a solution of the inequality (3.1) and u^* is the unique solution of (2.1) for all $x,s \in [0,a]$, we have

$$|u(x)-u^*(x)| \le C_{ghf_1f_2}\cdot\varphi(x)$$

where

$$C_{ghf_1f_2} = \frac{1}{1-N\ell_g}\exp\left(\frac{m}{1-N\ell_g}\right) \tag{3.2}$$

i.e., the equation (2.1) is Ulam-Hyers stable.

Proof. We have

$$|u(x)-u^*(x)| \le \left|u(x)-g(x,h(u)(x))-\int_0^x f_1(x,s,u(s))ds-\int_0^\infty f_2(x,s,u(s))ds\right|$$

$$+|g(x,h(u)(x))-g(x,h(u^*(x))|+\int_0^x |f_1(x,s,u(s))-f_1(x,s,u^*(s))|\,ds$$

$$+\int_0^\infty |f_2(x,s,u(s))-f_2(x,s,u^*(s))|\,ds$$

$$\le \varphi(x)+\ell_g|h(u)(x)-h(u^*)(x)|+\int_0^x \ell_{f_1}(x,s)|u(s)-u^*(s)|\,ds+\int_0^\infty \ell_{f_2}(x,s)|u(s)-u^*(s)|\,ds.$$

From the conditions (i), (ii) and (a_8), we have:

$$|u(x)-u^*(x)| \le \varphi(x)+\ell_g\cdot N|u(x)-u^*(x)|+\int_0^x \ell_{f_1}(x,s)|u(s)-u^*(s)ds+\int_0^x \ell_{f_2}(x,s)|u(s)-u^*(s)|\,ds$$

Then

$$(1-\ell_g\cdot N)|u(x)-u^*(x)| \le \varphi(x)+\int_0^x (\ell_{f_1}(x,s)+\ell_{f_2}(x,s))|u(s)-u^*(s)|\,ds$$

and we have

$$|u(x)-u^*(x)| \le \frac{1}{1-\ell_g\cdot N}\varphi(x)+\frac{1}{1-\ell_g\cdot N}\int_0^x (\ell_{f_1}(x,s)+\ell_{f_2}(x,s))|u(s)-u^*(s)|\,ds.$$

From Gronwall lemma it follows that

$$|u(x)-u^*(x)| \le \frac{1}{1-\ell_g\cdot N}\exp\left(\frac{1}{1-\ell_g\cdot N}\int_0^x (\ell_{f_1}(x,s)+\ell_{f_2}(x,s))ds\right)\varphi(x), \tag{3.3}$$

and

$$|u(x)-u^*(x)| \le \frac{1}{1-\ell_g\cdot N}\exp\left(\frac{m}{1-\ell_g\cdot N}\right)\varphi(x) \tag{3.4}$$

$$|u(x)-u^*(x)| \le C_{ghf_1f_2}\cdot\varphi(x) \tag{3.5}$$

where

$$C_{ghf_1f_2} = \frac{1}{1-\ell_g\cdot N}\exp\left(\frac{m}{1-\ell_g\cdot N}\right)$$

and the equation (2.1) is Ulam-Hyers stable.

Conclusions

The market is considered as the place where we can find economic information, which stands at the basis of decisions taken by companies. The market works as a regulator of the commercial activity, ensuring the forming of prices based on supply and demand.

Companies set their own strategies seeking to defend their product from competition, to increase their conversion rate in getting new customers and to gain more market share.

Price equilibrium is achieved when there is a balance between the offer - the quantity of products requested – and respectively the request which is met when there is a compatibility among sellers and buyers.

In this paper we studied a new model for the price fluctuation in a single commodity market that proves useful for the product price variation analysis. In this case we have used the theory of Picard operators for a fluctuation Volterra-Hammerstein integral equation in two independent variables. We have considered only Ulam-Hyers Rasiass stability for this equation shaping the market price.

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New challenges in a time of crisis

ANALYSIS OF CUSTOMER LOYALTY INFLUENCING FACTORS

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Abstract

Purpose *– In the past few years, the term "Customer loyalty" has become a real trend in almost all business areas in which the client has an important role: banking, retail, telecommunications, manufacturing, automotive, insurance et al. Every business understands that the more customers attracts and the more existing customers retains financial results can improve, and the organization continues its work. In this context, identifying the factors that contribute to defining customer loyalty is very important. The present paper identifies the variables that contribute in defining customer loyalty within the banking system.*
Methodology/approach *– A survey is used to identify the variables. These questionnaires were applied to bank customers in Romania. The survey questions refers to a number of variables related to loyalty from which the respondents chose one variant response.*
Findings *– A number of variables were identified and to each of them a degree of importance depending on customer responses was granted.*
Research limitations/implications *– The present research was limited to customers residing in Romania and to banks that develop local activities.*
Practical implications *–The questionnaires were applied to banking clients in Romania. Also there were variables identified that define loyalty internationally.*
Originality/value *–The research is an original one, being adapted to present needs and desires of customers in relation to current technological developments.*
Key words: *customer loyalty, customer attitudes, bank system.*

Introduction

The banking system is defined as a group of institutions, banking and financial relations, regulations, infrastructure, techniques that interact in a complex way, in order to mobilize as deposits, to distribute in the form of loans, financial funds and to provide facilities including payment systems for different businesses, financial or non-financial, including individuals National Bank of Romania (NBR 2014). In another vision, this structural banking system is a network of institutions providing financial services in a given environment (Georg, 2013). Another definition of the banking system include specialized institutions whose main object of activity is the management, organization and realization of the loans, and the ultimate goal is to obtain profit (Ryan O'Toole, & McCann, 2014).

Today the banking industry is characterized by increased global competition, rapid progress in the liberalization of the banking market and financial-economic instability. As a result, banks try to retain customers and attract new customers to maintain their competitive market position. Another aim of banks is to get out of this economic instability that has been installed since 2008. The paper examines the various factors and dimensions that influence customer loyalty in the banking industry. Loyalty is a dimension that the client develops from other dimensions and variables. The determination of these dimensions and variables is very important for banks because on their basis new customer loyalty programs are implemented. Existing customers are maintained and new customers are attracted.

Customer loyalty is supported by reliable conduct, favourable to the organization. The loyal client presents a low desire to change and intends to always choose the same product, same service or the same unit (Siddiqi, 2011). Defining loyalty contributes to the development of competitive loyalty programs that help banks to emerge from the current financial and economic crisis.

By analysing the literature, it appears that, in particular, service quality is a liaison between the bank and the customer. This bridge consists of internal organizational policies and banking practices that lead to added value to customers and their answer through loyalty (Titko, Lace, 2010); (Siddiqi, 2011) and (Padmavathy, Balaji, and Sivakumar, 2012). (Köksal, Dema, 2014) concluded that organizations, especially in the service industry can win customer loyalty if they continuously deposited effort to maintain high quality services to their clients. (Daikh, 2015), argued that it is better to invest in service quality and maintain the client relationship, that make him loyal to them, thus increasing profitability and impact on business environment.

Service quality and customer loyalty were comprehensively investigated by many researchers (Köksal, Dema, 2014) (Murali, Pugazhendhi, and Muralidharan, 2016) and most of them have positive results on the directions: service quality, customer trust and loyalty from the trials (Fatma, Rahman, 2016); (Santoso, Erdaka, 2015) and (Hosseini, Zainal, and Sumarjan, 2015).

Customer loyalty

Customer loyalty is a very important concept for many bankers. Arguably why so many bankers are struggling with developing, implementing and measuring loyalty programs to customers is that there is consensus among bankers about what behaviours constitute customer loyalty and how best practices can encourage these behaviours (Santoso, Erdaka, 2015).

The lack of agreement between the bankers on the variables that constitute customer loyalty determines that a series of customer loyalty programs do not often succeed and are not productive. In addition, many bankers from banking retail still confuse customer loyalty with three distinct concepts, but closely related: customer satisfaction, customer retention and customer confidence (Hosseini, Zainal, and Sumarjan, 2015). In the studies, (Köksal, Dema, 2014) (Murali, Pugazhendhi, and Muralidharan, 2016), these four concepts, loyalty, satisfaction, retention and customer confidence covers:

- Customer loyalty: Adhesion demonstration of a client to an institution / trader, despite the occasional error.
- Customer satisfaction: Customer perception of the needs, wishes and expectations regarding products and services which have been met. Customer satisfaction is not a guarantee of retention or loyalty.
- Customer retention: the organization's ability to keep existing customers over time. Unlike customer loyalty and customer satisfaction, which measures aspects of the relationship in terms of the customer, customer retention is a direct measure of the institution's capacity to maintain relationships with customers over a long period of time.
- Customer Confidence: banks rely on trust. Confidence comes first. Customers who have this state of confidence in banks, never drift from the products and services offered by the bank. They trust and use them and do not give them up.

The relationship between the four concepts is presented in Figure 1 and it is observed that customer satisfaction and confidence contribute to loyalty. All three concepts are associated with the client and lead to customer retention. Customer retention belongs to the bank, so there is a close link between them.

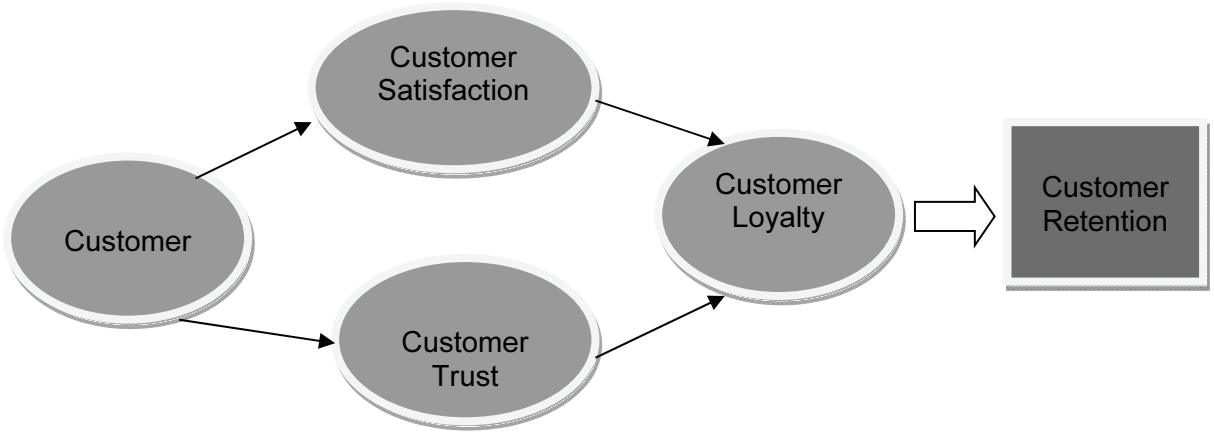

Fig 1. Dimensions of Customer Loyalty Program

It can be seen in Figure 1 that loyalty is an important variable in the relationship shown above, so below are the results of the survey of 300 clients of banks in Romania. After analysing the various results, the authors systematize the different variables that contribute to customer loyalty to the bank ((Köksal & Dema, 2014) (Titko & Lace, 2010), (Murali, Pugazhendhi, & Muralidharan, 2016) (Hosseini, Zainal, & Sumarjan, 2015)) in Table 1. There are a number of different variables, definitions and importance / impact on the customer. Each variable is associated with three levels: low, medium, high, depending on respondents' answers.

To note that satisfaction and confidence are high and contribute to customer loyalty. Other important variables are: cost of service, brand, type of bank, the distance and the time of a transaction. These variables were allocated a high level, by means of respondents' answers.

Table 1. Dimensions and variables that help define customer loyalty

Dimensions Variables	Definitions	Importance
Satisfaction	Customer satisfaction related to bank services	High
Confidence in the services provided	Confidence in attributing all transactions to a major bank	High
Costs of services	Level of cost perceived by client	High
Brand	The image created in the business environment	High
Bank type	Bank with foreign capital	Medium
	Domestically-owned bank	High
Distance (in km)	The distance traveled by the customer to the bank	High
Gender of client	Female / male	-
Week-end bank	Bank that has operating hours on weekends	High
ATM facilities	Different payments which can be made from ATMs	Medium
The time allocated to the last transaction	The time allocated to the last transaction made by the customer (10 minutes - medium)	High
Failures	The number of failures during online transactions (3 failures / transaction - medium)	Medium
Credit facilities	Quality of services concerning loans	Medium
Other facilities	Aggregation of other facilities as share on the scale of appreciation	Medium

Another aspect that contributes to customer loyalty is communication between the client and the bank. Currently, most banks are using an integrated customer communication system (Cioca, Ivascu, 2014). After analysing the studies, ((Köksal, Dema, 2014) (Titko, Lace, 2010), (Murali, Pugazhendhi, and Muralidharan, 2016) (Hosseini, Zainal, and Sumarjan, 2015) (Izvercian, Ivascu, and Potra 2014), (Miricescu et al., 2009), (Cioca et al., 2005), the authors systematize, from the perspective of customer Relationship Management (CRM), the most important factors in maintaining / developing customer loyalty. These factors are outlined in Figure 2. At the same time, the benefits of implementing CRM in the banking system are presented (Cioca et al., 2013).

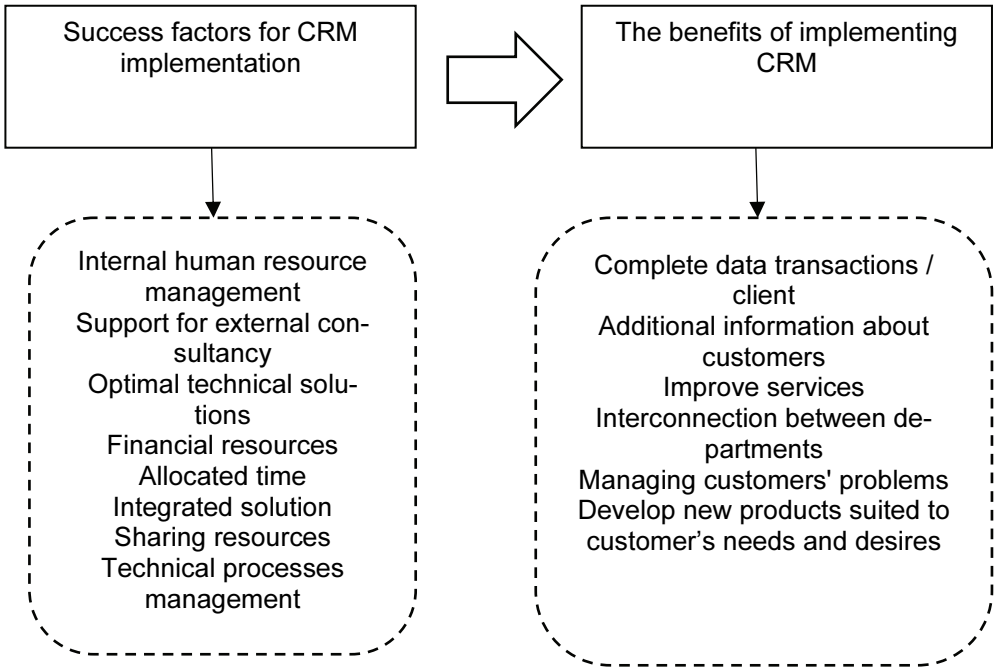

Fig 2. Success factors and benefits of implementing CRM in banking

Based on the research of literature and the questionnaire applied to bank customers in Romania, the paper presents the important factors affecting customer loyalty, Figure 3, which are important pillars in the development of a strategy for bank competitiveness.

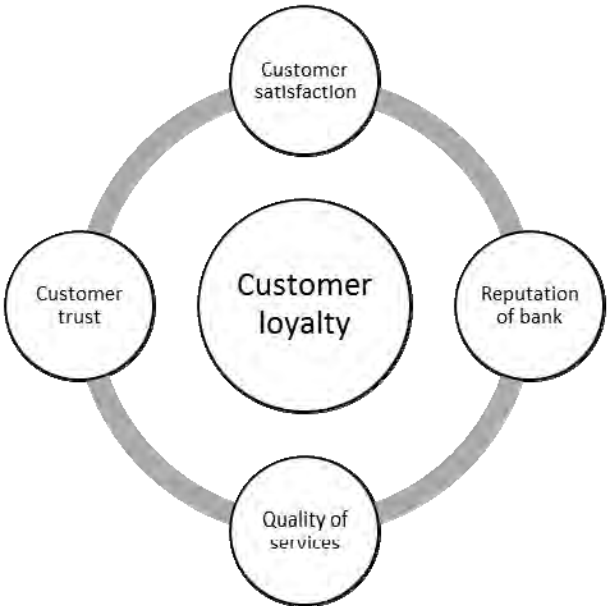

Fig 3. The main variables and dimensions that influence customer loyalty

It is noted that customer satisfaction and trust directly influence customers' loyalty. In addition to these dimensions, variables bank's reputation and quality of service have an important role. These variables and dimensions were most appreciated by survey respondents, being undoubtedly important directions to be followed for the development of competitive customer loyalty programs.

Discussion and conclusions

In terms of customer loyalty, it can be concluded that the reputation, quality, reliability are factors that positively influence customers. For this determination, a survey-based questionnaire was used and results were compared with international banking industry. However, it is found that there is a strong correlation, positive and significant among all three factors related to customer loyalty. On the other hand, a high proportion of respondents thought the quality of domestic banks is higher than that of foreign banks. The results of this chapter support the authors' expectations and accepted assumptions.

The four variables, loyalty, satisfaction, retention and customer confidence that contribute to the development of customer loyalty programs represent important directions that contribute to competitiveness and maintenance of the banks in the banking industry.

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A CRITICAL ANALYSIS OF THE EUROPEAN AIRSPACE ARCHITECTURE

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Abstract

Purpose *– With the rise of global desires comes the increases of aircrafts in the air, leaving modern air traffic management system to be overwhelmed. Even though the subject has been debated ever since the late 90's, all air traffic management organizations in Europe have established that the Single European Sky and the European ATM Master Plan initiatives are the courses of action, application of this system will be slow due the particularities of each nations aeronautical laws and regulations*
Methodology/approach *- Using www.flightradar24.com database we can address the research problem on a comparison basis.*
Findings *– The first result were encouraging the new ATM system seems to cut flight time however not all European states have the same overflight cost which leads for some air companies to detour that country all together leading in a longer flight time.*
Research limitations/implications *– The paper core information's are based in 3rd party sources however it address issues regarding modern air travel.*
Practical implications *– With some country's implementation of the concept of free routs and FAB we can assess a base line comparison between the current ATM and the future one regarding flight time*
Originality/value *– The main contribution is recognizing the problem with the development of the future architecture of the European airspace and namely not the boarders themselves but the overflight fees.*
Key words: *ATM - Air Traffic Management, ANSP - Air Navigation Service Provider, ATFM - Air Traffic Flow Management.*

Introduction

Shaped from the technological growth of the XX century, the civil aviation has grown into a global net of transport and business. The necessity to offer quality services to consumers, with the aim to improve commerce and the conditions of travel. Air Traffic Management (ATM) stands out throw the way airplanes can travel safely, without delays and without events regarding the flight issues. ATC employments of the flight safety system is constructed on a new set of rules and procedures concerning air space management, with the need kept on the sovereignty of the national air space, these features have put the base for the formation and growth of organizations that today offer air traffic service ANSP.

ATM is well-defined by International Civil Aeronautical Organization (ICAO) as "the dynamic, integrated management of air traffic and airspace - safely, economically, and efficiently - through the provision of facilities and seamless services in collaboration with all parties" (ICAO – Global ATM Operational Concept – Doc 9854). Even though the main parties concerned in the air transport industry pretend that the key objective is the innovation of ATM, the truth is that they put more significance on providing Air Traffic Control (ATC) services. The means in which the services are provided have not been reformed since they were first developed. In any case, today the ones that offer ATC services are under great pressure to fundamentally transformation their

way of operations, the operation capacity, the attitude concerning the rapid development of the social-political climate and the technological advancement that is rapidly growing. The main role of Single European Sky (SES) is to bring together the main parties involved that defines today air transport to development a vision of the ATM that will be applied starting with 2020.

I. Functional Airspace Block (FAB)

In the framework of the SES regulation, in March 2004, The European Commission has advanced a report to EUROCONTROL called Mandate on Support for Establishment of Functional Airspace Blocks (FABs); the main idea is to fuse regional collaboration between ATC structures. The SES provisions try to rearrange the superior airspace (over FL285) through the employment of FABs. There is no clear definition of FAB, but the SES guideline refer to some conditions about the possible definition an airspace of defined boundaries in which ATC service is provided.

The definite characteristics that an FAB must have:

- To be built according to the operational requirements;
- To insure an integrated and efficient air space management;
- Not to be confined by national boundaries.

These FABs will be created in accordance with the efficient flow of flights without taking into considerations national borders. One single structure will be responsible for every FAB, even if it serves several countries. The new network of routes will have the following operational objectives:

- **Safety**: to insure an ever increasing level of safety despite the rising in civilian and military traffic;
- **Capacity**: to ensure the requirements of air traffic;
- **Cost effective**: to achieve optimal cost for operations in FABs with ATC;
- **Flight effective**: to find optimal routes for continuous clime/decent and for the minimum time and distance spent in flight;
- **Environment**: to reduce the impact on the environment by choosing the optimal route, the appropriate flight profile and reducing the time spent in the air;
- **Efficient military missions**: to execute missions inside FABs, and not inside national airspace; this aspect requires an attentive coordination at the military level of each country that is reliant on the respective block.
- **Integrating** UAS for safe fights in FABS.

The Key Performance Indicator KPI of the Performance Review Commission PRC (Performance Review Unit) regarding the efficient operation refers to:

- ATFM delays regarding flight in hours;
- Drastically reduction of the length of routes;
- Optimal climb/descend flight paths.

It is vital to notice that fight delays are in hours and not in miles like the US version, at the time there are not enough technical and data information to accurately determine the efficient of flight in the optimal climb/decent path, the most urgent problems that are address are regarding the transfer from air ways to the terminal aria of on airport.

Next the main idea of FAB will be presented through the reduction of time and distance of flight as much as 20% per flight.

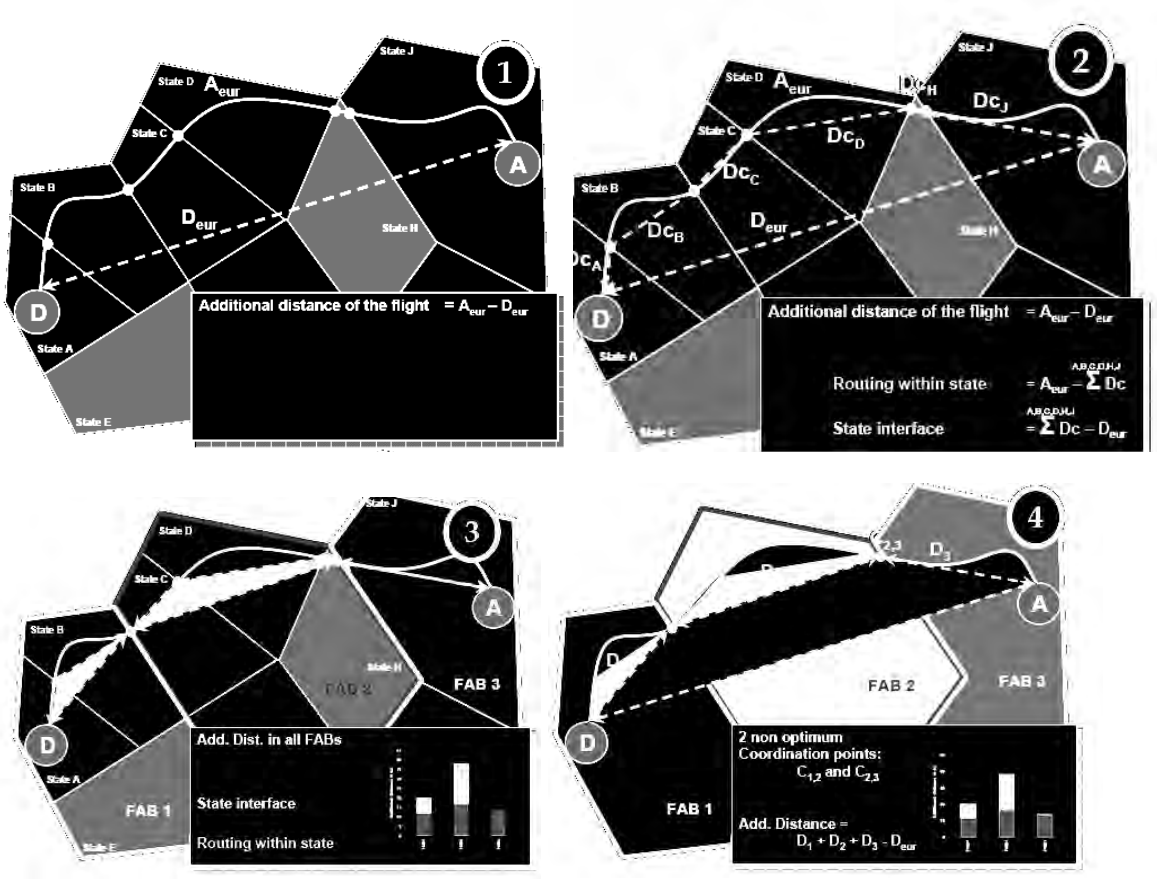

Figure 1: Rerouting in the FAB context
Source: Eurocontrol Performance Review Commission “Evaluation of functional airspace Block (FAB) initiatives and their contribution To Per-formance improvement”

For example, we can see in the figure 1 the extension of route of a flight which signifies the different between the direct path of the two points and the route the flight has to follow, this can be analyses by 3 views as follow:

1. Reroute/ ATC services from each individual state. This signifies the difference between the entry point and the exit point of a state and the curve route defined by the effective flight of the airplane see the second image. This reconfiguration of the route is the key objective of the FAB but at the state level and not as group of countries;
2. Reroute/ ATC services from FAB’s. This represents the difference amongst the sum of curve routes from each member state of the FAB and the direct line from the entry and the exit of the FAB see the third image. The distance between the transfer amongst state and the transfer line inside the FABs;
3. Reroute/ ATC service inside European airspace. It refers to the difference between the sums of the routes form every FAB and the direct line between the departure and arrival see the fourth image. The distance between the transfer points of each Fab and the line D – A.

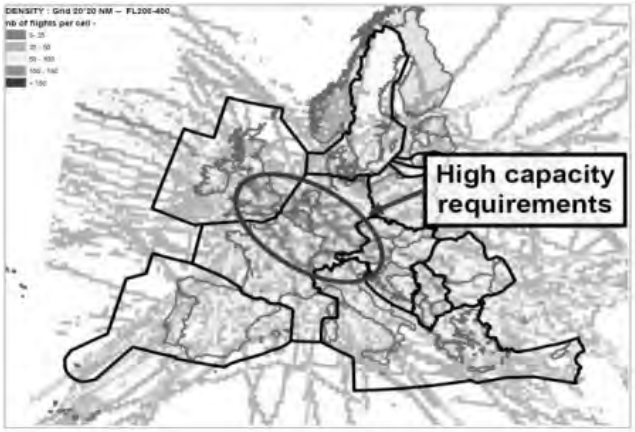

Figure 2: European airspace density
Source: http://www.eurocontrol.int/network-operations/general-public-information

Using the principle stipulated earlier and feasibility studies the European airspace could be reorganized as shown in the figure below.

Figure 3: Proposed European FAB
Source: Eurocontrol Performance Review Commission “Evaluation of functional airspace Block (FAB) initiatives and their contribution To Per-formance improvement”

Present there are about 9 proposed FABs that were submitted to the European commission for ratification. Each is concentrated on arias with similar traffic. In the creation there were considered that the limit of a FAB would coincide with national borders. The lower limit of FABs will be FL 285 and the superior would be unlimited.

II. EN-ROUTE VIABILITY

We can evaluate that the SES initiative will have a major influence in the air traffic architecture, also a major role in air transport industry is played be the jet fuel price and also over flight fees that aircrafts pay for ATC services.

Next we will compare 2 flights B763 LY312 from London-Tel Aviv and also B752 AY1376 Funchal to Helsinki both running the Rolls-Royce RB211 gas turbine systems that has a typical 0,4 liter /

Km of flight specific fuel consumption starting with the knowledge that SES is implemented and all Europe implements direct flight, optimal clime/descent paths. (http://www.rolls-royce.com/energy/energy_products/gas_turbines/rb211/)

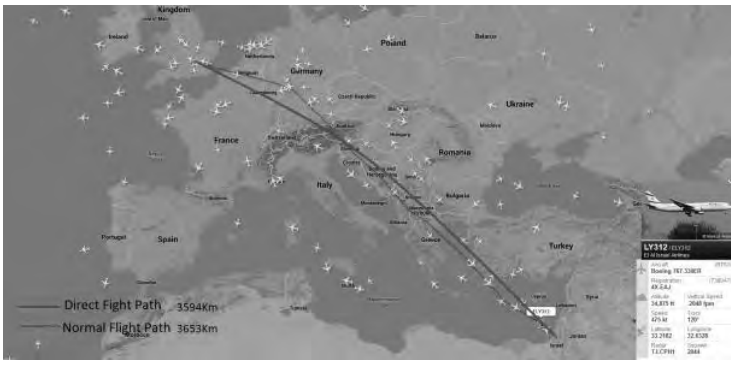

Figure 4: Normal Flight vs Direct Flight (LND-TAV)
Source: Flightradar24

For instance we can see in the figure above the changes between normal and direct flight path is only 59Km which can translate to approximately 26 Euro and 4 min delay time. Also the flight overflies a number of 9 stats (United Kingdom, France, Slovenia, Croatia, Bosnia, Albania, Greece, Turkey and Israel) which bring the total cost of overfly to 383 Euros.

Taking the new information into account the airline could consider rerouting for a bigger delay throw Italy thus reducing the number of country to 6 (UK, France, Switzerland, Italy, Greece and Israel) however this would cost them 367 Euros do to the fact that Italy and Switzerland have bigger overfly fees. For comparison the US has an over flight fee of $49.95 of en-route and $20.09 for oceanic overflight. (http://www.faa.gov/air_traffic/international_aviation/overflight_fee)

Figure 5: Normal Flight vs Direct Flight (FNC-HEL)
Source: Flightradar24

The next flight presented is a B752 AY1376 from Funchal to Helsinki the change between normal and direct flight path are 105Km at an estimated cost of 46 Euro in fuel and approximately 7 minutes it also over flights 10 country's (Madeira Island, Portugal, Spain, France, Germany,

Poland, Lithuania, Latvia, Estonia and Finland) bring the sun to 410 Euros for European over flight.

III. CONCLUSIONS

The two random cases of flight exemplify that the SES initiative is a good way to consider the future, however concerning ATM changes in overfly fees in all European airspace have to be made join in a single fee for all European airspace, therefore reducing the cost of airlines to operate.

The Single European Sky initiative was launched in 2000 by the European Commissions as an answer to the major delays reported in 1999. A research comity was established, and based on their findings the European Commissions has created a new legislative packet at the end of 2001.

The SES is trying to:

- Increase the safety and efficiency of air traffic in Europe;
- Reduce delays throw the optimal use of air space;
- Improve ATC services and reduce costs;
- Successfully integrate military aviation in FABs.

In spite of intense efforts to optimize European ATM regarding costs, there is no doubt that the system provides safety at an immense cost.

ATFM is firstly being prevented by actual practices and constrains regarding air laws that are primary based on national borders and not on areas with intense air flow.

The application of the SES legislative packages will be done in two steps named SES I and SES II. The first will follow the achievement of the base objectives regarding ANSP, air space and interoperability:

- A superior level of safety of the air navigation service;
- A developed architectures of ATFM more efficient;
- Efficient coordination between neighboring countries;
- New improved processes for decision making.

Similarly in this program it is necessary to integrate military flights in European ATM and creating a set of rules and principals that both sides can benefit from.

The second legislative package SES II was established as a response to rising of airspace users that utilizes the maximum capacity of airports and ATM. The safety level must increase directly with the upsurge on number of aircrafts that transit European airspace. At the same time a vital pressure concerning eco-friendly issues is been exercised.

To respond to this aspect SES II will address in essence aspects regarding:

- Generating a unique safety frame to help the development of all the implicated parties;
- Refining ATM systems through elaborating long term goals and objectives;
- Raising airports capacity and air space blocks.

FABs come as a response to the solicitations of SES I and SES II being the means in which the objective stipulated earlier can be achieved. They are blocks of air space that acquire areas of responsibility of the neighboring ACC and designated for efficient flight regarding distance, time and also reducing cost and negative environmental effects.

These entire objective have the year 2025 as a limit, also the results will become visible by the year 2020.

SES is a complex and highly required program that once implemented will work under the principle maximum results with minimum efforts.

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OPERATIONAL INSTRUMENTS IN THE FINANCIAL RISK MANAGEMENT SPECIFIC TO THE PROJECTS OF RENEWABLE ENERGY RESOURCES EXPLOITATION

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Abstract

By this work, we propose a critical analysis of the associated risks to the exploitation projects of renewable energy sources which may influence the entrepreneurial and managerial decision based on their proper management. The performance objectives specific to any project requires a separate treatment, closely related to the volume and quality of the available information, but also by the instrumental means of operating used in the quantifying and aggregation of data at the level of certain comparable and interpretable indicators with the risk analysis. Therefore, our work will address mainly the area of the financial risks associated with this type of projects, without forgetting their incidental connection with other types of risks (political, macro-economic, legislative, demographic, social, etc.), whereas a correct assessment of the influences cannot be overlooked by them. Also, it is important to remember that any approach to the problems in question is rather based on the concept of "harmonization of the risks and interests" than their elimination, being proved that the restrictive and punitive measures have failed in time, accomplishing the established objectives only to a small extent at the scale of time.
Key words: *renewable energy, financial risks, instrumental means*

Introduction

The contemporary world is facing to a growing impact of climatic conditions changes mainly determined by the unprecedented growth of CO2 emissions. According to certain authors these are irreversible (The Guardian,2011), by others, controllable and therefore providing the ability of adapting to the new environmental conditions through the development of viable and effective projects which have to respond to the needs of both increasing demand for energy of the today and future society, and its overview sustainable development (Krugman, P., 2014).

The waiving of fossil fuel resources exploitation is considered, by most specialists in the field of energy, with certain reservations from the view of the fact that the current infrastructure provides most of the necessary energy at world level, and on the other hand the investments relating to the implementation of the renewable resources exploitation projects are associated with multiple risks (natural, technological, financial) that can reduce the interest for the development of entrepreneurial initiative in this field.

However, the stringent need for concrete measures in respect of the protection and conservation of the global environment, even in the context of the climate change evolution to which we are witnessing, represents an imperative of the present generation and especially of the future one. It must be noted that the "one-quarter of the oil reserve on the globe, half of the gas and 80 % of the coal reserves should remain untapped by 2050 in order to limit the global rise warming up to 2 Celsius degrees" (Le Monde, 2015). To the greatest possible extent, the responsibility of acting this way entails an emergency involvement of the policy makers, determined to act by concrete

measures even ahead to the involvement of the business environment, much more cautious in assuming the inherent risks of such an approach.

By this work, we propose a critical analysis of the associated risks to the projects of renewable energy sources exploitation which may influence the entrepreneurial and managerial decision based on their proper management. The performance objectives specific to any project requires a separate treatment, closely related to the volume and quality of the available information, but also by the instrumental means of operating used in the quantifying and aggregation of data at the level of certain comparable and interpretable indicators with the risk analysis. It must be noted that an unidisciplinary approach to this problematics is speculative, at least from the perspective of covering the entire risks areas, but especially of their pertinent analysis that requires the appealing of the resources and means specific to other research domains.

Therefore, our work will address mainly the area of the financial risks associated with this type of projects, without forgetting their incidental connection with other types of risks (political, macro-economic, legislative, demographic, social, etc.), whereas a correct assessment of the influences cannot be overlooked by them (Bellalah, M., 1998).

Also, it is important to remember that any approach to the problems in question is rather based on the concept of "harmonization of the risks and interests" (Drury, C.,1992) than their elimination, being proved that the restrictive and punitive measures have failed in time, accomplishing the established objectives only to a small extent at the scale of time.

Therefore, financial risk management support is a complex procedure involving not only the monitoring activity, but also the impact management regarded as attributes of the financial function, directly involved in the decision-making process (Haimes, Y. Y, J. H. Lambert, and D. Li, 1992).

The latter involves the assessment of the risk exposure by treating the business decision as part of the process of financial risk management, being necessary a systemic approach by methodological calling disciplines as accountancy, theory of decision, statistics or psychology.

General aspects concerning the financial risks of exploitation projects in the field of renewable energy resources

The investment projects, regardless of their nature or the field in which they operate, are decisively affected by the financial operations and multiple risks associated with them. The decision of the economic profitability or even the registration of some negative results in the plan of the managerial objectives is the direct consequence of the cause-effect relationship which is implicitly established between them, fact for which their approach should be made at the level of the whole undertaking system or business.

The field of renewable energy resources requires, by the nature of projects that can be initiated and developed in the context of their energetic diversity (hydro, geothermal, aeolien, solar, a.s.o.), a treatment which takes into account the specificity of each and more, the peculiar action of the general risks and implicitly of the financial ones. Considering the fact that the purpose of the managerial action is the decision, the complex process which underlies it is aiming, among other objectives, the avoiding, and alleviation or removing the effects of the financial risks, the manifestation of the latter having a strong objective character.

Starting from the general structuring and staging model of the decision-making process in the plan of the financial risks, we believe that an approach which takes into account the particularities of the renewable energies field is stringently arriving to a standard model that must include:

- the identification and the establishment of the general and specific objectives; depending on the type of exploited resources;

- the assignation of the target objectives of the financial management and the batch of performance indicators;
- the forecasting and the possible results on the basis of statistical data and considered time intervals;
- measuring the risks exposure degree with majeure amplitude and frequency;
- the option of the optimum decision regarding the harmonization of the risks value with the performance objectives.

The genius of the financial risk management in the field of renewable energy resources (consists not only in the act of establishing the level of uncertainty concerned to the potential risk exposure of the project, but also in its assessment, such as to facilitate the financial control of the risks, and unassailably minimize the impact on the objectives attainment. Therefore, the managerial efforts to risk management should focus upon the uncertainty that matters, this being one of the critical factors of success for the project. As regarding the effectiveness of the risk management, this is achieved by the relationship optimization between the risk and the objectives of the financial management, taking into account that its neglecting can be fatal to the whole business.

Operational instruments in the management of the financial risk

The concern of financial risk analysis (MacCrimmon, K.R. and Wehrung, D.A., 1986) and evaluation under its multiple forms of manifestation, especially in a growing market like that of renewable energies, implies a careful selection of significant indicators and with great impact on the achievement of the laid down objectives in the framework of their exploitation project management. From the point of view regarding the conceptual approach way to this undertaking is noted that the considered indicators as financial management objectives may be concluded on the basis of accounting and statistics data, even in the absence of historical records, and therefore having a direct relevance in the context of the financial risk analysis.

On the other hand, the manifestation of the failure risk of complying the financial objective is random and therefore requiring a forecasting with obvious subjective involving. Additionally must be taken into account also the factor of impact, differentiated by its effect on the exploitation of renewable energy resources activity for each indicator - financial target considered.

As a result of a preliminary selection that had in view the likelihood relevance of risk probability manifestation, the impact and the exposure extent, here have opted out for a set of three economic-financial indicators, i.e. the critical turnover, the rate of expenditure effectiveness (expenditure to 1000 lei incomes) and the labor productivity.

Taking into account the fact that the share of renewable energies, at the level of 2015 was approximately 70 % of the total volume of electricity supplied to final customers, there were considered as relevant for the present instrumental analysis, three types of renewable energies: Hydro, geothermal energy and solar .

It is notable that by inserting of geothermal energy in the analysis there are covered both forms of market energy, electrical and thermal, so that this study will benefit from a comparative analysis of these. Between these resources, the highlighted differences at the level of the initial investment and duration of depreciation, operating costs, continuity of production, and last but not least the share held in the mix of consumption, implies an specific analysis which will be reflected in the weighting of the above mentioned indicators-goals at the level of the their array processing.

The model of decision analysis proposed is that of the implementation of risks matrix which will combine objective determination of economic and financial indicators on the basis of the statistically-mathematics with their subjective processing based on estimated values after examining the historical recorded data and the prognosis of impact. In this respect, taking account the variable predictability of the economic-financial indicators depending on the type of

resource in question here has opted for a differentiation of their approach in the context of the financial risk analysis (Budulan, P., Rugină, V., 2004).

1. The first indicator in view is the **"minimum turnover",** essential to ensure the viability of any project in the conditions under which its level is decisive for the attainment of the minimum threshold of return. Its determination shall be figured by taking firstly into account the level of the fixed costs, but also related to the variable expenditures, from the linearity of the latter evolution directly depending on the economic efficiency of the project:

$$CA_{min} = \frac{Chf}{100 - Rv} \quad (1)$$

where:
CA min represents the minimum turnover;
Chf is the amount of the fixed costs;
Rv represents the average rate of variable expenditures:

$$Rv = \frac{Chv}{CA} \times 100 \quad (2)$$

where Chv represents the amount of variable expenditures.

It must be noted that the positioning of the company in the reference market is directly reflected by its turnover, but especially of mass of indicator which, under the conditions of owning a significant percentage of the total sales at the level of the market would ensure a control position and a substantial reduction of exposure to the financial risks. At the present time the annual quota of electricity produced from renewable sources for the year 2016 is 12,5 % of final gross consumption of the market, this being required to reach 24 % by the year 2020 in accordance with no.2009/28/EC5 directive.

2. The second considered indicator represents the ratio between the mass of expenditure and revenue, significant for the threshold control of profitability and maintaining a functional balance of the business under the conditions of controlled exposure at the financial risks. The indicator used for this purpose is **"expenditures to 1,000 lei income",** or "**effectiveness rate of the expenditure**" (R_{EC}), which shall be determined as the ratio between the total expenditure and revenue, in accordance with the relationships:

$$R_{EC} = \frac{\sum Ch_i}{\sum V_i} \times 1000 \quad (3)$$

$$R_{EC} = \frac{Ce + Cfin + Cex}{Ve + Vfin + Vex} \times 1000 \quad (4)$$

or

$$R_{EC} = \frac{\sum g_i \times c_i}{100} \quad (5)$$

where:
Ce – exploiting expenditures;
Cfin – financial expenditures;
Cex – extraordinary expenditures.
Chi – total expenditures;
Vi – total revenues;
Ve – exploiting revenues;
Vfin – financial revenues;
Vex – extraordinary revenues;
g_i – structure of revenues by categories;
c_i – expenditures at 1000 lei by revenues categories;

It is noted that in the case of renewable energies the investments subventioning by means of the green certificates has certainly a direct effect in declining the financial risk from the perspective of unaccomplishing the expected revenue. This economic-financial mechanism constrains the electrical energy distributors to have a specific quota of renewable energy delivered to the consumers and implicitly supports the development of production based on these resources, considerably reducing the exposure to the financial risk for renewable energy producers.

3. The third indicator in view is the **"labor productivity",** directly linked to the management objectives of economic performance and profitability of the renewable energy resources exploitation, being as well a barometer of the technological level concerning the investment projects in the field. Its determination is allowing for two ways, namely:

a. The direct method, namely by quantity or value of sales per employee in the time unit considered (month/year):

$$W = \frac{Q_{pT}}{T} \quad \text{sau} \quad W = \frac{V_T}{T} \tag{6}$$

where:
W – labor productivity;
V_T – sales for T period;
T– considered time period;
Q_{pT}– produced quantity for T period;

b. The indirect method or time consumption per unit of energy produced / sold (kWh/ MWh):

$$W = \frac{T}{Q_{pT}} \quad \text{sau} \quad W = \frac{T}{V_T} \tag{7}$$

For practical reasons related to the specificity of the energy field is the currently used, the direct method, either in the quantitative form (production), or of the value form (sales), the indicator having a special significance in reflecting the level of technological performance, but most of all in the context of the competition on the market energy. Therefore the neglecting or the postponement of the periodic upgrading in an emerging field and highly dynamic constitutes a major risk to the viability in time of the project or business.

The matrix calculus of financial risk indicators and the decisional analysis

As we have mentioned above, the available data processing regarding the indicators considered as significant economic-financial risks requires an assessment of their incidence upon the projects of renewable energy resources exploitation in drawing up an matrix of the respective indicators-risk, for each type of resource to be taken into account, as follows in table 1 and table 2.

The interpretation and ranking of the financial risk- indicators matrix processing results in table 3.

From the above presented issues that the risk levels assumed by the projects of renewable energy resources exploitation is ranged at high or medium level in most of the cases, what draws the attention of potential investors upon the needed efforts in the technological and economic respect, but also from the point of view of the rank positioning in the energy market.

There is notable that the scores granting had in view the discontinuous providing of electricity, as a result of the natural factors action or the seasonal variation of the electricity and thermal energy demand. It also has been taken into account the possibility of investment depreciation in such conditions, operating costs and the variations of the selling price on a competitive market. An important factor of influence upon the frequency and impact of these financial risks is the optimizing of the personnel structure and its quality increasing, essential from the perspective of technological evolution in this field.

Table 1 – The financial risks indicators data for each type of renewable energy

No.	Type of renewable energy	Risk Indicators	Probability of occurrence		Impact		Risk exposure degree		Risk ranking
			Probability	Scoring	Probability	Scoring	Probability	Scoring	
1	Hydro	Minimum turnover (CAmin)	Very small	15	High	72	Small	35	C
		Effectiveness rate of expenditures (REC)	Medium	54	Medium	52	Medium	58	C
		Labor productivity (W)	Medium	55	Small	37	Small	36	D
2	Geothermal	Minimum turnover (CAmin)	Small	30	High	70	Small	30	C
		Effectiveness rate of expenditures (REC)	Medium	56	High	65	Medium	54	B
		Labor productivity (W)	Small	34	Medium	45	Small	32	C
3	Solar	Minimum turnover (CAmin)	Very small	18	High	75	Small	34	C
		Effectiveness rate of expenditures (REC)	Medium	58	High	72	Medium	50	B
		Labor productivity (W)	Small	27	Medium	42	High	64	C

Table 2 - Grid of scoring

Occurance probability	Scoring
Very small	0 - 20
Small	21 - 40
Medium	41 - 60
Big	61 - 80
Very big	81 - 100

Table 3 - The interpretation and ranking of the array processing results of the financial risk- indicators

Risk appreciation	Interpretation	Ranking
High impact / High probability	Very high There is a major risk as resulting from the greatest extent failure of the indicator causing severe effects	A
Hugh impact / Medium probability Medium impact / High probability	High There is a major risk but which may cause less serious harm due either the average probability of occurrence, or the average level of impact	B
Medium impact / Medium probability High impact / Reduced probability Medium impact / Reduced probability	Medium There is an important chance for the risk to produce a noticeable impact or to occurred with a reasonable frequency	C
Medium impact / Reduced probability Reduced impact / Medium probability	Small The risk occurs seldom and only in certain situations with a level of low or medium impact	D
Reduced impact / Reduced probability	Neglectable The risk has low probability of occurrence and effects without great impact that can be neglected	E

Conclusions

The present paper had as objective the settlement of an important and maximum interest problematics for the business milieu involved in carrying out projects of renewable energy sources exploitation, offering an instrumental mean of evaluation and prediction of the financial risks impact.

The fundamental idea that detaches out from the analysis and the interpretation of the information presently available is therefore to competently and carefully manage the financial risks, not including that they may occur by choice or by producing a minor impact and therefore do not have to be taken into consideration.

An important factor of minimizing the financial risk action and effects is the involvement of the political and legal milieu which should act in the direction of the granting facilities for these emerging industries which constitutes one of the vectors of increasing the interest of entrepreneurial activity in the energy area and competitional market.

There is entailing that the projects management of the renewable energy resources exploitation has to take into account the principle of "harmonization of the risks and interests ", vision according to which it is important to look the unfulfilment of the objectives as inwardly risks, of their attainment, in a smaller or larger extent, depending on the chance of the project or business.

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CONSUMER NEUROSCIENCE-RESEARCH INSTRUMENTS AND SHORT HISTORY

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Abstract

Purpose *– One of the objectives of this paper is offer an analysis of the history of neuromarketing as well as exemplifying specific data collection instruments used in neuromarketing research.*
Methodology/approach *– The results presented in this paper are based on a previous literature review and represent a part of the findings.*
Findings *– This paper offers a general description of relevant instruments that are used or that could be used in parallel or separate when conducting neuromarketing research studies.*
Research limitations/implications *– The limitations of this paper are based on the fact that neuromarketing research is still a young and dynamic research field that can change in very short time and because of that the results presented in this paper can become outdated.*
Practical implications *– The results can be used in order to obtain a clear image of the state of neuromarketing research.*
Originality/value *– The originality of the paper is given by the presentation of a short history of neuromarketing as well as a presentation of the research instruments that can be used in this type of research.*
Key words: *neuromarketing, consumer neuroscience, consumer behavior*

Introduction

Neuromarketing is considered a new interdisciplinary domain. Lee, Broderick and Chamberlain, mention in their paper that neuromarketing like neuroeconomics, utilizes research techniques borrowed from other fields such as psychology and neuroimaging in order to complete studies that are based on the idea that man is not only a rational being. The definition provided by them to neuromarketing is: "neuromarketing as a field of study can simply be defined as the application of neuroscientific methods to analyze and understand human behavior in relation to markets and marketing exchanges" (Lee, Broderick & Chamberlain, 2007). They also reject allegations of ethical issues, according to which neuromarketing studies have the main objective of identifying the "buy button".

An earlier but very similar concept to neuromarketing is neuroeconomics. Neuroeconomics like neuromarketing is based on the idea that people are not completely rational and thus their decisions are influenced by unconscious aspects. As Camerer notes in 2008, neuroeconomics promotes a theory of economic decisions that have substantiation from both mathematically, behavioral and neurological points of view (Camerer, 2008). Thus it can be said that neuromarketing, similarly to neuroeconomics is trying to determine the cause of certain decisions that cannot be explained by classical economic theories.

Neuromarketing history

Figure 1 aims to highlight some important points the history of neuromarketing. This figure is also partially based on relevant moments, which helped build the new interdisciplinary field called neuromarketing, described by Vlăsceanu (2014) and Morin (2011). The moments mentioned in this figure show the evolution until 2012 when NMSBA (The Neuromarketing Science & Business Association) is established.

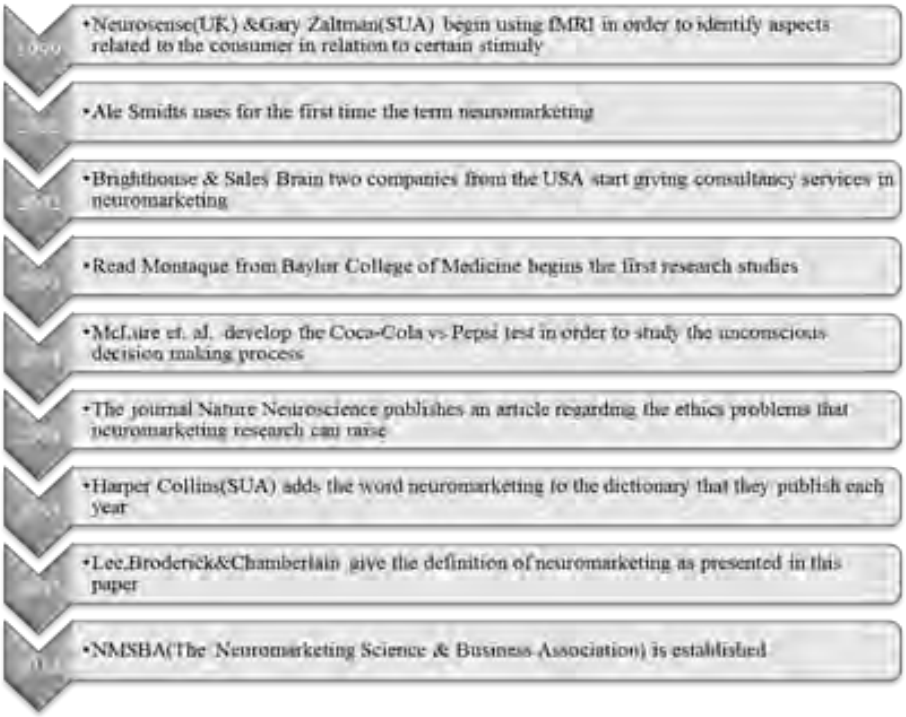

Fig.1. Neuromarketing history

Current status on the instruments used in neuromarketing research

In terms of devices used in neuromarketing research, they differ depending on what kind of reactions we want to observe. EEG technology, galvanic sensors and functional magnetic resonance imaging (fMRI) are the most common methods used to collect data in neuromarketing research. These methods, however, are often difficult to apply because some of them are expensive or difficult to operate and in some cases the freedom of movement of the investigated subjects is greatly reduced. However, in recent years new technologies have been developed that are more accessible, are making it easier to be used by researchers and are less uncomfortable. Such technologies do not track directly the changes in brain activity caused by reactions to certain stimuli but focus on other physical reactions that may explain which factors influence the final buying decision at an unconscious level. The recognition of emotions using facial recognition software or the use of eye tracking technologies can provide researchers more convenient and in some cases more relevant methods to explain certain decisions and subsequent behaviors. However, in some cases, according to a study presented by Roger Dooley and published in Forbes Magazine in 2015, these new methods do not show a significantly increased in accuracy in all cases compared to the classical method of the questionnaire. The results obtained by a team of researchers at Temple University show that, except MRI technology (functional magnetic resonance imaging), the rest of neuromarketing research technologies used are not that accurate compared to the classical method of obtaining data. In this context Roger Dooley mentions that these new technologies could be more relevant for neuromarketing research if several technologies would be used in parallel. He also considers that some technologies could present more accurate research results on specific niches (Neuromarketing 2016).

Companies like SensoMotoric Instruments (SMI) or Tobii are developing and providing solutions for detecting and tracking eye movements that are able to generate a map containing all of the points of interest in the view field. In much the same way, companies like Noldus or Vicar Vision Software offer detection and recognition software for facial expressions that are able to identify the emotions of the investigated individuals (Vicar Vision, 2011). Such solutions can help researchers evaluate real time unconscious reactions to certain marketing stimuli without using complicated equipment that is more expensive and intimidating for the investigated subject.

It should be noted, however, that neuroeconomics and neuromarketing research, have certain limitations and therefore in order to obtain relevant results, certain conditions as mentioned by Kenning and Plassmann in 2005 have to be considered. The two scholars consider that first of all, the measured values must provide relevant figures and have to avoid the sources of noise and errors. Also the allocation of spatial and temporal measured values to brain structures has to be done correctly in order to avoid irrelevant data. The model of linking the measured values to brain activity also has to be valid as well as the models and assumptions about the specific functions of brain structures. Concerning the data collection, the subject has to respond to selected stimuli and his/her attention doesn't have to be distracted by other activities (Kenning, P. & Plassmann, H., 2005).

Research instruments

The following sections present a series of devices used in neuromarketing research. Among them, there will also be some equipment that due to the technological advances from recent years could change the way the research aimed at the consumer unconscious reaction to certain stimuli is carried. Methods of gathering data as eye-tracking devices or facial recognition software can represent data collection options that do not involve immobilizing subjects at a desk or near a fixed station and therefor can offer new ways of analyzing the consumer. The same thing can be said about mobile EEG devices or galvanic sensors that have seen a rapid improvement in recent years.

EEG (electroencephalogram) is one of the most used methods to analyze a subject's reaction to certain stimuli. This type of device taken from medical a environment and used by neurologists is designed to detect and monitor the electrical activity of the brain. Thus, by means of electrodes placed on the scalp, electrical oscillations resulting from the exchange of neurons can be observed at the millisecond level (Electroencephalography, 2016). These EEG devices have the advantages of showing a picture of the brain activity in real time, the advantage of not being an invasive data collection method and the advantage of being silent when conducting research that involves auditory stimuli. Due to the more frequent use of EEG as research devices, some companies such as Emotiv or Biopac have developed solutions that allow data collection without requiring a permanent connection to a fixed station. Thus they have succeeded in eliminating a nuisance and allowing the use of such devices in diverse research environments.

Magnetic resonance imaging is a technology successfully used in medicine in order used to track brain activity by observing the blood flow in the brain. The magnetic resonance imaging equipment consists of large magnets that generate an electric field while the subject/patient is lying on a table that is positioned in a tube that houses the magnets (Vlasceanu, S., 2014). This technology however, as Vlăsceanu mentions, has a number of disadvantages that can influence neuromarketing research. First of all, during the experiment, the investigated subject must remain motionless in order to avoid the collection of compromised data, also the changes in the brain activity can only be observed in this case with a delay of about 5 seconds. Also fMRI devices require specialized personnel that assist the process and that can operate the machine and conduct the experiment. Being an expensive technology and because of their low number and availability the access to laboratories with fMRI devices can more difficult compared to other options of collecting data. It is also worth mentioning that the machine emits noises during operation which may distract subjects and influence the relevance of the results (Vlasceanu, S., 2014).

Ocular activity detection devices (eye-tracker) are produced by companies like Tobii or SensoMotoric Instruments (SMI) and can take various forms depending on the necessities of the research. Thus two types of eye motion recognition devices can be identified: fixed or mobile devices. In the case of fixed devices, they can be used for tracking the eye movement on a projected area or on a monitor. Fixed devices are also used for carrying out research using virtual fixed settings.

Such devices represent a relatively cheap solution compared to other alternatives and can be efficiently used for tracking reactions to certain stimuli. Eye movement recognition devices allow researchers to track eye movements in real time and to map out the areas of interest in the field of view of the investigated subject. This can help researchers determine the visual stimuli that determine certain decisions or behaviors. Such a device used in parallel with other data collection devices like EEG or galvanic sensors can help reveal the changes in brain activity caused by color, shape or appearance of certain products in order to understand why we make certain decisions. Such devices can also be used independently from a fixed station or a fixed data storage, which allows a greater mobility of the subjects and the possibility of introducing them in real or simulated environments (physical or virtual).

Some of the advantages of eye movements tracking devices are listed below:

1) It is a relatively small investment compared to other devices;
2) They provide a real-time observation of the points of interest from the field of view;
3) Allow the mapping of the points of interest from the field of view;
4) Give details on the time length spent on each specific interest point and the moment when this has happened (which allows the correlation with data from other devices);
5) It is characterized by the fact that, it can provide increased mobility of the investigated subjects;
6) It doesn’t disturb in any way the investigated subject and therefor the collected data can be considered relevant.

Eye movement detection devices, can adapt to different scenarios depending on the area of research. Such glasses can be used to detect eye movements to develop research in real environments. Eye-tracking devices can be used to optimize the arrangement of web pages or develop applications but they are also for example used in testing shelves arrangements in real stores. Such analyzes can help explain the rational or irrational decisions and help the researcher to determine what are some of the aspects which determine the decision to purchase a product to the detriment of another. Even if this technology doesn’t track directly the responses of the brain, it still does this by tracking unconscious reactions and decisions indirectly and used in parallel with a mobile EEG device, it could represent a powerful research instrument that can be used in more diverse scenarios.

Facial recognition software became a way of decoding emotions and identifying the reasons that can lead to various consumer decisions. Companies like Noldus or Vicar Vison have developed software that allows the recognition of emotions and decoding of the consumer behavior. Such a software can determine what kind of emotions are generated by certain stimuli and how can they influence the consumer. The software developed by Vicar Vision can analyze facial expressions in real time using a 3D face modeling method. This analysis uses facial modeling with up to 500 key points that allow the detection of any changes in the expression. Thus this software identifies six types of emotions (fear, disgust, happiness, anger, anxiety and surprise) which can be analyzed and recorded (Vicar Vision, 2011).

Skin conductivity sensors are based on a very simple principle in order to determine the electrical conductivity of the skin. The human skin's electrical conductivity is directly influenced by the sweat gland activity. This can be explained by the increase in skin moisture, which facilitates the transfer of electric charge. The activity of the sweat gland is directly related to the activity of the sympathetic nervous system which in turn affects glands rise to a psychological stimulus. The sympathetic nervous system is the one that is responsible for the reactions in case of danger or unforeseen situations by reacting autonomously and uncontrolled. These reactions cause unexpected release of adrenaline and noradrenaline, which are then released into the blood (Miu,

A. C. & Olteanu, 2003). In this way the secretion of sweat is stimulated and determines an increase in the electrical conductivity of the skin.

The changes in the electrical conductivity of the skin are in most cases accompanied by changes in body temperature or blood pressure. All these changes are unconscious actions taken by the sympathetic nervous system and thus, this method of data collection as well as the previous methods described in this paper represents an effective method that can be used to study unconscious reactions to marketing stimuli. One study that uses galvanic sensors was conducted by Wijk et al. in 2012. They have noted that presenting disliked as well as liked food to consumers has determined an increase in the electrical conductivity of the skin and a decrease in the temperature of the fingers in the case of disliked food. In the case of children, when asked to taste food, they had lower electrical conductivity of the skin compared to adults (de Wijk, R.A. et al, 2012).

Like the variations in the electrical conductivity of the skin, changes in heart rate are also a consequence of the sympathetic nervous system activity. Variations in heart rate and blood pressure are directly related to the release of adrenaline and noradrenaline in the blood when the body responds to unforeseen circumstances. As well as the previous methods of analysis and detection of unconscious reactions to stimuli, temperature variations can also detect emotions which can in some cases determine the consumer behavior.

Conclusion

This paper offers a general description of relevant instruments that are used or that could be used in parallel or separate when conducting neuromarketing research studies. As mentioned before, the instruments used in neuromarketing research have each advantages and disadvantages that could contribute to the relevance of the research results. However if used in parallel, these methods of gathering data could offer complex insights regarding the behavior of the consumer as well as regarding the emotions that can influence his decisions. The current context puts technology, society and human beings in a quickly changing position and marketers need to keep up. Consumer preferences change frequently depending on various factors and marketing strategies must consider these issues. The influence of social sciences or psychology is evident in the economic or marketing domains, supported by numerous studies, some of which are mentioned and cited herein. A trend towards interdisciplinary consumer behavior studies in the neuromarketing field can be observed.

A very important conclusion drawn following the bibliographical study conducted refers to the fact that the investigation is very complex and difficult to distinguish. Thus, the literature is replete with psychological theories applicable to the economy, but on the other hand there are various controversies between supporters of these theories. On the other side, we can remember the methodological complexity and lack of well-defined paradigms of study. So it is common in literature exhortation to continue these studies to highlight the psychological component in the economy.

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EVOLUTION OF THE SUSTAINABILITY CONCEPT

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Abstract

Purpose *– The purpose of the paper is analyzing the evolution of the concepts "sustainability / durability" and to improve the definition of these terms.*
Methodology/approach *- Exhaustive study of the concept evolution from ancient times to the present analysis based on questionnaires and face to face meeting with subjects (people with higher education) about how is understood the concept of sustainability.*
Findings *– The time evolution of the concepts of sustainability and durability highlighting the limits of the existing definitions and the necessity of systemic approach of concepts and determinants.*
Research limitations/implications *– The Old Testament sizes are very large, so they are partially analyzed.*
Practical implications *– A new vision of sustainability.*
Originality/value *– Starting with the Old Testament, the paper outlines the implications of sustainable development. The concepts of sustainability / durability have modern origin, but in human history have been defined implicitly in ancient writings and practice. The implications of Old Testament from the perspective of sustainability highlights the essence of this paper.*
Key words: *sustainability, evolution, determinants factors.*

Introduction

Sustainability and sustainable progress are priorities in any time of crisis. The key issues in crisis management in light of achieving sustainable products, underpinning an economy consistent, sustainable, both for development today and for future generations.

The terms "sustainability" and "sustainable" appeared in dictionaries in the second half of the 20th century. But equivalent terms in French (durabilité and durable), in German (Nachhaltigkeit and nachhaltig), in Romanian (durabilitate and durabil) have been used for centuries. History shows that concern for sustainability has been a feature of Humanity in the past 10,000 years. The demand for raw materials and its impact on the environment have been a constant issue throughout human history (Zavodna, 2013; Espinoza, A., and Porter, T., 2011).

The concepts of sustainability / durability have modern origin, but in human history have been defined implicitly in ancient writings and practice. As early as the ancient Egyptian, Mesopotamian, Greek and Roman civilizations environmental problems such as deforestation and the salinization and loss of fertility of soil occurred, and today we consider environmental issues as a sustainability component.

The temporal landmark Old Testament of sustainability

Throughout time man has realized that the survival of his species depends on how he can manage the resources made available by the planet Earth and how he can coexist with other nations. Sustainability responsibilities existed and were applied by mankind since ancient times. The Bible

is an important milestone/landmark, being one of the oldest writings in which we can identify the three major areas of sustainability: social, economic and environmental.

According to Genesis, the first book of the Old Testament, nature and man are God's creation, the latter being created in order to "manage" the Earth: “Be fruitful and increase in number; fill the earth and subdue it. Rule over the fish in the sea and the birds in the sky and over every living creature that moves on the ground.” (Genesis, 1:28). Therefore, it is observed the greatness of man who can dominate the Earth.

Due to the fact that "God created man in His own image" (Genesis 1:27), it can be assumed that all people, all nations are equal. This principle is applied nowadays by the fact that all citizens are considered to be equal before the law.

The man was not created to be alone, «Then the Lord God said, “It is not good that the man should be alone; I will make him a helper fit for him”» (Genesis, 2:18), he is in a constant connection with other human beings and the whole ecosystem. Thus, there are outlined four types of human relations: with other human beings, with other living things, with the environment and with divinity.

The Garden of Eden, “Then the lord God planted a garden in Eden in the east, and there he placed the man he had made. The lord God made all sorts of trees grow up from the ground, trees that were beautiful and that produced delicious fruit. In the middle of the garden he placed the tree of life and the tree of the knowledge of good and evil. A river flowed from the land of Eden, watering the garden and then dividing into four branches… The lord God placed the man in the Garden of Eden to tend and watch over it.” (Genesis 2: 8-15) can be considered a first model of complete system set up, being described as a place where living organisms and nature have managed to form a symbiosis **(a sustainable system).**

This system collapsed as soon as the first humans, Adam and Eve, decided to break the single commandment given by their Creator, to not eat from the "tree of knowledge", «But the Lord God warned him, “You may freely eat the fruit of every tree in the garden except the tree of the knowledge of good and evil. If you eat its fruit, you are sure to die.”» (Genesis, 2: 16-17). Given the fact that man was endowed with reason and free will, it has the ability to make their own choices. As a result of non-compliance with the given command, Adam and Eve were driven from the garden of Eden, **being created the first imbalance between man and nature**.

In Genesis were highlighted the devastating effects concerning human foolish behaviour with other human beings and with the environment, «So God said to Noah, "I am going to put an end to all people, for the earth is filled with violence because of them. I am surely going to destroy both, them and the earth.”» (Genesis, 6:13). We are witnessing an imbalance which is cut off from the root in order to resume the **human balance in environment**. That's why it's imperative the existence of certain laws and rules to control these adverse effects on development.

However, the peoples of antiquity have put very high price on the idea of unity and mutual support. Economic activities, were not focused only in family but into the whole tribe of which belonged to.

An example is when Joseph arrived in Egypt and was commissioned by the Pharaoh to administrate the country's resources in order to satisfy current and future needs of the population, «You shall be over my house, and all my people shall order themselves as you command. Only as regards the throne will I be greater than you. And Pharaoh said to Joseph, “See, I have set you over all the land of Egypt.”» (Genesis, 41: 40-41)

Joseph, had access to Egypt's wheat reserve and for a period of seven years, in which time it was wealth in the country, he has been occupied to supply the storehouses. At the time of the coming hunger in Egypt, Joseph, who was delegate from the Pharaoh's side, has accessed the state wheat supplies and sold them to the egyptian, “When the famine had spread over the whole country, Joseph opened all the storehouses and sold grain to the Egyptians, for the famine was severe throughout Egypt. And all the world came to Egypt to buy grain from Joseph, because the famine was severe everywhere.” (Genesis, 41:56-57). Moreover, he gave people wheat seed, and then, they provide one-fifth of the harvest, to the Pharaoh. He had a plan and an operational mechanism

of what allowed him to achieve the so-called "Bank of supplies" and later calling the idea of **economic responsibility** to allow other Nations to benefit from it. allowing other nations to benefit from it.

It can be observed a new economy model in which decisions are taken by "advice" (Representative Assembly), through its leader or through his delegates, for the good of the citizen: “When all Egypt began to feel the famine, the people cried to Pharaoh for food. Then Pharaoh told all the Egyptians, "Go to Joseph and do what he tells you.” (Genesis, 41:55) **It can be recognized the power of leaders and their capacity in making decisions in order to maintain the system balanced.**

Exodus is the second book of the Old Testament and has as its main theme the issue of "chosen people", from Egyptian bondage.

With the coming of the throne of Egypt for a new Pharaoh it has began the suffering of the Israelites. Due to the fact that the Israeli people had suffered an ascent from the military point of view and a massive increase in population (numerically), King of Egypt, feeling threatened by them, decided to conquer them and turn them into slaves, " they have made life bitter through heavy works ... ” (Exodus, 11) **When a subsystem grows, leaving others behind, the system becomes unbalanced followed by the tendency of balancing.**

The Jews at the head of which stood the Moses, considered one of the greatest prophets of the Jewish and Christian traditions, **were able to get out of Egyptian bondage** with the help of some miraculous intervention from God: “the turning of water into blood ","the frogs invasion "," the lice invasion," the invasion of flies"," cattle plague"," chicken pox "," black stone and fire"," locusts"," dark for 3 days", "the death of the first-born baby." (Exodus, The 10 plagues, 7-14) **(social responsibility).**

It is very interesting to note how united were the Israelites in their faith, faith that offered them a sense of security and protection. They, led by a leader in the person of Moses, were able to free themselves from the bondage of Egypt and cross the Red Sea toward the realm of what has been promised by covenant, mentioned above, between Abram and God. The Jewish people had rejected Egyptian dominance and control and refused to be exploited and thus, united in their common purpose was able to break free.

The theoretical implications of sustainable development

The starting point of the concept in sustainable development was the World Economic Crisis between 1929-1933 caused by overproduction and worsed by sharp decline of people purchasing power. This crisis started in United States of America where between 1920-1929 the economic activities have greatly expanded, but it burst worldwide in the middle of 1929, causing serious damage in the production of iron, copper, steel, coal, slat, leaving huge amounts of unsold goods, in warehouses.

In the specific literature after 1970, two categories of definitions of the concept of sustainability have been developed (Draghici, et al., 2011; Moraru, et al., 2011):

(1) functional definitions related to the concept of "sustainable development" and
(2) definitions oriented towards systemic approach.

In English, but also in other languages, there is no clear distinction between the concept of "sustainability" and "durability" and, in general, the term "development” is understood by its secondary meaning of "evolution".

The numerous functional definitions of sustainability have been analysed by many authors. Based on this analysis, critical conclusions can be drawn regarding functional definitions of sustainability:

- relatively vague wording of the concept of sustainability, often confused with the concept of environmental protection, which has led to the overuse of the concept of sustainability, vagueness and ambiguity;

- correct understanding of the scientific term “sustainability” was investigated on a group of subjects with higher education to highlight the clear knowledge of the concept;

- a limitation in defining the concept of “sustainability" in knowledge and current practice level without taking into account the progress in scientific knowledge, in activity and innovation in the coming centuries;

- known determinants categories of sustainability (natural, social, cultural, economic) are limited and not detailed, which generated a wide variety of interpretations, methods, indicators and measurement / evaluation of sustainability, difficult to use in practice;

- difficult to differentiate the concept of " sustainability" as understood by other related concepts : sustainability, resilience, longevity (Pater, and Cristea, 2016).

Therefore, the functional implications of sustainability definitions are systematized in Figure 1.

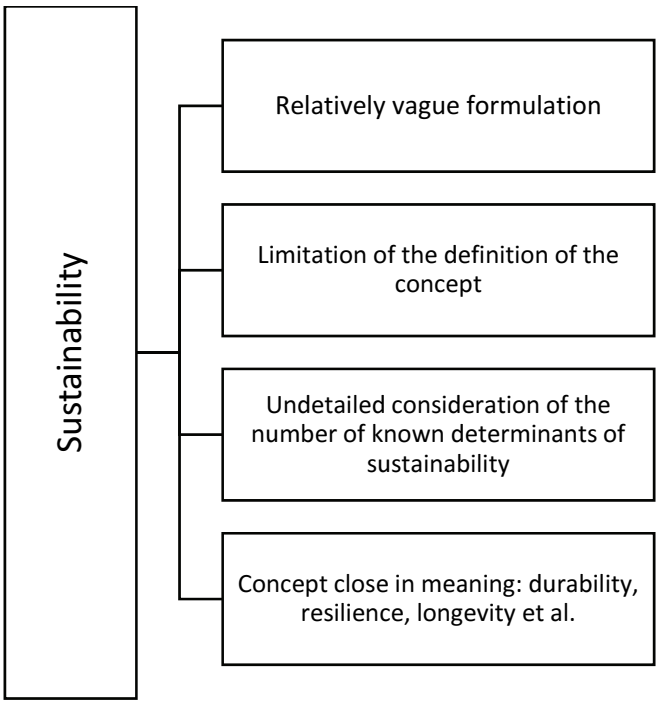

Figure 1. The functional implications of sustainability definitions

The systemic definitions of sustainability bring improvements in the reflection of the content of the concept. In this regard, two concise definitions are to be remarked:

- “Sustainability is defined as ability of dynamic, stochastic, purposeful system, its components, boundaries and hierarchical context to continue to the future” (Hansen, 1996) p.18,
- “Sustainable development meets the requirements of the present without compromising the ability of future generations to meet their own needs” - United Nations Commission on Environment and Development.

The systemic approach of the sustainable development is summarized in Figure 2. Can be seen the defining elements: ability of dynamic, ability of stochastic, future development, enhancing

economic and social efficiency in the use of natural resources, and preserving the natural heritage (Izvercian, et al., 2014; Moraru, et al., 2011).

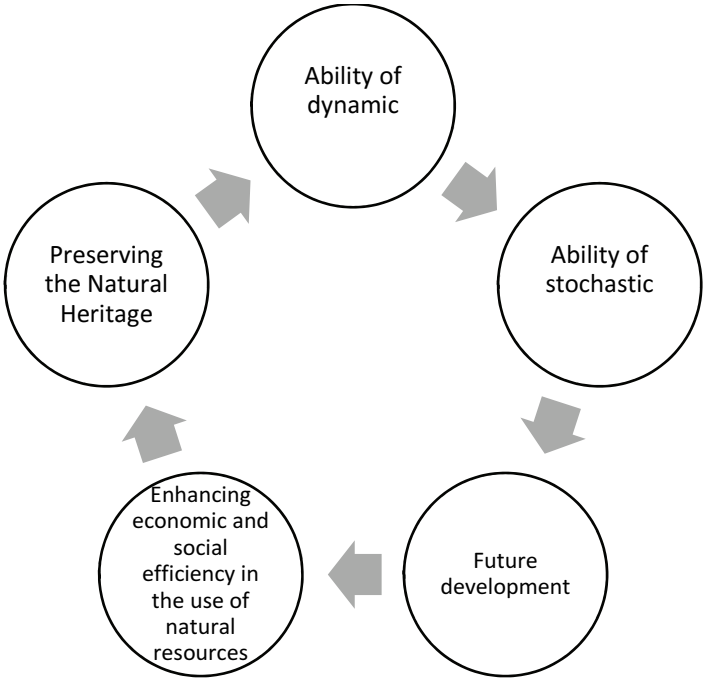

Figure 2. The systemic factors of the sustainability

Market analysis from the perspective of sustainability

In support of the aforesaid there has been made a research market to identify the level of knowledge regarding the concept of sustainability and sustainable products, the chosen criteria used by consumers when decide to purchase sustainable products, identification of the information media on products to be purchased, identification of intention in buying a sustainable product based on costs, identify main sustainable products preferred by consumers.

The study was carried out by applying questionnaires both in physical, face to face, and electronically format. The questionnaire consists of 23 questions. Data collection took place between May 18 to 30, 2016, in Timişoara. The sample consisted of 58 subjects, with home address or resident in Timişoara, respectively: 21 men and 37 women. The method used in research was the sociological survey and regarding the tool, there was used the questionnaire. The sample was randomly selected.

Finishing the research, the following conclusions can be presented:

- the vast majority of respondents use the word "sustainability " specifically for environmental protection. Only three of those who defined this concept, meaning 4.5 %, were able to approach the correct definition emphasizing that sustainability is not just the ecological environment but also to create a balance between the social, economic and environmental . Therefore, it appears that, although this word is becoming more popular and known among the citizen, very few of them really know what it means;

- most of the respondents, almost 18,31 %, consider that the most important feature that should have a sustainable product is its ability not to harm. Only 2 % of them think that the aesthetics is the most unimportant feature of a sustainable product;

- the vast majority of the interviewed are not informed and do not have the necessary knowledge related to the specific characteristics of a sustainable product. Only 16 % of them consider that the manufacture process and use of sustainable product must involve a low consumption of resources;

- regarding the quality of the products purchased, 95 % of respondents pay attention to the high quality of the purchased food, while the remaining 5 % are concerned about the quality of food they consume;

- 78 % of respondents would like for the consumer electronics products they buy to have a long lifetime. Same result, with a difference of 2 %, meaning 76 % of respondents believes that cars should have a long life. In the opposite side is food, where only 34 % of individuals surveyed believe it should stay fresh long time, which is otherwise normal because food is usually consumed in the following days of purchase;

- most of the respondents, with small differences, consider that the price sought when buying a sustainable product is the average, for all the five types of products listed before, respectively: 67 % for food, 79 % for clothing, 76 % for footwear, 66 % for consumer electronics and 72 % for automotive;

- taking into consideration all the 58 respondents, 50 % of them consider the price a determining factor for a sustainable product purchase, while 22 respondents, meaning 38 % pay attention to the products they buy to be sustainable. 12 % of them are not necessarily interested in purchasing such products. Therefore, it can be said that the price of a product is one of the decisive factors in its purchase process;

- more than 50 % of respondents are willing to pay a higher price for a sustainable product, while 29 % of them prefer to buy and consume these products, as long as breakneck price is in line with their income. 16 % of respondents are not willing to pay more to buy a sustainable product, they prefer to consume other types of products;

- the main feature that leads most of the subjects (69 %) to buy again a sustainable product is its quality. It is interesting to note that none of the interviewed do not consider that brand is the most important feature of a sustainable product, and only one of them consider the appearance of the product as the essential characteristic in the repurchase process;

- with reference to the main activities that affect the environment, 27 subjects, meaning 47 %, believe the main factor in pollution is industry, followed by wars (24 % of subjects) and transport (21 %). None of the respondents do not consider agriculture activity harmful to the environment;

- more than half of respondents consider that the two main measures that must be taken for educating citizens in respecting and protecting the environment are represented by education in schools, followed by penalties. From the responses provided, we find out they consider drastic measures or fines to be many more efficient for citizens to comply with environmental legislation.

Due to the majority of the respondents looking for the products to have sustainable features, it can be concluded that there is a high interest from respondents in the application of this concept and the degree of awareness on the negative effects of non-compliance with these sustainability criteria will have negative effects on the future of the planet.

The Critical analysis of the sustainability's implications

Biblical implications outlines a number of key elements related to sustainable development. Those factors relate to human freedom and the possibility to use the resources, but also to the manner in which those resources can be used in a balanced way and limited by certain principles:

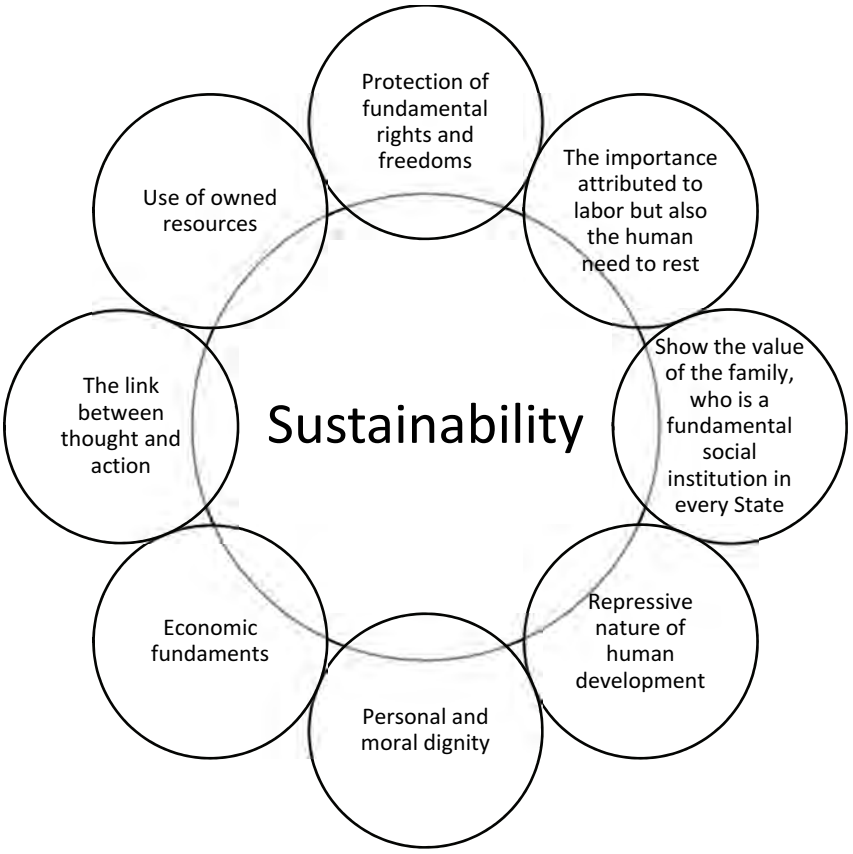

Figure 3. The link between Old Testament and sustainable development

a) protection of fundamental rights and freedoms
b) the importance attributed to labour but also the human need to rest
c) show the value of the family, who is a fundamental social institution in every State
d) repressive nature of human development
e) personal and moral dignity
f) economic fundaments
g) The link between thought and action
h) Use of owned resources

The critical analysis of known systemic definitions of sustainability (Pater, and Cristea, 2016) reveals several aspects:

- is not taken into account for the future the progress of knowledge, innovation and mainstreaming of human action;
- are not taken into account the changes in the framework of functional cycles/ behavioral cycles /generations cycles/ cycles of sustainable progress for systems, changes which can expand its network systems domains evolution like space-time-resources-products;
- the definitions are based on different models and concepts (cybernetics, classical systems theory, science of complexity, etc.) are not related to each other;
- it manifest abstract forms tendencies of defining sustainability, making it difficult to achieve and understand in practice the sustainability and durability;
- the categories of resources/products and the external environment are not clearly detailed, which make it difficult to identify priorities for action for achieving sustainability;
- no clear distinction is made between the concepts of durability and sustainability, it's hard to distinguish time horizons in the definitions of these concepts.

Discussion and conclusions

Sustainable development represents the exit solution from the various economic and ecological crises that took place starting in the twentieth century, by creating a balance between the three great pillars of sustainability: economic, social and environmental issues, but its main concern is preserving and protecting the quality of the environment. Sustainable development also promotes the advancement of economic, social and technological developments without disrupting the natural balance of the planet.

It can be noticed the existence of sustainable development roots in the Old Testament. The man has a huge responsibility, to properly manage the resources of the planet, so as not to exhaust them and allow the future generations to benefit from them. The Bible itself shows the greatness of man in relation to the environment, according to it, man was created in order to manage the planet Earth.

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MARKETING RESEARCH ON THE EVOLUTION OF DOMESTIC PRODUCTION FRUIT CONSUMPTION IN ROMANIA (CASE STUDY IN IAȘI COUNTY)

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Abstract

The case study was conducted at SCDP Iasi and aimed at analyzing the annul fruits / capita consumption and the gap between Romania and other European countries*, but also the consumers' attitude towards some aspects regarding demand, favorite varieties and hybrids, costs and comparing the regular physiological consumption and the average consumption in Romania and the European Union.*

The research methodology was represented by statistical survey based on a written questionnaire. *The target market consisted of SCDP Iasi own stores, wholesale and retail distribution companies, units of fruit industrialization and individuals.*

Also, ***we studied the possibility of increasing the market share, based on consumers' perception related to the apple producers' performances.***

The results confirmed the leader position of SCDP Iasi on the Iasi market, compared to other competitors*.*

The research was applicative and was based on an elaborate questionnaire, which was distributed on a sample of 150 subjects (45 men, 75 women and 30 children and teenagers, aged between 12 and 18) from Iasi, for apples. *Based on the questionnaire, we elaborated the perceptual mapping for apples, resulting that consumers' preferences are heading to the Golden Delicious variety, followed by Idared and Jonathan.*

The paper is original, being the result of own research done by the collective of authors.

Key words: *fruits, consumptions, Iași county.*

Introduction

Romania's transition to a market economy considerably influenced companies, including the agricultural ones, in terms of marketing research, where aspects regarding consumer needs, supply and consumption of fruits occupied a primary place.

Consumer demand for fruits aims at the fundamental requirements of consumers, which is reflected in the amounts of fruit and fruit products about to be purchased.

Changes occurring in the income distribution of various population segments havean important role in assessing the trend of consumer demand for fruits.

Consumer's margin is used to compare different situations on certain welfare of the consumer. Often, a certain price change is associated with a change in thedemandedquantity, which may be lower (coefficient of elasticity based on price is between 0 and 1, but there is also the situation when the change of the required amount may be higher (coefficient of elasticity based on priceis negative, but higher than - 1).

In practice, the emergence of a positive correlation between price andde-manded quantity is unusual.

Social and demographic factors also influence the consumption demand, although their effect is very difficult to quantify.

In this sense, it can be exemplified, as a factor, the "increasing elderly population", as a result of low birth rates combined with increased life expectancy.

Currently, each agricultural company is vitally interested in knowing how the market accepts its products, as well as the features and quality characteristics of similar products offered by competitors.

In countries with market economies, demand must have a permanent character, which will positively influence the demand and a trend to standardize the use of labor and income earned by producing, distributing or trading companies.

In modern economies, establishment of the assortment of fruits and fruit products is made increasingly following criteria related to the typology of consumers in certain market segments that they address.

This explains the fact that, lately, there have been a number of shops such as "all for teenagers", "all for travel", "all for organic products" etc.

Materials and methods

Currently, Iasi county's population is about 822000 inhabitants, of which 435000 in rural areas and 387000 in urban areas.

The daily fruit requirement is different and it is influenced by several factors, of which we mention: age, gender, human energy consumption, profession, etc.

Based on recommendations regarding the people'sdailyphysiological needs for fruits and fruit products, the normal physiological average annual consumption has been determined (104.5 Kg), which was differentiated by age as follows:

- 91.25 Kg in the category "under 19 years";
- 109.5 kg in the category "20-44 years";
- 118.6 kg in the category "45-64 years";
- 94.9 Kg in the category "over 64 years"

To determine the annual requirements of the consumers in Iași county for fruits and fruit products,three versions were developed (table 1).

Table 1 - Variants of ensuring the yearly intake of fruits and fruit products per capita of the population in Iasi County (fresh equivalents)

Variant	Yearly average intake - Kg/loc.-	% as compared to V_1	Yearly need - tons
V_1 – normal physiological intake of fruits	104,5	100,0	85888
V_2 – average intake of fruits in Romania	59,5	56,9	48903
V_3 - average intake of fruits in E.U.	91,0	87,1	74792

Source : Own calculation

The destination of the total supply of fruit production in Iasi county highlights an inappropriatereport. Compared to the national and international annual consumption of fruits, differences were obvious in Iasi county.

In order to build on this, we used a scale with three levels of assessment for consumption (unsatisfactory,satisfactory and very good), and, from the comparison, it resulted that the population of Iasi county has an unsatisfactory consumption of fruit, placing Romania in the group of poor countriesandregions, with a low standard of living (Chiran A. and all., 1998).

To assess consumers' attitude towards buying a particular orchard product (eg apple), we have used statistical sampling method, based on a written questionnaire.

The investigated collectivity was represented by the apple consumers residing, with work or activity (pupils, students), in the municipality of Iaşi.

The survey unit was the consumer, regardless of gender, age and socio-professional category (except for persons under 18 years).

The questionnaire contains 10 questions with 21 variables and aims at gathering information about the proposed objective: to establish consumer preferences on apple varieties and positioning of the main producers on the Iasi market. In drafting the questionnaire, it was disregarded that in order to be considered good, it must lead to the expected, true and usable answers.

To obtain conclusive answers, people involved in compiling the information have been trained in advance, specifying the number of subjects in the sample, their structure on socio-professional categories, duration of response (time allowed), questionnaire confidentiality, the venue for questioning.

From presentingthe survey, it results thatdrafting ruleshave been respected (header, editing, questionsformulation), so that it becomes attractive and stimulating for the subjects.

Also, the confidentiality of the questionnaire is statedand the addressing and concluding of the questions expresses respect and consideration for the respondents, which motivates them to respond seriously. Collection of information was done by survey method and, as a structured form of communication, alls amplesubjects received the same questionnaire.

Validation of responses represented a very important step, because out of the 133 questionnaires, 117 were detained following the endorsement, to which answers were complete and appropriate. Information processing was performed using a specialized software for social statistics - SPSS (Statistical Package for the Social Sciences, version 12), which is compatible with Windows operating system.

The frequency analysis of responses was determined for every variable and for each case, both in absolute and percentage values.

Results and discussions

Consumption of main types of fruits and fruit products has been highlighted in numerous studies and research (Alexandri, 1999; Belaz, 1989; Boier, 1994; Chiran. and all, 2003, 2007).

As it is known, the consumption of fresh and processed fruits has a special significance for human health and nutrition. In this context, developed countries are granted a special interest in issues related to the production and recovery of fruits in consumption, by the population.

Necessary measures have been taken for promoting a good and balanced nutrition, to ensure the health of the population, by creating abundance and diversification of fresh and industrially processed fruits.

After 2007, in Romania, the annual consumption of fruits and fruit products (fruit equivalent) was relatively stable, with a magnitude of variation between 43.4 to 48.1 kg/capita (Stanciu and Glăman, 2000).

Compared to the annual national and international consumption of fruits, in Iasi,the differences were obvious. As shown, the intensity of consumption is quite low. Thus, reported to the necessaryannualsupply of fruits for the needs of the population in Iasi county, which ranged from 48900 to 85900 tons, consumer demand was quite low, hovering, in some years, at a level below 30 kg/capita/year (Budescu, 2001; Chiran and all, 1997, 1998).

Annual consumption in main types of fruits and fruit products has been highlighted in numerous research studies (Constantin and all., 1997; Demetrescu., 1993; Dobre and. all, 2000; Funar and all, 2005; Iosif and Iosif S., 1998; Istudor, 1998; Murariu, 2005).

In Romania, compared to its potential, national consumption of industrially processed fruits and vegetables, canned over a long period of time, is currently in a process of concerning decline. Averages of consumption in Romania do not correspond quantitatively, nor qualitative to the consumption needs.

Also, consumption is usually directed towards fresh products. Therefore, it is absolutely necessary to prove that industrially processed and canned products, by scientific methods, can replace fresh produce and compete with them, both in terms of nutritious potential and digestive qualities.

Analysis of consumer panel based on gender and age revealed the following:

- of the 117 repondents, 45.3 % were male and 54.7 % female;
- by age, the highest share consists of young repondents (64.96 %), from the "21-45 years" group, followed by the "46-65 years" group,with 29.91%;
- the percentage of subjects in the age groups "up to 20 years" and "over 65 years" was insignificant.

Based on occupation, of all subjects, the highest share is occupied by engineers (44.44 %) and teachers (23.93%). The other socio-professional categories were scored between 3.42 % (retirees) and 11.97 % (other occupations).

By residence, 84.62 % live in Iasi and 15.38 % in rural areas, but operating in Iași (students, employees).

When asked "How importantis the variety in apple purchase?", 27.35 % of repondents stated that variety is an "important"criterion, 17.09 % answered that the variety is "extremely important", while 14.53 % appreciated it as a "very important"element (Figure 1).

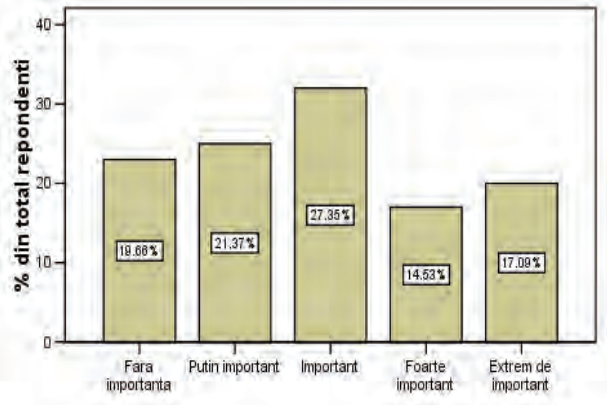

Figure 1. The importance of variety in apples purchase for the investigated sample

Summing up the positive options of those questioned, it appears that in the process of purchasing apples, 58.97 % attach a certain importance to variety, which denotes possession of a great knowledge of the apples varietes' characteristics.

At the same time, for 41.03 % of the subjects, in a purchase decision, apple variety is "less important" or "unimportant", which demonstrates poor knowledge in the field, especially on certain characteristics, such as: taste, smell, color, acidity, consistency, degree of perishability etc.

Regarding "preceived importance of quality for consumers when purchasing apples", 87.18 % of respondents consider quality as a dominantattribute in the purchase, 47.86 % indicating that it is "extremely important" (Figure 2).

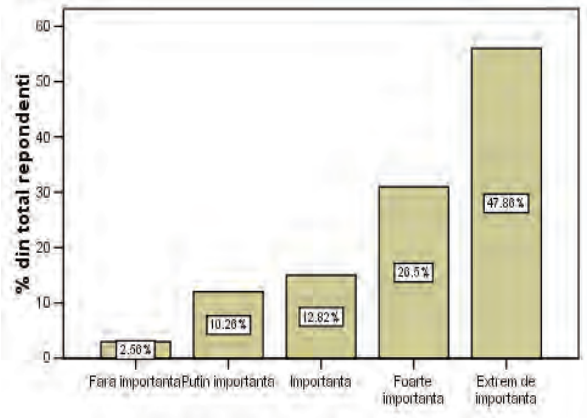

Figure 2. The importance of quality perceived by consumers in buying apples

Meanwhile, 12.82 % of repondents believe quality is "less important" (10.26 %) or "unimportant" (2.56 %).

When asked "What importance does price have in the purchase of apples?", 57.26 % answered that price is "unimportant" or "less important" (25.64 %), from which we conclude that, due to the importance of apples in human nutrition, the price does not represent a barrier forpurchase and consumption (Figure 3).

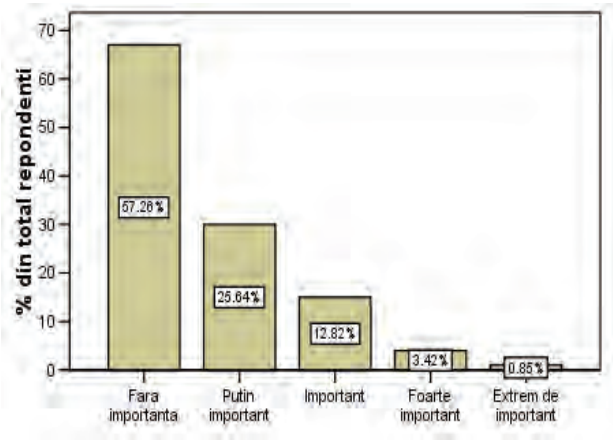

Figure 3. The importance of price in apple purchase for the investigated sample

Also, the fact that only for 4.27 % the price is "very important (3.42 %) or "extremely important "(0.85 %) expresses, at least for this product, a high purchasing power of the population in Iasi, demonstrated by insensitivity to price of about 83% of all subjects.

The answer to the question "How important is the appearance and packaging of fruits to consumers in the buying process?" is also abnormal, because only 3.42 % of those surveyed consider this criterion as "important" (Figure 4).

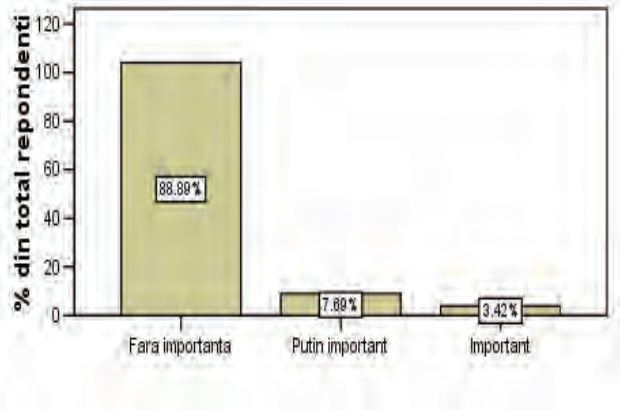

Figure 4. The importance of presentation and packaging in apple purchasefor the investigated sample

We believe that this option is influenced by a number of factors from a past period, when packaging and packing methods were not a necessity in the process of recovery of goods, including fruits. In addition, 97.44 % of the subjects polled the prestige of the manufacturer (bidder)as "unimportant"in fruits purchase, which shows a limited level of knowledge (Figure 5).

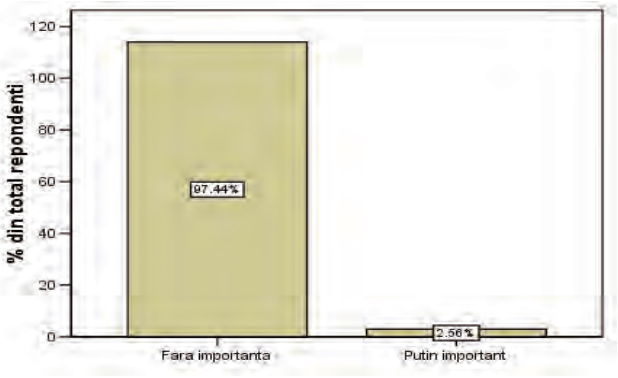

Figure 5. The importance of the manufacturer' prestige in apple purchase for the investigated sample

When asked "What variety do you prefer when buying apples?", 49.57 %indicated Golden Delicious variety, 20.51% Jonathan variety, 13.68 % Starkrimson variety (Figure 6).

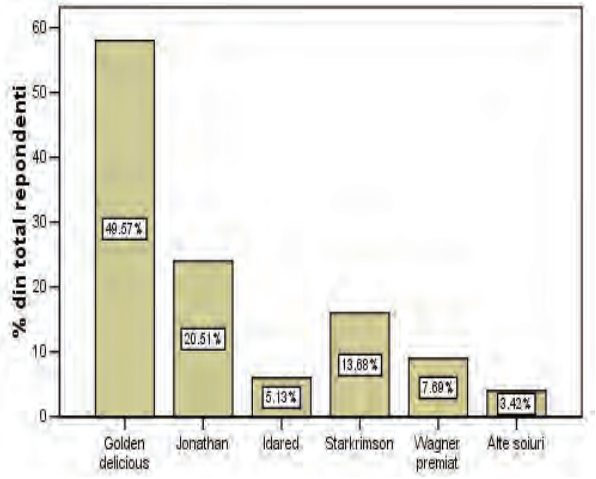

Figure 6. Hierarchy of apple varieties, based on consumers' preferences

Because there is a degree of differentiation in consumers' preferences, apple producers in Iasi will be motivated to maintain a certain cropstructure, to ensure varieties that meet the requirements. Based on consumers' preference for a particularsupplier of apples, S.C.D.P. Iasi has the leader position in the market, gathering 47.86 % of the votes, followed by individual house holds in Iași, with 19.66 %, S.C.Vinifruct-Copou S.A. Iaşi - 11.11 %, etc. (Figure 7).

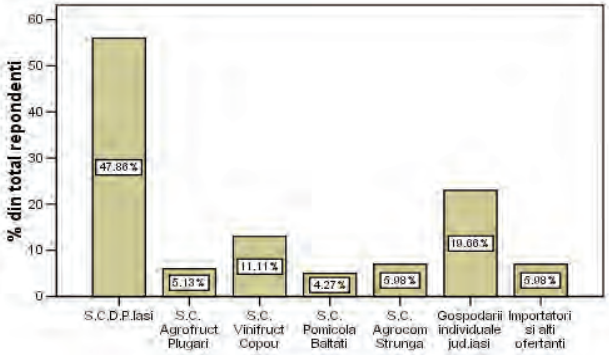

Figure 7. Apple suppliers market position in Iasi, based on consumers' preferences

This positioning of the main apple producers and suppliers in Iasi reflects a synthesis of the influence of all the factors that have contributed, directly or indirectly, to a greater or lesser extent, to achieving compliance between defined and expected quality, between the requirements and satisfaction of customers.

Conclusions

1. Structure of fruit plantations is inadequate,the plums have the largest share, while peaches, cherries, sour cherries, hairs, walnuts, etc., are grown on quite low surfaces.

2. In Iasi county, orchards occupy over 6000 hectares, of which 82% belonging to the private sector, placing it first in the eight counties in Moldova.

3 Out of the total Iasi county fruit plantations, bearing plantations occupy 93.4%, of which the apple ranks first, followed by plum, cherry and sour cherry.

4. In Romania, total fruit production was uneven and rather low, returning about 60 kg / capita / year, with an average annual consumption of about 49 kg / capita.

5. In the last decade, the dominant form of exploitation of fruit in Iasi was "fresh after harvest", with obvious differences in species.

6. In the reviewedperiod, as a result of rising prices, a decrease in fruit quality and especially in the purchasing power of the population, in Iasicounty, the supply – demand ratio was subunitary, and the average annual consumption of fruits per capita of 26.4 kg placed Iasi county area in the group of poor regions, with low living standards.

7. Depending on the recommendations of the experts, the average annual consumption needs of fruit and fruit products is 104.5 kg, which was differentiated by age groups.

8. Following calculations, the Iasi county, the annual consumption demand of fruits and fruit products (fresh fruit equivalent) falls between 48900 tonnes (V2 - average consumption achieved in Romania) and 85900 tons (V1 - physiologically normal consumption of the population). At the local level, the annual demand for fruits and fruit products (fresh fruit equivalent) will be between 19500 tonnes (V2) and 34200 tonnes (V1).

9. Following a marketing research on a sample of117 subjects, on the importance of variety in the process of buying apples, it was revealed that 58.97 % of respondents put varietyfirst, demonstrating knowledge of theanalyzedvarietal characteristics.

10. From the analysis of information on the preferred varietyby the surveyed consumers,it was revealed that the favorite variety is Golden Delicious, followed by Jonathan etc. In the process of buying, 87.18 % consider the quality of apples as an essential attribute. Meanwhile, 83.92 % of respondents believe that, in the process of buying apples, price is less important or unimportant.

11. Most subjects consider that the presentation and packaging of fruits and fruit products, as well as the prestige of theproducer,are not important. This shows a poor knowledge of fruit producers and reduced requirements in fruitpackaging and packing.

12. Reffering to the consumers' preference for a particular provider of apples, on the Iasimarket, S.C.D.P. Iasi is the authoritarian leader, meeting 47.9 % of the votes.

13. According to the National Pomiculture Development Program, which provides a tripling of the total fruit production, it is recommended for Iasicounty to follow the third variant of fruit supply, which means that total fruit production to reach 74800 tons annually, compared to an average of 50600 thousand tons.

14. For the new plantations about to be established, the following varieties are recommended for apples: Golden Delicious, Idared, Starkrimson;

15. It is recommended to take advantage of research and development, by creating and introducing new improved varieties with high productivity and resistance to diseases and pests.

16. To assess consumers' attitude towards buying fruits,as well as knowledge of competitors and their market position, we have used statistical sampling method, based on a written questionnaire.

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THE NEED ANALYSIS OF THE CITIZENS IN RELATION TO PUBLIC ADMINISTRATION

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Abstract

Purpose *– The main objective of the paper is identifying the issues faced by citizens in relation to public administration.*
Methodology/approach *- The research instrument used is questionnaire. It was distributed to a total of 240 public institutions in Romania.*
Findings *–The existence of a large number of documents to be submitted emerged as the main citizens dissatisfaction. Thus, it needs that strategy to be launch in order to simplify the procedures, focusing in particular by reducing the time to fulfill the required conditions.*
Research limitations/implications *– limitations concerning the number of completed questionnaires.*
Practical implications *– The questionnaire contains a series of questions aimed in ranking the problems in relationship with public institutions, measuring the intensity of satisfaction / dissatisfaction, perception subject / object relationship with institution.*
Originality/value *– Studying and correlating this information can be regarded as some potential solutions that can be implemented within public authorities and institutions in order to avoid a crisis situation.*
Recommendations resulting from the study are based on individual experience in all areas of the institutional with who he came into contact in terms of money alleged, time consuming and satisfaction with the services received, according to individual criteria.
Key words: *Public administration, citizen, needs*

Introduction

In the current climate of economic pressure and evolving political priorities, organizational change within public bodies is becoming an increasing priority. However, change is a complex process that can have negative as well as positive outcomes and as such it is worth looking at the available evidence so that the process is conducted as efficiently and effectively as possible. In order to help manager access the vast range of literature on organization change, this short paper aims the perception of citizens in relation with the difficulties and impediments regarding public authorities and institutions, using the questionnaires method and the debates.

At the society level, we are witnessing a change of the relationship between citizens and authority. In democratic societies the citizens is seen as a partner rather than a subordinate. Also in today's society, speed of performing various processes has grown constantly, leading to communication style change (largely under the influence of new communication technologies), which became a more direct one, less formalized and faster [Dobrota, C.2015].

However, modernization or the reform of public administration was in recent decades under the influence of the New Public Management, which currently focuses on efficiency, effectiveness

and customer orientation (citizen). In the past 10 years such theories have shown their limits and currently are being developed theories based on the concept of governance, which concern citizens (and companies) not only as customers but also as stakeholders in the governance of society.

We cross a prolonged period of transition which has brought in some extent, the reconfiguration of the formal and informal relations between individuals, and between individuals and institutions „The poor performance of many institutions and the economic problems faced by the majority of the population are accompanied by a sharp drop in trust capital of Romanian society".

Against a background of generalized lack of confidence, is observed, almost constant, growth of citizens mistrust in public institutions and in their ability to respond to their real needs. "For a large part of citizens, institutions (central and local) are not credible and some of them do not have the obvious functionality".

If the attitude of citizens towards public institutions and civil servants is generally negative, its desire for involvement is rather small. There is a contradiction between the fact that citizens recognize the importance / usefulness of participation and low levels in participating. Romanian citizen participatory culture is at a low level, it operating especially where his personal interests are affected. Sometimes citizenship act when it comes strictly about his own neighborhood or community to which he belongs.

A broader definition about customer satisfaction is "customer satisfaction measures the degree in which customer expectations are met." Thus measuring the satisfaction of interested parties / stakeholders used by public authorities and institutions reflect the following perspectives:

a) Description in general, as a process measurement of outcomes;
b) In terms of ensuring and improving the quality, efficiency and effectiveness;

Jan A. Eklöf, Anders Westlund (2007) define customer satisfaction index as a system that on the one hand, it shapes, measure, estimate and analyze the connection and interaction between consumer preferences, the perceived quality and the satisfaction consequences, and on the other hand, models and analyzes the organization performance.

Customer satisfaction can be measured as follows:

- Through a one-dimensional measurements. This method of measurement involves a single measurement or the overall satisfaction measure of customers.
- By building a customer satisfaction index. This index incorporates besides the satisfaction of various quality key dimensions also a component related to the importance and quality weight dimensions in the customer satisfaction process.

The general framework of the developed work

According to the services provided to citizens it was passed on the identification of the main issues faced by citizens in relation with public authorities and institutions.

Data were collected using sociological research methods and tools (surveys and questionnaires) or by organizing meetings / workshops with representatives of the concerned key public institutions (Fowler, Floyd J., Jr., 2009).

Surveys were conducted among citizens. The poll among citizens tries to measure their perceptions on their experience with public services. The method has the advantage of allowing the identification of factors that can cause irritation among citizens, such as the number and nature of the requested documents or the less happy experiences at counters. Such factors may play an important role in satisfaction (or dissatisfaction) towards the quality of services. (OECD, 2012).

This paper aimed to draw up an analysis of "needs and objectives of simplification and rationalization of administrative procedures for citizens' needs that once identified and removed will reduce excessive bureaucracy. The problems are generated by the existence of excessive regulations, sometimes redundant, as well as the lack of adequate communication and information.

The service analysis provided to citizens by the government includes (King, C.S.):

- Identifying the process by which is obtain the desired result;
- Identifying the involved institutions.

Regarding the institutions involved there is an issue related to the degree of fragmentation: the more we have several institutions involved, the higher the degree of fragmentation is. We care for each institution involved the role it meets: we have regulation authorities or institutions of implementation, with the possibility that some hold dual role.

Identifying the main issues faced by citizens in relation to public administration

The survey data reveals that the most important needs identified in commune, city and municipality are the service (providing service, communication and improving services) ie different issues facing stakeholders and the aspects of informing the interested parties. (Figure 1)

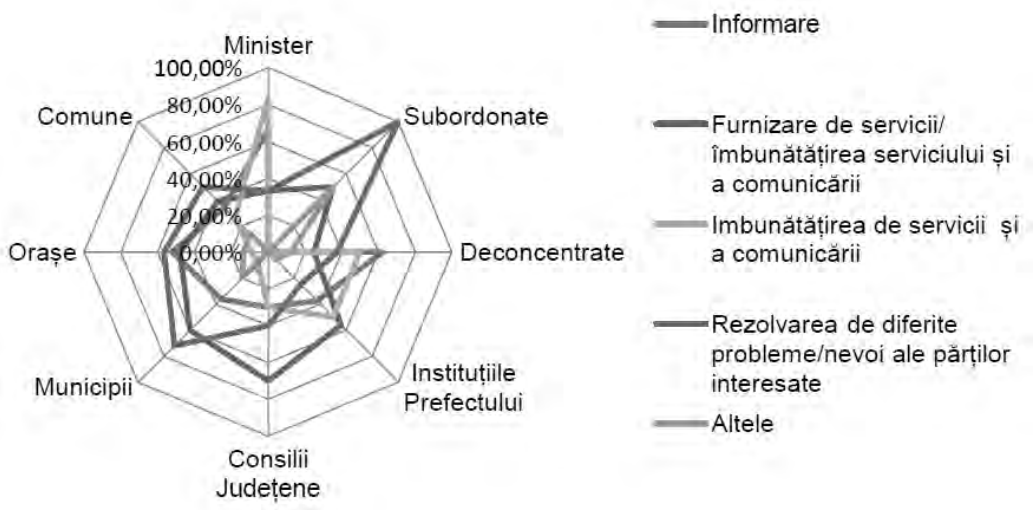

Figure 1 Major citizen expectations divided depending on the organization type

So, the main types of identified needs, in descending order are "solving different problems / needs of stakeholders" (72.0% -18 municipalities and 56.5% - 13 cities), Providing / improve service and communication "(in proportions of 60.0% -15 municipalities and 47.8% - 11 cities)," Informing interested parties "(the proportion of 36.0% -9 and 52 municipalities, 2% -12 cities). At the same time at the village level are identified in descending order all same needs of stakeholders namely: solving different problems / needs of stakeholders "(a rate of 50.0% - 31 villages, "Providing / improving services and communication" (in a ratio of 38.7% - 24 villages and 25.8% - 16 villages), "Stakeholders information" (a rate of 33.9% - 21 villages). (Figure 2) (Dobrota, C.E.)

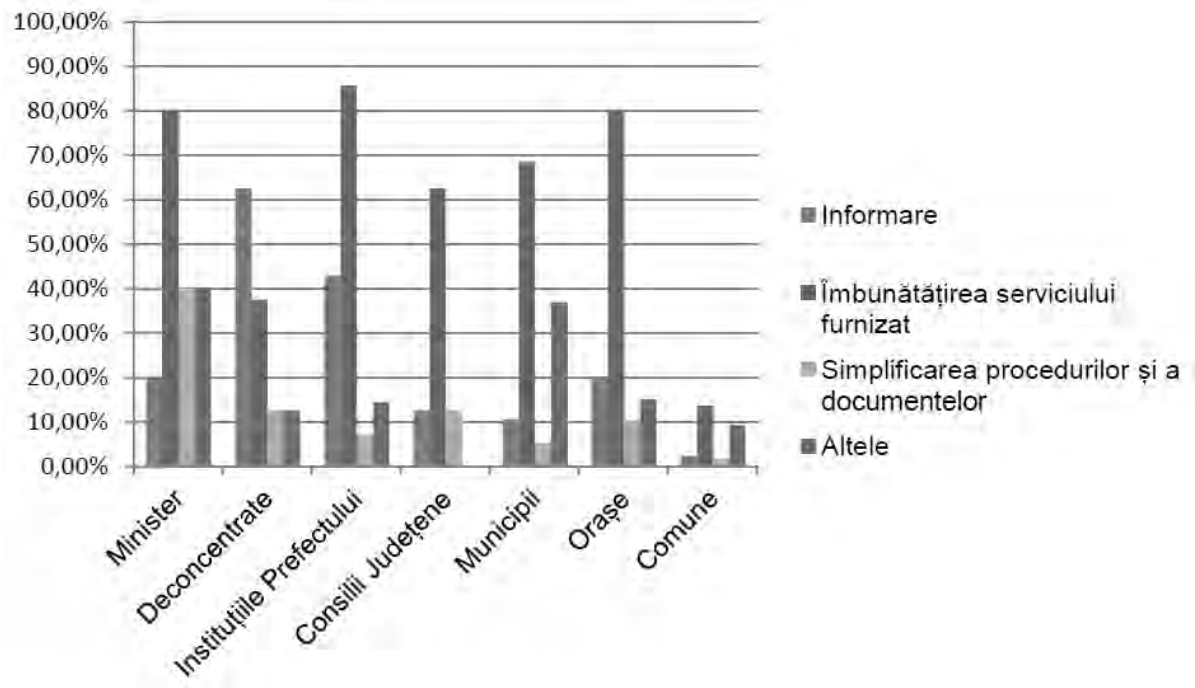

Figure 2 Major citizen expectations that are identified after analyzing the needs

Related to business expectations in relation to the analyzed public authorities / institutions at central and county level, which concern especially 'simplification of procedures / regulations and documents" (Figure 3).

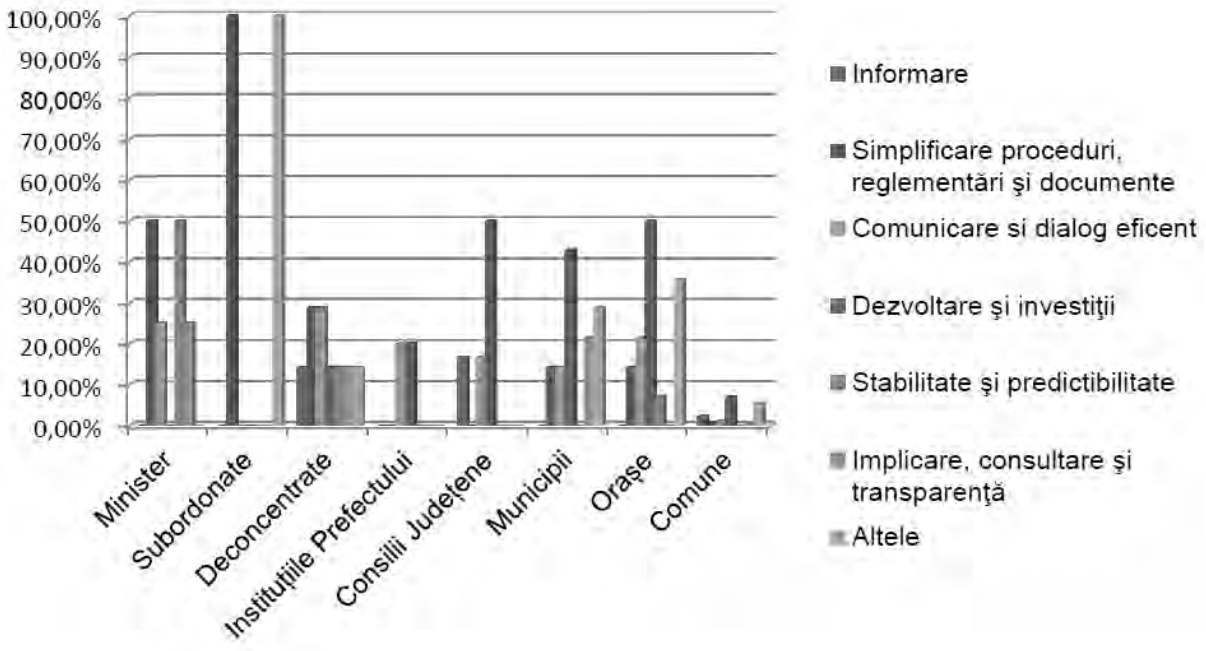

Figure 3 Major business expectations that are identified after analyzing the needs of stakeholders

Survey data reveals that the most important needs identified are related to the way the service is provided by the public entity mainly certain aspects of improving service and communication with stakeholders. ("Providing / improve services and communications", and "improve services and communications").

Also, two other identified needs related to aspects concerning the information stakeholders, namely aspects concerning solving some problems / needs of stakeholders were identified. The most important types of institutions concerned of the identification of different types of stakeholders needs are the prefect institutions and county councils, followed by decentralized public services. (Dobrota, C.E.)

Regarding the services legislation provided to citizens, in all cases respondents noted that is not sufficiently clear. The responses collected to this question reveals that more than half of respondents (51.39%) believe that the legislation is not clear regarding civic problem solving. We believe that the lack of clarity felt by citizens results in confusion, suspicion and a tendency to wrote complaints and petitions because of uncertainty in how they are served (Figure 4).

	Frecvente	Procente
Nu	572	51.39
Da	362	32.52
NR/NS	179	16.08
Total	1113	100.0

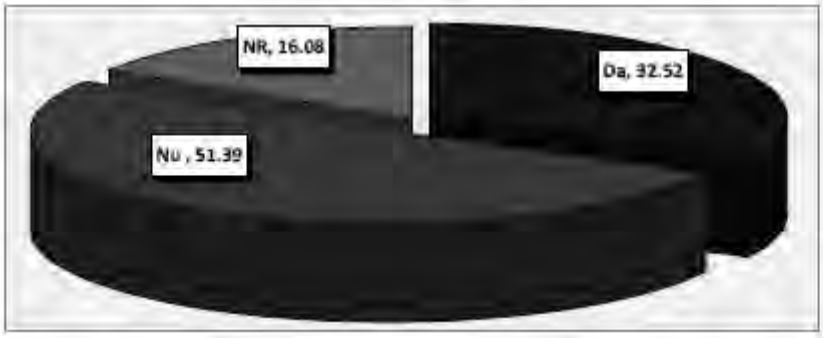

Figure 4 The clarity of the services legislation provided to citizens

Only 32.52% of respondents felt that they have enough information to solve the personal problems.

Although the findings related to the services they received were predominantly positive we can say that the poorly understood legislation is a disorientation factor among citizens.

Most respondents have solved many problems by resorting to a single institution (73.01%). From the 21.2% remaining respondents is observed that mostly had to resort to two institutions (57.1%), at three institutions (24.62%), four institutions (13.08%) and at another institution (11.54%) (Figure 5).

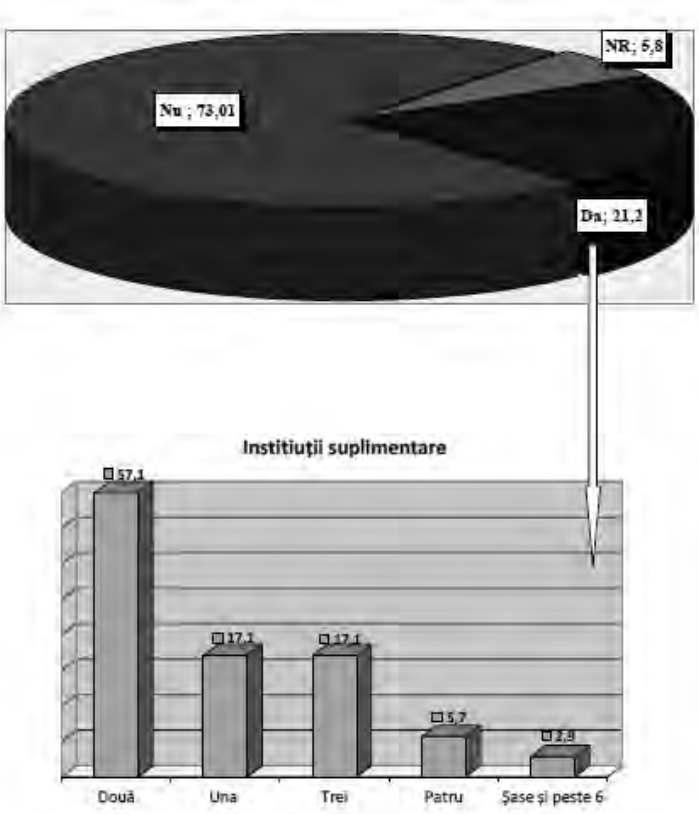

Figure 5 Number of institution that respondents have to resort for solving the problems

In the case of these services are needed interventions merging or online connecting of the work procedures so that the time spent on obtaining permits and necessary documents from several institutions to be reduced.

Services involving movement between several institutions help increase citizens dissatisfaction.

This opinion is the main cause of citizen's dissatisfaction with regard to provided public services. Even if negative aspects regarding the time, taxes and volume of documents requested, were not named, analyzed individually, we believe that there is a pattern of interaction with public institutions that generates dissatisfaction. (Dobrota, C.E.)

Institutions mentioned as a model of best practice are town halls (26.14%), followed by polling stations (7.84%), ANAF (7.19%) and CEC (6.54%). This question makes it clear that in many cases negative opinions are based on certain services, whose conditions provide certain deadlines or keeping records of multiple documents from multiple institutions. The institutions providing most of the services are valued by the population, even though many of the issues raised are related to services provided by them (Figure 6).

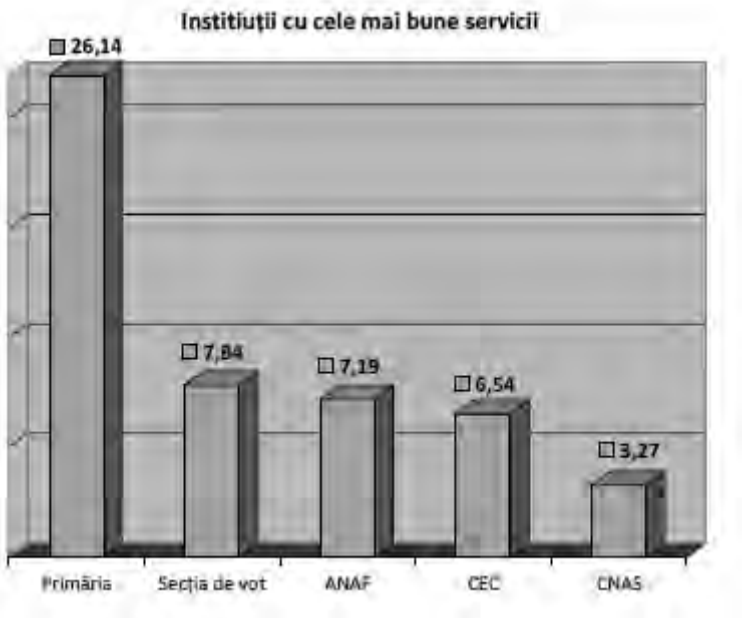

Figure 6 Best services in public administration

Institutions marked by inadequate services are in order: town halls (22.94%), ANAF (18.35%), police (7.34%) and CNAS (6.42%). We find that in top five institutions are mentioned also institutions that were found in the category of institutions offering good services. Given the pro or against options we consider that many of them are related to the approval or refusal of the respondents, ie, the approval bringing a positive option and a negative rejection bringing a negative one (Figure 7).

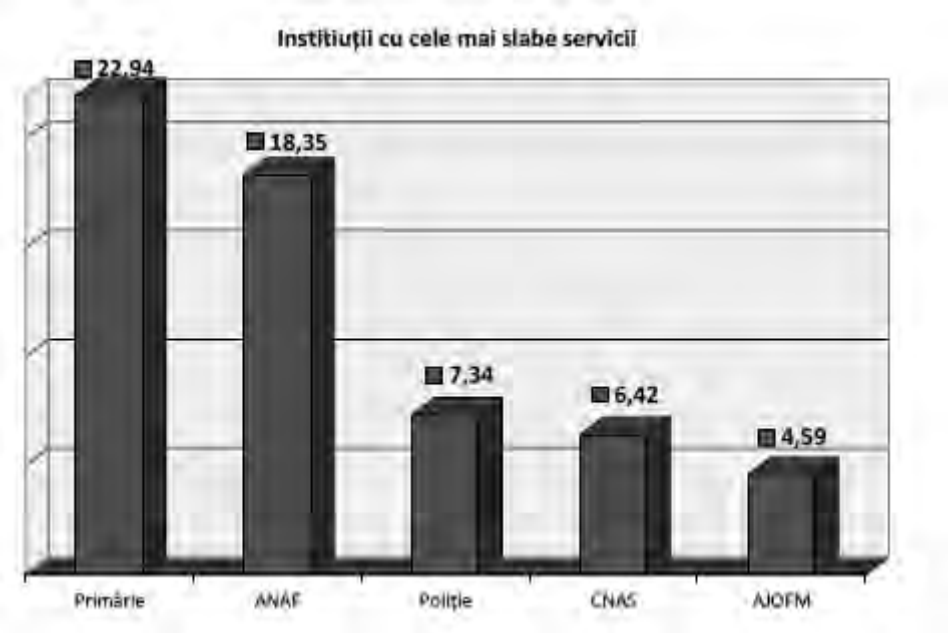

Figure 7 Poor services in public administration

Although citizens are usually dissatisfied with the services provided by public administration, another study in which they included 20 institutions and local authorities from four counties (Cluj, Mehedinti, Suceava, Tulcea) and from Bucharest reveals a worrying situation: 57.4% of respondents did not attempt to connect with agencies / local authorities in matters of general interest. The form of involvement in decision making at the local level most commonly practiced by citizens is filing a petition. The analysis results are also confirmed by the reports of institutions involved in the project, which highlights a low level of citizen involvement in decision making (in more than half of the reports the public participation is expected to be low or very low).

Also, the interest for information via the internet is low (61.28%) (Figure 8), although the majority of respondents have the necessary equipment and Internet connection at home or at work. Alternatively we believe that the information obtained on the spot is valued higher on the grounds that it gives a higher quality to the requested information. Thus, we can expect a consultation, perhaps superficial, of the public screen and overcrowding of the public information office from the institutions headquarters, which may result in queues, problem that respondents frequently mentioned (Raboca, H., 2006).

Figure 8 The interest for information via the internet

Overcrowding the information offices from the headquarters institutions can be avoided by promoting the advantages brought by the use of online formal channels.

Discussion and conclusions

A change is needed in public administration, a change that can be achieved by simplifying procedures. This can be achieved by reducing the number of documents required, creating a common database among public institutions. Switching in the online exchange of documents may also be a solution for simplifying the procedure (Chewtynd, E., 2001).

Administrative simplification is a process implemented by public institutions for the benefit of users - citizens, businesses or other public institutions - in order to facilitate access to public services and the compliance with regulations. Administrative simplification objectives are to reduce the complexity of interaction with public institutions, as well as the costs incurred by the users.

The most common simplification measures are exploring different ways to meet the needs of citizens, as follows (Sandor S.D., 2007):

- Adequate information helps users understand the steps, documents and associated costs;

- Increasing the quality of legislation aims to make regulations predictable and accessible to any persons;
- Diminishing contracts between users and public institutions decreases the solving time and the incurred costs, but also the opportunities for corruption;
- Simplification of standard forms seek to reduce the complexity of the users approaches;
- Reducing the number of forms and documents required help reduce the cost and complexity;
- Examining key processes and steps designed to reduce settlement times and costs;
- Reduction or elimination of taxes and tariffs paid by users in return for services rendered by public institutions resulting in reduced costs and complexity approaches.

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TOWARDS AN INTELLIGENT ACADEMIC REVOLUTION - THE NEW ROLE OF CHANGE LEADERSHIP IN TURBULENT AND CRISIS PERIODS

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Abstract

The turbulences and crises in the global higher education, especially in emerging markets represent now a reality. Academic leaders try to respond to these threats by initiating adaptive processes of change but the complexity of interconnections and the implications make it almost impossible to control the turbulent situations. Result in the need to develop a new inter-, multi- and transdisciplinary approach, based on building a dynamic global picture of the interrelated processes. R & D Partnerships are based on building collaborative architectures, high R & D intensity, transforming of the role of teachers, funding diversification, increased complexity, new relationships with the government and the industrial partners.

The aim of the research is achieving a model based on more efficient knowledge production, partnerships, centers with technological infrastructure and multi-disciplinarily centers, offers the opportunity of the contribution to supporting the sustainable competitive advantage and socio-economic and regional progress.

The interest is to understand the actual context of universities in emerging markets, their capabilities to evolve in a global, dynamic environment and to offer pragmatic solutions and strategies to adapt to crises and turbulences.

Key words: *Academic leadership, Knowledge-based society, Higher education*

1. Introduction in academic change leadership (ACL)

The turbulences and crises in the global higher education, especially in emerging markets represent now a reality. Academic leaders try to respond to these threats by initiating adaptive processes of change but the complexity of interconnections and the implications make it almost impossible to control the turbulent situations. Academic leaders in emerging markets want to obtain performance, but higher education exhibits asymmetric dynamics: on one hand increasing the performance is difficult in academia and on the other hand the catching- up process is delayed and slowed down, while sensitivity to crises and turbulences is considerable.

Regardless of the type of university and academic leaders, there is a moral obligation to promote the constant process of change through teachers who are motivated to contribute and support the change as a critical factor for development via innovation and creativity. In the current context, universities cannot passively witness the processes of knowledge- based society, dynamic but intelligent involvement being required. The academic leader wants institutional development through quality links but cannot suddenly change everything. Based on dynamic monitoring of the

global picture, the academic leader can detect and evaluate opportunities, turbulences and crises emerged in academia and also can correctly phase specific action strategies.

The implementation stages take into account all the drivers of change (social, economic. technological, ecological, political, ethical, demographic).

Although classic literature focuses more on developing new academic programs, more attractive ones, more grounded in the practice, efficient processes change with a focus on cost reduction, innovative micro and macroscopic mechanisms and instruments need to be considered, inspired by entrepreneurship and markets respectively. Result in the need to develop a new inter-, multi- and transdisciplinary approach, based on building a dynamic global picture of the interrelated processes.

2. Emerging mechanisms in the academic process of change. The influence of turbulences and crises periods

It exceeds the specific from crisis management by an incursion into change management and time crisis management. There are a lot of models or methodologies for change management like Kubler-Ross model (1969), focused on the resistance to change and build on five steps (denial, anger, bargaining, depression, acceptance) all connected to the inevitable flow of time, the iceberg system's approach of Kruger (1996), focused on the capture of the invisible factors (power relations, politics, beliefs, biases and perceptions) or Kotter model (2012) on eight critical steps. The applications in the field of academic leadership are very rare and these models could not capture the specific mechanisms that characterize the academic world, a continuously evolving and changing in short periods of time.

In Kotter (2012) model, there are some elements that could attract attention such as understanding the urgency of change, creating a coalition that can develop the academic leader's vision, or the process of creation of short term wins and the building of enthusiasm year of change. The role of the organizational culture in the process of change is also highlighted by Schein (2010), which shows the critical role of the cultural group in external adaptation/ internal integration, in the context of an academic freedom, high degree of authority and autonomy. The problem of change management in academia efficiency, or an explanation about the prolonged period of change often arises.

The link between the change in academia, respectively the impact of turbulences and crises is a very complex one. Besides the typical mechanisms academia, characterized through a process of change in which the long periods of calm alternate with periods of change and revolution, specific mechanisms for periods of crisis occur, characterized by reduced governmental funding and changing the competitive environment. Thereby, results in a very complex problem that academic leadership should resolve. Starting from anticipating these mechanisms, management in times of crisis and turbulence involves a more proactive component of leadership, which opens up flexibility, respectively adds an absolutely necessary versatility for survival and even achieving competitive advantages as a result of movements in academic market. There are various external factors that may influence change processes, with implications on the transformation processes, which will be presented in Chapter 3.

First of all there exists an agency conflict between decision makers and decision implementers and it is frequently suggested that the change is imposed from the outside. The difficulty of transition is explained by Schein (2010), through mechanisms that describe the change in diverse manipulative frameworks that exacerbate learning anxiety, and various behavioral mechanisms (like a possible loss of power, the fear of temporary lack of competences or the loss of group's identity). Next, there exists an agency conflict between faculty staff and administration.

The proposed change from the administrative area is justified by infrastructure development and is not agreed by the university staff which motivates the fact that there is no pedagogical basis, and performance comparison is also not relevant. The expansion of new concepts of learning,

like MOOC (Massive Open Online Courses), CBL (Campus Based Learning) and BL (Blended Learning) are agreed by the administrative area, rather through cost control or reduction of teaching positions for the staff. In addition, academics categorically deny developing the administrative area, or at least want to maintain the rate of administrative posts.

Result in new tensions that the academic leader must tackle through the flexibility and adaptability, starting from option thinking. Strategic decisions of academic leaders are essential in times of crisis and turbulence and involve a deep understanding of the new mechanisms; the impact on markets, movements resulting from these influences, and the so called unique

There are certainly other mechanisms that create internal conflicts but the change imposed from the outside in terms of organizational restructuring, or mergers at state universities, generally lead to a refusal by academics. For Romania, the issue of leadership change is a challenge that unfolds amid the transformation in a context in which the number of graduates decreases, while obvious increasingly many graduates option to study abroad.

3. External factors that imposed an acceleration of the process of change and implications on transformation. The new role of academic leadership in Romanian higher education

3.1. External factors that determine the acceleration of change in the universities in Romania. These factors are:

a) The democratization of knowledge through an expansion of the access to university studies, new markets and new partnership structures, and through increasing the role of emerging markets and even of some emerging market segments, offering a new chance to small or niche universities;

b) Competition and markets have a tremendous impact on financing academia because a change in the share of financing generates change in the hierarchies and has a major impact on competition. The competition for accessing these non-governmental funding has a major impact on quality;

c) The integration of new ICT technologies and innovation has a significant impact on transforming the way the transfer of knowledge is put into practice. New concepts, easy to implement ones have emerged: MOOC (Massive Open Online Courses), CBL (Campus Based Learning) and BL (Blended Learning), but in this case, there must be taken into consideration the possible conflicts between academia and the administrative area;

d) Mobility changes hierarchies (narrowing top brands allows special access to opportunity towards the middle area of academic hierarchies) and offers a new chance to the second line universities. The universities in emerging markets can become global competitors. This was a somewhat incredible opportunity a few years ago, but in this case academic leadership is essential by anticipating market movements and imposing a higher rate of implementation of anti-crisis solutions. New solutions for building upon the academic talent are mandatory for universities in emerging countries to be allowed to enter in the race for the emergence of elites and sometimes result in a decisive impact on the academic brand;

e) A new integration with the industrial community and private co-funding is required. This is the reason new partnerships for research commerce through the link of SMEs (entrepreneurship, spin-offs, venture capital) must be a priority, and new Triple Helix - type solutions with support from the private area (again, the academic leader must anticipate and take courage in creating partnerships of this type);

3.2. Implications on the process of transformation and adaptation of the academic model in Romania

First, competition requires the creation of new models with academic entrepreneurial guidance, autonomy, but in the context of maintaining the academic rigor. A particular opportunity comes from exploiting market niches, creating new markets and sources of value (by specializing in certain areas of the international education value chain). Another aspect relates to the concentration of R & D in excellence areas or mergers and acquisitions of laboratories / research centers.

3.3. Implications on the configuration strategies

a) Rethinking strategies for recruiting graduates through various types of partnerships and rethink curricula succession;
b) Accessing new markets, represents a purpose in line with the exposure to competition;
c) Well-founded analytical application of measures to maintain the competitive position (e.g. focusing resources on core programs).

4. Strategies based on R&D Partnerships

In the knowledge based society, a research university (university focused on finding knowledge, PhD theses in a multiple variety of domains, but also education, postgraduate training, services to society, technological transfer,) represent a key institution in the socio-economic development. In carrying out a specific infrastructure (libraries, laboratories, technicians, administrative support), which involves higher budgetary allocations or new financing strategies or partnerships is needed.

For Romania, the partnerships in academia and R&D are essential because of the critical mass that could not be very easily obtained. Unfortunately, funding R & D in Romania is far from being the new vision imposed by Europe 2020. Moreover, research is highly fragmented and laboratories are insufficiently equipped. Specific triple helix synergies are not fructified, and the transformation process is extremely slow. Joining the management talent in R & D with academic leadership could lead to a research university as a solution, but academia in Romania, with a very high average age is reluctant on cooperation with R & D. If government efforts are inadequate quantity and inefficient, universities initiative should not be neglected, in their desire to set strategies and starting from the opportunities offered by new types of partnerships.

R&D partnerships are based on building collaborative architectures, high intensity of R&D, transformation of the role of teachers, funding diversification, increased complexity, new relationships with government and industry partners. Achieving this model based on more efficient production of knowledge, partnerships, technological infrastructure centers and multiple disciplines, offers the opportunity to contribute to sustaining a sustainable competitive advantage and a socio-economic progress, both a local and a regional one.

For Romania, the following aspects should be taken into consideration:

- The prestige of a university / consortium in an area of interest characterized by accelerated changes (Stromquist, 2007);
- The dual integration could provide a higher acceleration rate (Pau, 2003);
- There is a new role of social sciences, beyond the vision of von Humboldt (specific projects, consulting, marketing of innovation / knowledge) in the direction of opening new synergies in areas inter, trans and multidisciplinary, and this aspect is critical for Romania (there may be easy to implement pilot projects in an option thinking, but results should be considered in the long term);
- The impact on autonomy (Bok, 2003; Kirp, 2003) in the context of market pressure, and rapid adaptation to new R & D priorities;
- Diversification of funding in the context of applying the Triple Helix model (Etzkowitz, 1998), adapted to the concrete possibilities and realities in Romania;

- New capabilities for the production of knowledge through increased R & D internal autonomy (Geiger, 2004) imposes mergers of centers and laboratories, or at least partnerships based on pragmatic and efficient management of R & D portfolios.

This concept helps to increase university autonomy by attracting new categories of students, stimulating academic consortia and a better focus on national strategies and priorities. It fructifies in a superior way the niche competitive advantage (Huisman, 2001), and a better connection to paradigms / existing research flows (Altbach, 2007) is realized, encouraging private cofinancing, respectively a leverage of the production of knowledge.

5. Conclusions and contributions

The design of strategies to cope with turbulences and crisis in higher education represents a very complex task, because the domain is new and it is not possible to apply the principles of risk management. The build of an intelligent academic revolution should be based on the new role of change leadership in turbulent and crisis periods, together with openness towards partnerships (in an extended concept inspired from the triple helix paradigm).

For this goal we need a much better understanding of the mechanisms and the processes that contribute to change, along with the impact of turbulence and crises on the vulnerabilities and survivability, in this context of the build of new resilient architectures which will ensure a smooth operation under shock functional conditions, with disruptive consequences. This intelligent academic revolution is essential to the survival of universities, and for this, resilience acts as an effective maintenance support capability against the negative impact (in the context of environmental degradation resulting from the inherent latent conditions). Unfortunately, there are still fragile universities where the incapacity to anticipate distortions can lead to their closure. Resilience brings flexibility and adaptability, while offering superior behavior in the post-crisis recovery phase. This means that the ability to survive in turbulent conditions must be well orchestrated by the academic leader.

There have been proposed ideas on how to scan specific mechanisms for changing the academic process; there have been detailed external factors that change the spectrum of the academic unique recognized picture, highlighting the implications on transformation and adaptation of the academia from Romania, along with the implications on the reconfiguration strategies. There has been detailed a strategy based on R & D partnerships, highlighting the proposed research university, as a flexible vehicle, capable to navigate in turbulent periods but also to take advantage of the sometimes uncorrelated movements of the markets and some changes which are treated by various types of universities with diverse reaction speeds.

Future work could consider implementing some models based on real options in strategic decisions of the academic leaders, but also collective real options in the paradigm of McCarter-Mahoney for academic partnerships or other collaborative structures that links academia with R&D.

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STRUCTURAL AND FUNCTIONAL REDESIGN OF AN INVESTMENT FUND IN THE CONTEXT OF COMPLIANCE WITH THE REQUIREMENTS IMPOSED BY THE EUROPEAN UNION IN RESPONSE TO THE FINANCIAL CRISIS
- SIF Moldova case study -

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Abstract

The alignment of the national legislation to the European directives on alternative investment fund managers (AIFM) represents a significant reform of the legal framework applicable to the investment funds industry. As a consequence it is foreshadowed the necessity to redesign the structural and functional architecture of local investment funds. The process aims both the core activities, namely business, control, support, as well as their procedures, namely: investment process (business), risk management, internal control, internal audit (control) and corporate governance, IFRS financial reporting, current and periodic reporting, human resources, legal (support). SIF Moldova case study - reveals both the stage of the alignment process with the changes of the legal framework and the projections regarding the elaboration and use of the assessment methods based on quantitative and qualitative models (objectives and steps) as a main support in the integrated and coherent implementation of the requirements imposed to the alternative investment fund managers (AIFM).
Key words: policies, investments, risk

1. Reform of the applicable legislative framework

For the Financial Investment Companies established under Law 133/1996, which are entities regulated as **Non-UCITS** (under Law 297/2004) – the year 2015 marked a major reform of the legislative framework by the alignment to the European norms, namely the implementation of the European directives on alternative investment fund managers (**AIFM**). The activities concerned in the implementation of the AIFM legislation are: **business, control, support** - Figure 1.1.

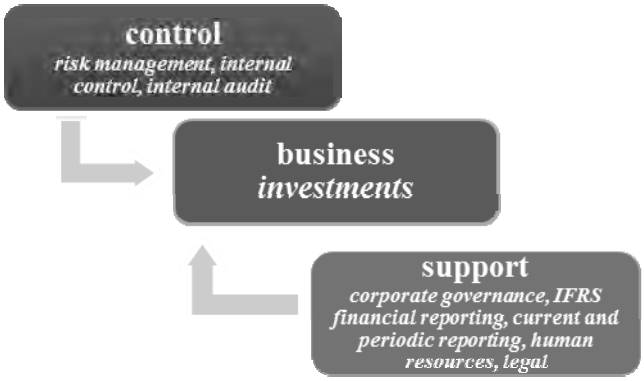

Fig. 1.1. Main activities structured in compliance with AIFM requirements

Both the topic of the paper and the concrete process of structural and functional alignment of Societatea de Investitii Financiare Moldova to the European legislation regarding the management of an investment fund, derives from the response of the mature capital markets regulators (European Commission) to the financial crisis and has as main objective the establishment of more stringent rules on the management of asset portfolios and on the associated risks. This is to prevent the apparition of new speculative bubbles with high potential of generating new financial crises, with significant impact on both the investment funds industry and the individual and/or institutional investors.

From this perspective, the paper is fully fit in the Conference theme: "*From Management of Crisis to Management in Time of Crisis*" describing the general and particular process on the implementation of some strict and complex rules in the management of the investment funds, with the explicit aim of preventing the emergence of new vulnerabilities and conditions of triggering new financial crisis in the industry, with potentially severe repercussions in the whole economic environment.

From the perspective of a balanced regulation of the capital market, it is interesting the view of Jonathan Hill (2016) – Commissioner for Financial Stability, Financial Services and Capital Markets Union**,** which, in Bruegel, on the Call for Evidence – *"The Impact of the EU regulatory framework for financial services"* concluded that whereas after 2008 the greatest threat to financial stability had been the financial crisis, over time the greater threat had become the lack of growth itself. In other words, too little risk itself became a big stability risk, so that too little risk itself became a big stability risk. For this reason, excessive regulation and complex legislation can harm the regulated companies. It is bad for values-based leadership, leading people to ask if they can get away with it.

We are in a time of change and of the identification of the balance between the need for regulation and the need for performance. This is amid the Romanian capital market characteristics, of frontier market, where the management of an investment fund must ensure the compliance with the applicable regulations and achievement of the performance targets expected by shareholders.

2. Procedures imposed by application of the European directives on Alternative Investment Fund Managers (AIFM)

The procedures imposed by the application of European directives are structured on the main areas.

Thus, in the **business** / **investment** area, the procedures mainly focuses on the following: prior verification of the investment; investment due diligence; calculation of global exposure and leverage; liquidity management; execution of trading decisions; etc.

In the **control** activities area - risk management, internal control, internal audit – the procedures regulates mainly: prevention and management of the conflicts of interest; remuneration policies and practices; preventing the unfair, fraudulent or malicious practices; managing the operational risks, including those of professional liability; risk policy and strategy - risk profiling according to the size, portfolio structure, strategy and investment objectives; monitoring the assets under management; verifying the compliance.

In **support** activities area, which includes corporate governance, financial reporting, human resources and legal, the procedures are targeted on accounting policies; valuation of assets; exercising the voting rights of shareholders; communication to investors of significant events; data control and protection, protection of interests through judicial or extrajudicial ways.

3. The investment strategy – determinant role in establishing / ensuring performance for an alternative investment fund (AIF) - *case study SIF Moldova SA*

3.1. Main directions

The investment strategy takes into account professional management of the available resources / assets in order to achieve the objectives set by the shareholders and to obtain incomes on medium and long term.

According to the Investment Policy Statement 2014-2018, the institutional objective of SIF Moldova is *"the increase of the value of assets through investments made mainly in Romanian securities".*

Investment activity is conducted in compliance with the legal and prudential exposure limits, taking into account the macroeconomic trends and has the following key elements:

- **The Investment Policy** is the basis for long-term growth of the assets under management.
- **Capital Operations** - SIF Moldova is considering the following:
  - share capital increases in order to provide resources for the implementation of investment programs;
  - reduction of capital in order to increase the investor returns;
  - stock buyback programs for managers and employees, in accordance with AIF regulations on remuneration;
  - splits and consolidations of the nominal value.
- **Dividend Policy** - SIF Moldova assumes a predictable policy that remunerates the invested capital at a higher level than the interest rates from the banks

Implemented principles:

- High level of diligence in the selection and monitoring of investments in line with the objectives approved by the shareholders and with the macro-economic trends;
- Compliance with prudential, legal and risk limits in implementing the investment programs;
- The continuity of the strategic orientations in a medium and long time;
- Ensuring transparency on the decisions communicated to investors;
- Adjusting the investment - disinvestment programs according to the needs of cash for distributions of dividends due to shareholders.

Investment opportunities are selected according to:

- the potential for long-term growth of the assets
- speculative potential in the case of shares listed on the stock market
- opportunity to gain control and implement strategic decisions in a company.

According to the annual programs and the **Investment Policy Statement 2014-2018,** the investment strategy adopted by SIF Moldova has been defined by the following characteristics:

- A portfolio comprised mainly of shares;
- Orientation towards shares listed / traded on the Romanian market;
- Defining the CORE portfolio - mainly oriented on listed shares from the bank and energy – utilities fields. The Portfolio is adjusted in agreement with the macroeconomic tendencies and provides an important dividend flux as well as a cash source for investment programs;
- Restructure of the historic sub-portfolio of closed or low-liquidity companies – SELL portfolio and the assigning of the amounts obtained towards active, efficient sectors;
- The development of the Majority Holding portfolio, including the implementation of private-equity programs;
- The development of specialized investment projects in agriculture, tourism, real estate.

3.2. Eligible Assets Categories

SIF Moldova can invest in the following categories of assets, according to applicable provisions:

a) securities and monetary market instruments registered or traded on a regulated market, from Romania or another member state;
b) securities of monetary market instruments allowed at the official quota of a third country;
c) newly issued securities provided the issue include a fixed agreement according to which the trading on the stock market or another regulated market that operates regularly shall be allowed;
d) securities of the collective placement bodies set in member states or not;
e) deposits with credit institutions, that are reimbursable by request and offer withdrawal rights with a maturity that does not exceed 12 months;
f) derived financial instruments;
g) instruments of monetary market, other than those traded on a regulated market, who are liquid and have a value that can be precisely ascertained at any moment;
h) SIF Moldova can invest up to 10% from its assets in securities or monetary market instruments, other than those mentioned above;
i) SIF Moldova can only purchase those movable and immovable assets needed to carry out its activity;
j) SIF Moldova cannot invest in precious metals;
k) SIF Moldova can hold liquidities in cash and current account, on a temporary basis and within the limitations set through ASF regulations.

3.3. Geographic or sectorial distribution of assets

SIF Moldova has a predominant exposure on the Romanian capital market, mainly in the **bank and energy** fields.

Financial - banking sector is in the attention of SIF Moldova, important resources being already involved in a solid bank that is currently continuing its development after the absorption of another bank.

Exposure on the issuers in the **energetic sector** and the utilities takes into consideration their ability to constantly and predictably supply dividends.

SIF Moldova has a strategy of mixed assignment of resources on the capital market, in parallel with the implementation of **private equity** projects that insure an increase yield of the long-term managed assets.

Investments in private equity target any field, but the focus is on the in **real estate, hotel and agriculture**, in which average / long term increase opportunities are identified.

The private-type approach involves a direct involvement in entrepreneurial projects and leads to the increase of the profitability of managed assets. Project selection involves the abidance by a set of conditions:

- Classification in the annual investment objectives and abidance by the risk / performance criteria (insuring a minimal internal return rate – IRR for the project's performance);
- Abidance by the prudential limitations of the investment policies as defined by specific regulations;
- Information of the shareholders through press releases according to the principles taken on through the Corporate Governance of SIF Moldova Group.

SIF Moldova implements a **multi-annual investment policy, with added yield, reaching its maturity in a 3 to 10 years' period**.

4. The management of the risks associated to the managed assets and related management processes, run according to the investment strategy

Given the nature of the activity carried out, financial investments, SIF Moldova is, or can be exposed to the following risks (figure 4.1.):

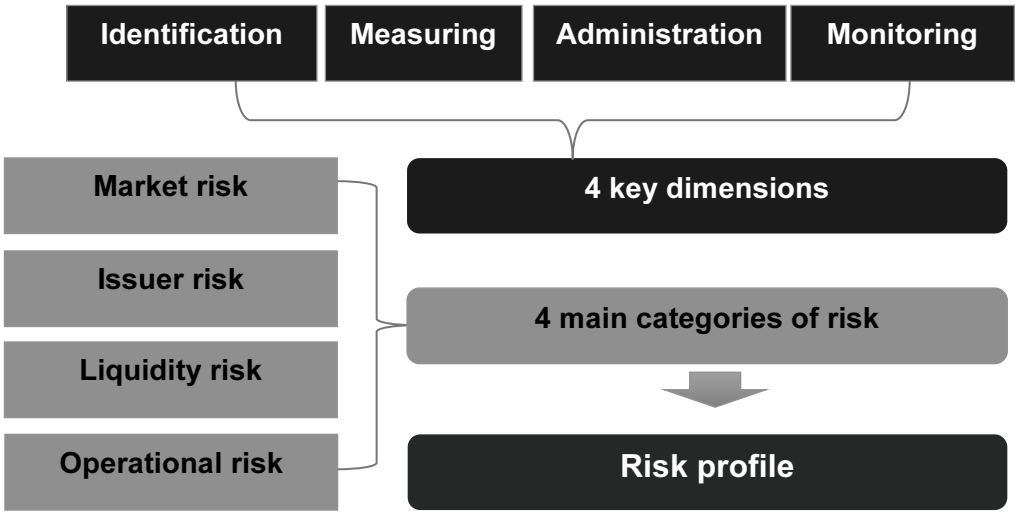

Figure 4.1. Categories of risks and processes – establishing the risk profile

Other risks: counterparty risk, regulation risk, strategic risk, reputational risk, conflict of interest risk.

When risks are identified and measured, SIF Moldova uses **anticipative and retrospective-type instruments.**

For each relevant risk, SIF Moldova has established a **set of specific indicators, calculated periodically and on pre-established timelines,** which measure risk.

For the evaluation and supervision of the risks it is exposed to SIF Moldova has IT applications developed internally within an integrated information system, that calculate specific risk indicators by using internal models based on:

- **The data bases on the market** (series of trading prices) for the calculation of return/risk indicators of the issuers / traded financial instruments portfolio (quantitative analysis).
- **Financial databases of the issuers** (information from the quarterly /annual financial reports) for fundamental analysis. The fundamental analysis works with financial indicators that evaluate the financial balance, degree of indebtedness, efficient use of assets, financial performance status and efficiency of issuer's management;
- **Data from the accounting records of** SIF Moldova and the net assets statement of SIF Moldova for the calculation and verification of risk limits;
- **Databases regarding operational risk events.** The purpose of the database is to facilitate the understanding of the nature, cause and value of operational loss and the collection of data for the quantification of operational risk.

5. The steps designed to develop quantitative and qualitative models - instruments used to implement the investment strategy and the related management processes

The elaboration of quantitative and qualitative models, as part of the implementation of AIFM legislation within SIF Moldova, involves the structuring on the following stages / working sections which are specific to the activities performed in the company:

Stage 1 - Qualitative and quantitative models of creating indicators used by the Management of the Company in assessing the performance of assets by categories of assets; performance of investments; implementation and monitoring; performance of companies in which SIF Moldova has majority holdings; risk on indicators on the basis of the integrated information system.

Stage 2 – Qualitative and quantitative models of creating indicators used by the Management of the Company in assessing the liquidity risk; liquidity management; calculation of own funds and additional own funds allocated for covering the civil liability risk and the professional liability risk.

Stage 3 – Qualitative and quantitative models of creating indicators used by the Management of the Company in monitoring the compliance: investment decisions; investment objectives; investment strategy; risk limits and prudential thresholds.

Stage 4 – Qualitative and quantitative models of creating indicators used by the Management of the Company, based on the integrated information system indicators: monitoring the assets managed by SIF; calculation of SIF exposure.

Stage 5 - The establishment of responsibilities and functions of delegation, based on the information provided and synthesized by the integrated information system by groups of specific and individual activities and by employees.

Stage 6 - Implementation of a system of alert within the integrated information system, based on prudential thresholds / limits established by applicable law or internal.

Stage 7 – Qualitative and quantitative models of creating indicators used by the Management of the Company for monitoring the financial indicators (assets, liabilities, equity) and prudential thresholds (undeclared reserves, asset revaluation, general provisions).

6. Conclusions

The alignment of the national legislation to the European directives on alternative investment fund managers (AIFM) imposes the necessity to redesign the structural and functional architecture of the local investment funds. The process aims both the core activities, namely: *business, control and support*, as well as the related procedures, respectively: investment process *(business)*, risk management, internal control, internal audit *(control)* and corporate governance, IFRS financial reporting, current and periodic reporting, human resources, legal *(support)*.

SIF Moldova case study - reveals the stage alignment to the changes of the legal framework in terms of investment strategy and risk management, establishing the steps on the elaboration and use of the assessment methods based on quantitative and qualitative models, as main support in the managerial processes, in accordance with the requirements imposed to the alternative investment fund managers.

From this perspective, the paper is fully fit in the Conference theme: "*From Management of Crisis to Management in Time of Crisis*" describing the general and particular process on the implementation of some strict and complex rules in the management of the investment funds, with the explicit aim of preventing the emergence of new vulnerabilities and conditions of triggering new financial crisis in the industry, with potentially severe repercussions in the whole economic environment.

A balanced approach is needed so that the companies should not to be excessively regulated. As Jonathan Hill (2016) – Commissioner for Financial Stability, Financial Services and Capital Markets Union**,** mentioned in Bruegel, on the Call for Evidence – *"The Impact of the EU regulatory framework for financial services",* the regulator must work with the regulated entities to understand the consequences of the real activity and should not regulate too much. A good regulation must be simple and clear.

We are in a time of change and of the identification of the balance between the need for regulation and the need for performance. This is amid the Romanian capital market characteristics, of frontier market, where the management of an investment fund must ensure the compliance with the applicable regulations and achievement of the performance targets expected by shareholders.

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Jonathan Hill
2016
Commissioner for Financial Stability, Financial Services and Capital Markets Union**,** in Bruegel, on the Call for Evidence - *"The Impact of the EU regulatory framework for financial services"*
SIF Moldova website
www.sifm.ro

CIRCULAR ECONOMY - A NEW CHALLENGE FOR ROMANIANS CONSUMPTION TRENDS IN A TIME OF CRISIS

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Abstract

Purpose *– To find out the correlation between "The innovative components of circular economy" and Romanian consumption trends in a time of crisis .*
Methodology/approach *- Theoretical and empiric study of issue, using European Commission documents.*
Findings *– The "Innovative components of Circular economy" (as matrix components) represent a development strategy that entails economic growth without increasing Romanians consumption of resources, deeply transform production chains and consumption habits and redesign industrial systems at the system level.*
Research limitations/implications *– The Romanian companies managers' which are trying to implement circular economy in Romania need to take in consideration three basic innovative components of circular economy because these could affect the entire economy for long term.*
Practical implications *– The Romanian companies managers' which are trying to implement circular economy in Romania need to take in consideration the main consumption trends of Romanian population because they could affect our country GDP for the next years.*
Originality/value *– The innovative components ("Involving citizens" and "Policy Support Instruments") belong to social-political factors that could influence the economic strategy of our Romanian state.*
Key words: *circular economy; consumption trends; economic crisis.*

Introduction

Romanian government spending in 2005-2008 had doubled in nominal terms, increasing the share of public sector from 32% to 37% of GDP. The accumulation of deficits and current account deficits during economic expansion has led to the crisis no longer able to call on policy to stimulate demand, as it would have led to an unsustainable public debt. The concept of "circular economy" is discussed because it is considered to be essential for the future of the Romanian economy. This concept aims to find concrete solutions applicable in economical development due to massive problems generated by multiple crises that are no longer resolve. The Romanian government aimed at finding long-term alternative in order to improve quality of life and eliminate possible population poverty. A topic that has attracted much attention in the economics literature is the economic crises role in generating political incentives to reform. The Western development model -based on consumerism of "Welfare State" needs another engine for development: circular economy. To transform the sustainable economic development requires a transition with multiple implications at government level and private sector level.

In other words, it needs a joint effort between public and private, in order to separate economic growth from excessive use of resources, with the main objective of increasing the quality of life while reducing environmental risks and social deficit. The transition to a "circular economy" requires an economy based on investment policies that make the connection between economic development, biodiversity, ecosystems, climate change, human health and wellbeing in the medium and long term.

Switching the Romanian economy to a "circular economy" implies a proper concern which focuses on knowledge, research and innovation to create a favorable framework designed to foster long-term sustainable development.

The characteristics of circular economy

In terms of technology and natural ecology, a circular economy has some characteristics. First characteristic is technological feature. The emergence and development of circular economy are based on science and technology progresses because only through constant technological progress of human society we can continue to increase the scale and efficiency with which the resources can be recycled.

The second characteristic is the systematic feature. Circular economy is a systematic and holistic economic operation involving every field and every link in the production chain of social value.

This can take different forms in different parts of the process of social production, but these forms cannot be reasonably regarded as fundamentally separate. Finally, circular economy consists of different levels. Circular economy industrial system, for example, is divided into three levels: enterprise movement level, the industrial movement level and regional levels of general movement.

The Consumption trends

Our research problem is to find out the correlation between the ” The innovative components of circular economy” [e.g. Marinaş (2012)] and Romanian consumption trends in a time of crisis .In “The Theory of Economic Development”, [e.g. Schumpeter (2008)] defines ***innovation*** as "new combinations" of existing resources which have resulted in new production functions - change the set of possibilities that determine what can be produced and how [e.g. Fagerberg (2006)]; [e.g. Nelson (1968)]. Innovation is therefore a novelty that can be translated into a production process. This sense of the term was maintained over time and is found in contemporary literature. In the context of policies aimed at national competitiveness, innovation appears as a solution to the existing dynamics in the economic and technological environment. In Romania, the presence of an adequate infrastructure, the level of primary education and good health is considered as a starting point for providing entrepreneurial framework conditions related to increased efficiency of innovation. We consider the innovative components of circular economy as Key Performance Indicators of this economy. Innovation has become the driving force of global competitiveness. It states that there is no success without innovation in history, and vulnerability to globalization and crisis (resources, population, etc.) increases. ***Consumption*** is defined as the process in which the substance of a thing is completely destroyed, used up, or incorporated or transformed into something else. Consumption of goods and services is the amount of them used in a particular time period. By our opinion, the consumption trends, and the associated impacts on Romanian natural ecosystems are of universal importance and interest to our country. The economic and social impacts of consumption are being felt by Romanian people everywhere, either directly in their daily livelihood or, less directly, in the form of higher prices and reduced quality of life. Demand management and technological advances can do only so much to slow demand: consumption in our country is inevitably increasing in every coming year. There will a crisis of consumption in the future years.

Time of crisis

Crisis causes may be different, however. Depending on the persistence and its effects, the current crisis may lead to a reconsideration of the fundamentals of economic theory. The restructuring problem is not purely conjectural and unexpected, but some economists were even predictable. Even before of any manifestation of the crisis, in the European Union, they noted the need to restructure the EU, considering that without serious reforms, deep and clear, Europe will inevitably end in a state of decline and relative decline may become absolute one [e.g. Alesina, (2006)]). The economic crisis requires hard budget constraints that can produce in a short time a lot of restructurings. The development model Western-based consumerism of "Welfare State" needs another engine for development (our engine proposal is circular economy) and should be characterized by exploiting a large, secure and lasting market, through an integrator type activity with large extensions on vertical and horizontal movement of ecological production factors. The circular economy needs the ability of producing added value above the average ecological industrial production as a planning system and regulating the production and the market in Romania. The engine of Romanian economic growth since 2000, has been consuming. The Romanian governments have promoted the pro-cyclical expansionary policy. Government spending in 2005-2008 had doubled in nominal terms, increasing the share of public sector from 32% to 37% of GDP (Gross Domestic Product) [e.g. Marinaş (2012a)]. Circular economy requires use of natural resources, energy and new technologies with cleaner production methods in order to increase economic growth and create new jobs. With this concept, it needs to create new patterns of sustainable consumption and production, which does not force the ecosystem. Sustainable development requires dynamic and constant change, adaptation and research, all of which are closely related to environmental conservation and the proper use of natural resources.

We are considering a new approach about the content and influence of ”Financial instruments” as following: innovation and investment; adequate financial support; assistance and guidance for SMEs; ecological microfinance” over Romanians consumption trends in a time of crisis. Financial instruments (used in circular economy) have as purpose to promote, by financial and regulatory measures, social and environmental sustainability and to stimulate eco-innovation and investment in human, social and environmental capital. These financial instruments (authors’ point of view) have the following objectives:

- to stimulate innovation and investment in human, social and environmental capital;
- to ensure adequate financial support to local, national and European level;
- to provide SMEs and microenterprises assistance and guidance through networks and European centers of excellence in developing the knowledge, skills and markets, especially with the help of financial support and in training domain;
- to ensure efficient and targeted structural funds (ecological microfinance).

The “Innovative components of Circular economy” (as matrix components) represent a development strategy that entails economic growth without increasing Romanians consumption of resources, deeply transform production chains and consumption habits and redesign industrial systems at the system level. The innovative components of circular economy [e.g. EUR- Lex - 52014DC0398 – EN (2014)] and global trends of consumption in a time of crisis are shown in table 1.

As we can see in the figure 1, three of “**Innovative components of circular economy”** named “Involving citizens”, “Logistics” and “Policy Support Instruments” have the highest weighted score (7,15). In this case, the managers of Romanian companies which are trying to implement circular economy in Romania need to take in consideration these three *basic innovative components* of circular economy because it could affect the entire economy for long term. The two from these three innovative components (“Involving citizens” and “Policy Support Instruments”) belong to social-political factors that could influence the economic strategy of our state.

Table 1. The correlation matrix between the" The innovative components of circular economy" and "Romanians consumption trends in a time of crisis"

Innovative components of circular economy (17 items)		**Romanian consumption trends in a time of crisis (11 items)**											Matrix total score	Matrix weighted score (%)
		Population global consuming trends diversification	Rapid growth of urban population	The burden of diseases' occurrence and the risks of pandemic	Accelerated change of green technologies	Green economic growth	The increase of multi-polarity in the world	The intensification of global competition for green resources	The increasing pressure on ecosystems	The increase of the severe consequences of climate change	The increase of environmental pollution	The diversification of Romanian governmental approach on circular economy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Technological innovation	Materials and processes eco-design	X	-	-	X	X	X	X	X	-	X	X	8	05.19
	Products Eco- Design	X	X	-	X	X	-	-	X	X	X	X	8	05.19
	Resources management (waste, water, energy and raw materials)	X	X	X	X	X	-	X	X	X	X	X	10	06.49
Social innovation	Production& consumption circular economy models	X	X	-	X	X	-	X	X	-	X	-	7	04.54
	Involving citizens	X	X	X	X	X	X	X	X	X	X	X	11	07.15
	Circular economy service models for products	X	X	-	X	X	-	X	X	X	X	-	8	05.19
	Design services	X	-	-	X	X	-	X	X	-	X	X	7	04.54
Organizational innovation	Solutions and integrated systems	X	X	-	X	X	-	X	X	X	X	-	8	05.19
	Logistics	X	X	X	X	X	X	X	X	X	X	X	11	07.15
	Circular economy business models	X	X	-	X	X	X	X	X	X	X	-	9	05.85
	Policy Support Instruments	X	X	X	X	X	X	X	X	X	X	X	11	07.15
Skills and knowledge	Entrepreneurship	X	X	-	X	X	X	X	X	X	X	-	9	05.85
	Capacity building and multidisciplinary	X	X	X	X	X	X	X	X	X	X	-	10	06.49
Financial instruments	Innovation and investment	X	X	X	X	X	-	X	X	X	X	X	10	06.49
	Adequate financial support	X	X	X	X	X	-	X	X	X	X	X	10	06.49
	Assistance and guidance for SMEs	-	-	-	X	X	-	X	X	X	X	X	7	04.54
	Ecological microfinance	X	X	X	X	X	-	X	X	X	X	X	10	06.49
Matrix total score		16	14	8	17	17	7	16	17	14	17	11	154	100
Matrix weighted score (%)		10.39	09.09	05.19	11.04	11.04	04.54	10.39	11.04	09.09	11.04	07.15	100	100

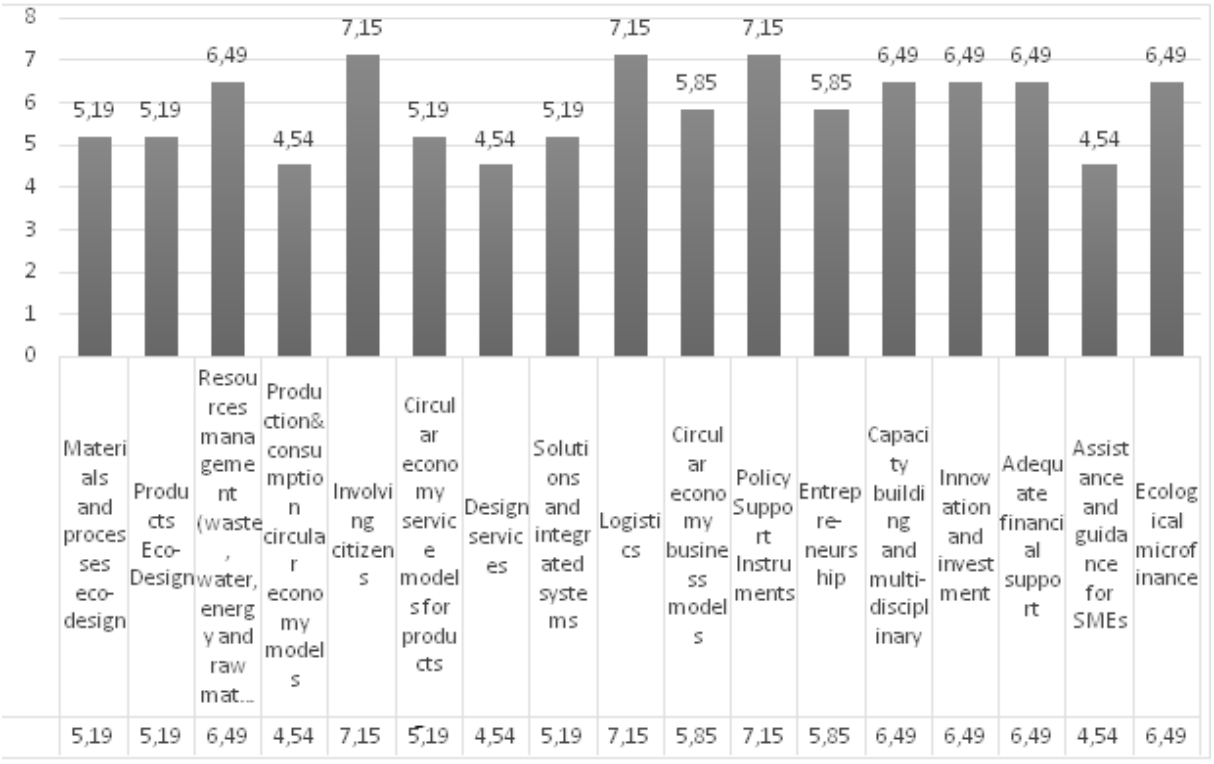

Figure 1. Innovative components of circular economy (figure is realized by the authors)

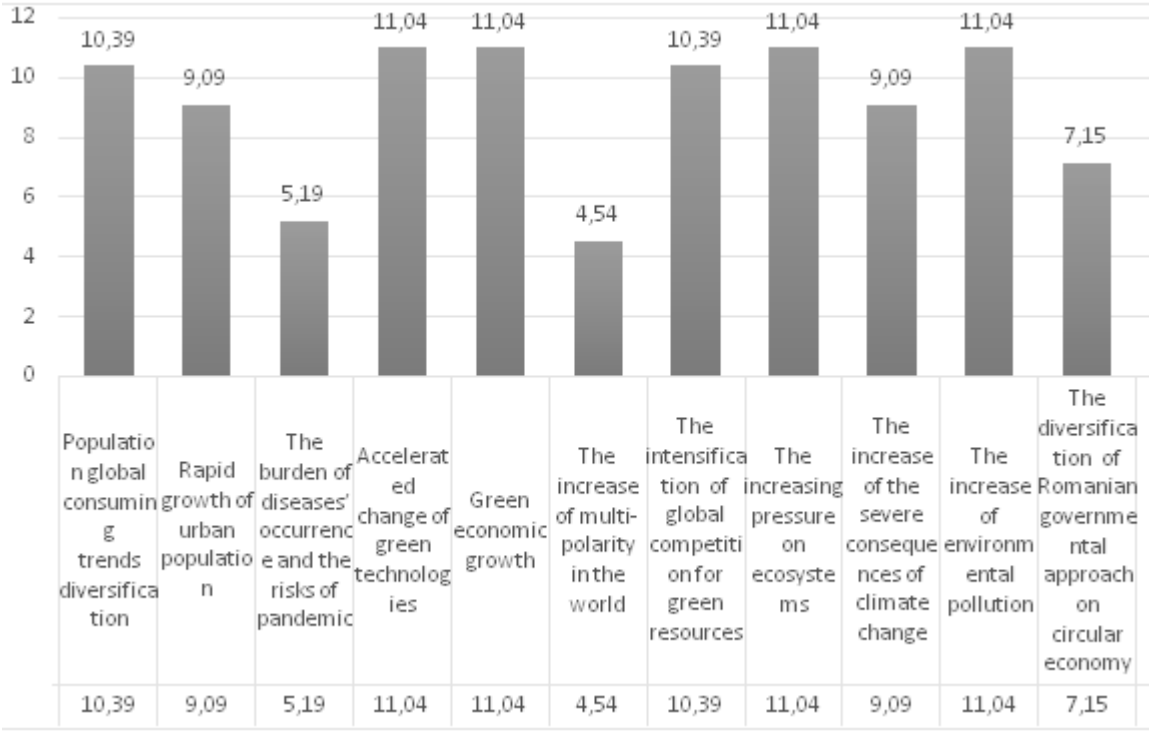

Figure 2. Romanian consumption trends in a time of crisis (figure is realized by the authors)

As we can see in the figure 2, four of "Romanian consumption trends in a time of crisis**"** named "Accelerated change of green technologies", "Green economic growth", "The increasing pressure

on ecosystems" and "The increase of environmental pollution" have the highest weighted score (11,04).

All these three consumption trends have a strong "green" component. In this case, the managers of Romanian companies which are trying to implement circular economy in Romania need to take in consideration these four consumption trends of Romanian population because they could affect our country GDP for the next years.

The finance role in circular economy

We need to adjust the range of financial instruments to better response to the demands of the circular economy. We consider that the finance has a major role in making the circular economy a reality, while aiming to place the concept within an adequate framework, and establishing the appropriate metrics needed to prove its economic and, ultimately, societal value. The explosive growth of the financial services industry in the last 20 years can be considered as one of the largest economic development of the industrial revolution, facilitating industrial restructuring through mergers and acquisitions, offering innovative solutions for privatization programs, increasing the importance of investment funds, expanding the sources and types of funding to support the emergence of new industries and facilitating the economic strength development in emerging and transition economies. Also, the expansion of financial instruments and techniques have increased the Romanian state participation in international financial markets, forcing the government to evolve policies and thus contributing significantly to the creation of a global financial environment. The realization of the correlation matrix between the" The innovative components of circular economy" and "Romanians consumption trends in a time of crisis".

Before to realize the content and influence of "Financial instruments" over Romanians consumption trends in a time of crisis, we need to take in consideration some taxes features as following: taxes are versatile instruments as they can take many forms; taxes related to environmental issues can target consumption and production (and inputs in production); the overall effectiveness of energy taxes varies based upon where the tax is applied; taxes that are applied far from the target source (or pollutant) are not ideal, since the indirect price signals they create are less effective in influencing behavior.

Romanian state supports investors in green energy (renewable) through green certificates and is ensuring the legal framework of their marketing. Circular economy projects can span the entire risk spectrum, meaning that different forms of capital, involving not only bank finance, but also grants, equity, crowd funding, etc. will be needed.
Policy instruments that could be used in the circular economy can be grouped into several categories: correct tariff; green procurement policies; ecological tax reform; public investment in sustainable infrastructure; public support for research and development in green technologies and social policies to reconcile social goals with economic policies.There is a strong environmental pressure over Romanian economic system (figure 3).

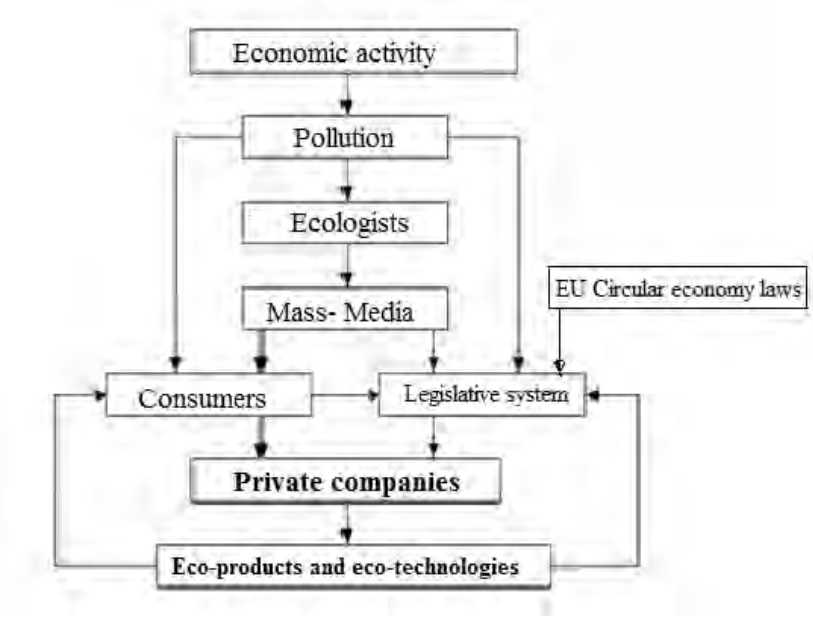

Figure 3. Environmental pressures and legislative implementation of circular economy due to economic activities (figure is realized by the authors)

Discussion and conclusions

As a solution to counter the current crisis, it highlights the following: appropriate regulation of the financial system; increased governmental transparency; correlation of budgetary and fiscal policies with monetary; infrastructure investments undertaken following transparent auctions; boosting savings and investment; providing facilities to SMEs; increased absorption of European funds and their orientation towards key sectors of the economy.

To implement the policies associated with the circular economy, it needs a joint effort of all countries, awareness campaigns on the importance of this new economic way of thinking, as well as providing timely and applicable solutions. For example, to implement the circular economy in every Romanian county, it requires deep involvement of consumers and businesses, along with the implementation of the main proposed and adopted measures at the national levels. It should be understood that it sustainable use of resources is a priority, especially in view of climate change in recent decades.

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THE EFFECTS OF WORKING CAPITAL MANAGEMENT ON COMPANY PROFITABILITY IN THE ROMANIAN CONSTRUCTION INDUSTRY

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Abstract

Purpose *– The goal of the research presented in this paper is focused on providing empirical evidence on the effects of working capital management on the profitability of Romanian firms from construction industry.*
Methodology/approach *- The present analysis is based on literature review as well as on data from companies in the construction industry listed on the Bucharest Stock Exchange for a period of thirteen years covering the period between 2003 and 2015.*
Findings *– The results indicate a negative relationship between profitability, measured through return on assets, and cash conversion cycles. The negative association implies that, when the cash conversion cycle decreases, the profitability of the company increases. Thus, managers can enhance the firm's profitability by handling correctly the cash conversion cycle and by keeping its components at an optimal level.*
Research limitations/implications *– The limitation of this study is that it was performed only on the firms from construction industry listed on the Bucharest Stock Exchange. Nevertheless, the study is meant to provide important insights for managers in terms of working capital management and at the same time it constitutes an appreciable contribution to the literature in the field.*
Practical implications *– The findings of this study suggest that managers can create value for their shareholders by shortening inventory conversion periods and by reducing the number of days for accounts receivables.*
Originality/value *– This paper examines the relationship between working capital management and profitability of the firms from construction industry. The profitability can be enhanced if companies manage their working capital in a more efficient way.*
Key words: *working capital, profitability, cash conversion cycle, construction industry.*

Introduction

The working capital management is one of the most important components of corporate finance because it has a direct impact on the firm's profitability (Haq et al., 2011). In order to maximize the company's value, the goal of the working capital management is to find a balance between inventories, accounts payable and accounts receivable. In this paper, it is explored the relationship between the working capital management and the firm's profitability for companies in the construction industry listed on the Bucharest Stock Exchange for a period of thirteen years from 2003 to 2015. The working capital management deals with securing capital for a company in order to run its day-by-day operations. (Harris, 2005) indicated that the working capital management represents a simple and straightforward concept of providing the ability of the company to fund the difference between the short term assets and short term liabilities. This implies that an efficient working capital management is one of the prerequisites for smoothly running a firm.

(Padachi, 2006) states that the working capital management is important for the financial health of all businesses, regardless of their type and size. Such an efficient management plays an important role of overall corporate strategy, especially in construction firms, where significant amounts of money are invested in elements of working capital. (Cuñat, 2007) states that trade credit represents about half the short term debt and about forty-one percent of the total debt in UK medium sized companies. An adequate working capital management is vital particularly for firms in the construction industry listed on the Bucharest Stock Exchange, where, during the assessed period, more than forty percent of assets are composed of current assets.

Multiple studies have analyzed the relationship between working capital management and firm's profitability in different markets. (Deloof, 2003) investigated the association between profitability and working capital of large Belgian non-financial firms for a period of five years. A significant negative association between profitability and accounts receivable days, inventory days and accounts payable days was found. (Arshad and Gondal, 2013) analyzed a sample of Pakistani firms from cement sector. This study shows that there is a significant negative relationship between working capital and profitability. (Gill et al., 2010) examined a sample of American manufacturing companies listed on the New York Stock Exchange from 2005 to 2007. This study shows that managers can enhance profitability by decreasing the credit period granted to their customers. (Makori and Jagongo, 2013) used the pooled ordinary least square regression models in order to investigate the influence of working capital management components on firm's profitability by using a sample of firms from manufacturing and construction industry listed on the Nairobi Stock Exchange for the period between 2003 and 2012. The study indicates that there is a significant positive relationship between profitability and the time it takes the firm to pay its creditors and at the same time there is a negative relationship between profitability and the time it takes for companies to collect cash from their customers.

The construction industry is a large and dynamic component of almost every economy, providing the buildings and infrastructure on which other industries depend. It has a considerable role for added value creation, taking into account its weight during GDP (Gross Domestic Product) creation. The construction industry contributed about seven percent to the Romanian GDP in 2015 (National Institute of Statistics, 2016). This industry is one of the largest industrial employers in Romania, accounting for about eight percent of the total employment market (National Institute of Statistics, 2016). This industry was heavily affected by the recent financial and economic crisis and its aftermath. Despite the fact that the construction sector experienced the deepest and longest contraction, with its added value falling by almost nineteen percent between 2007 and 2013 (Horta et al., 2013), during the last three years the Romanian construction industry has registered a continuous growth (National Institute of Statistics, 2016). No study, to the best of our knowledge, has examined the relationship between the working capital management and the firm's profitability for the companies in the Romanian construction industry.

The rest of the paper is organized as follows. The second section examines the methodology for the current research. Furthermore, the empirical results are presented in the third section and, finally, the last section summarizes the conclusions.

Methodology

In this paper, we examined the relationship between the working capital management and the firm's profitability using a sample of seven companies from the construction industry listed on the Bucharest Stock Exchange and a study period of thirteen years, between 2003 and 2015, resulting in ninety one total observations. For computing the final proxy variables, data from the financial statements of the firms were analyzed.

In order to quantify the influence of the working capital on the firm's profitability, proxy variables were chosen according to previous reported empirical work. The proxy variables are the following: return on assets, cash conversion cycle, inventory conversion period, receivables collection period, payables deferral period, current ratio, debt ratio, and firm size. In this study, we

use the return on assets (ROA), measured as the ratio of firm's annual net income to total assets, as a proxy for company profitability. The dependent variable is profitability proxied as ROA, which indicates the percentage of profit that a company earns in relation to its total assets. The working capital management is measured using the cash conversion cycle (CCC). It represents the length of time, in days, between actual expenditures to pay for productive resources and the collection of cash on receivables, indicating the average length of time that money is tied up in current assets (Brigham and Ehrhardt, 2005). An efficient working capital management implies lower values for CCC. The CCC is defined as follows:

$$\mathbf{CCC} = \mathbf{ICP} + \mathbf{RCP} - \mathbf{PDP} \tag{1}$$

where:
ICP – inventory conversion period;
RCP – receivables collection period;
PDP – payables deferral period.

The inventory conversion period shows the effectiveness of inventory management. It indicates how long it takes a firm to turn its inventory into sales. The ICP is defined as follows:

$$\mathbf{ICP} = \frac{\mathbf{Inv} \cdot \mathbf{365}}{\mathbf{COGS}} \tag{2}$$

where:
Inv – inventory;
COGS – cost of goods sold.

The receivables collection period measures the effectiveness of a firm's credit policy. It reveals the period of time that a firm takes to collect revenue after a sale has been done. The RCP is calculated as follows:

$$\mathbf{RCP} = \frac{\mathbf{AR} \cdot \mathbf{365}}{\mathbf{Sal}} \tag{3}$$

where:
AR – accounts receivable;
Sal – sales.

The payable deferral period indicate how long it takes for a company to pay its trade creditors, like its suppliers. The PDP is determined as follows:

$$\mathbf{PDP} = \frac{\mathbf{AP} \cdot \mathbf{365}}{\mathbf{COGS}} \tag{4}$$

where:
AP – accounts payable.

The independent variables of working capital management are the following: cash conversion cycle, inventory conversion period, receivables collection period, payables deferral period. To remain consistent with previous studies (Deloof, 2003), debt ratio, current ratio and firm size were used as control variables. Debt ratio (DR) indicates the proportion of a company's assets that are financed by short-term and long-term debt. Current ratio (CR) denotes the firm's capacity to pay off its short-term liabilities with its current assets. Lastly, we use the natural logarithm of sales to measure the size of the firm.

Results

Table 1 presents the summary statistics of the variables used in this study. On average, Romanian firms take a longer period to convert their inventories into sales compared to the American (78.63) and Belgian (46.62) ones (Gill et al., 2010); (Deloof, 2003). The mean credit period granted by Romanian companies to their clients is obviously higher relative to the American (53.48) (Gill et al., 2010). The Romanian companies need a shorter period to pay their creditors compared to American (49.5) firms (Gill et al., 2010). Overall, the average cash conversion cycle is significantly higher than that of Belgian (44.5 days) and American companies (89.94 days) (Deloof, 2003); (Gill et al., 2010).

Table 1. Descriptive statistics of variables

	Mean	Std. Deviation	Minimum	Maximum
ROA	4.40	7.03	-17.47	24.25
ICP	196.11	447.06	5.34	2761.05
RCP	200.30	339.15	13.19	2708.03
PDP	47.61	79.03	1.37	686.77
CCC	348.81	629.70	-5.99	3616.88
DR	35.88	19.88	8.58	91.50
CR	2.36	1.83	0.20	8.98
Ln(Sales)	17.67	0.75	15.20	19.39

On average, 35.88 percent of the Romanian firm's assets are financed with debt; this means is higher than the average DR of American (32 percent) companies (Gill et al., 2010).

Table 2 presents the Pearson correlation coefficients for the variables used in this research. The CCC and its components are shown to correlate negatively with ROA.

Table 2. Pearson correlation coefficients for the variables

	ROA	DIO	DSO	DPO	CCC	DR	CR	Ln(Sales)
ROA Sig. (2-tailed)	1 -							
ICP Sig. (2-tailed)	-0.343 (0.0009)	1 -						
RCP Sig. (2-tailed)	-0.290 (0.0054)	0.443 (0.0000)	1 -					
PDP Sig. (2-tailed)	-0.042 (0.6950)	0.209 (0.0463)	0.8234 (0.000)	1 -				
CCC Sig. (2-tailed)	-0.394 (0.0001)	0.922 (0.0000)	0.750 (0.0000)	0.466 (0.0000)	1 -			
DR Sig. (2-tailed)	0.070 (0.5084)	-0.065 (0.5391)	0.1332 (0.2083)	0.061 (0.5625)	-0.125 (0.2350)	1 -		
CR Sig. (2-tailed)	-0.099 (0.3509)	0.452 (0.0000)	0.160 (0.1287)	-0.051 (0.6310)	0.414 (0.0000)	-0.469 (0.000)	1 -	
Ln(Sales) Sig. (2-tailed)	0.276 (0.0082)	-0.095 (0.3718)	-0.272 (0.0090)	-0.275 (0.0084)	-0.179 (0.0888)	0.244 (0.0196)	-0.070 (0.5127)	1 -

ROA has a negative correlation with inventories, implying that if inventory conversion period declines it will have a positive impact on the company's profitability. DR and size of the firm are positively correlated with ROA, while CR is negatively correlated with the measure of profitability.

Table 3 reveals the results of estimating four regression models exploring the relationship between working capital management and profitability of the Romania firms from construction industry. In order to investigate how working capital management influences the profitability of a company, the regression analysis was used. The panel data methodology, with cross section weights and White's heteroskedasticity consistent covariance matrix is used.

Table 3. The relation of ROA with working capital management

Coefficient estimation	Model I	Model II	Model III	Model IV
Intercept (Prob.)	-39.742 (0.0001)	-45.217 (0.0000)	-42.637 (0.0000)	-52.254 (0.0000)
CCC (Prob.)	-0.004 (0.0046)	-	-	-
ICP (Prob.)	-	-0.006 (0.0001)	-	-
RCP (Prob.)	-	-	-0.002 (0.3011)	-
PDP (Prob.)	-	-	-	0.004 (0.2617)
DR (Prob.)	0.078 (0.0146)	0.089 (0.0019)	0.060 (0.0776)	0.068 (0.0296)
CR (Prob.)	0.590 (0.0913)	0.763 (0.0201)	0.093 (0.7686)	0.032 (0.9229)
Ln(Sales) (Prob.)	2.318 (0.0001)	2.575 (0.0000)	2.540 (0.0000)	3.043 (0.0000)

In the regression models, CCC and its three components were used, one by one, as a proxy for working capital management. The first model examines the relationship between profitability and the CCC. This model is acceptable from a statistical perspective. A negative relationship between CCC and ROA was found. This result is in line with the previous studies (Deloof, 2003); (Padachi, 2006); (Makori and Jagongo, 2013) and implies that firms can enhance their profitability by minimizing the CCC. The relationship between profitability and the inventory conversion period is provided by the second model. Likewise, this model is acceptable from a statistical perspective. The results denote a negative relationship between inventories and profitability, fact which means that the longer the inventory is held, the more working capital is tied up, and Romanian companies from construction industry can achieve lower profitability levels. The third model investigates the relationship between the receivables collection period and profitability. The results indicate a negative relationship between the receivables collection period and profitability, which indicates that managers can increase profitability by giving their customers a shorter credit period. The fourth model analyses the influence of payables deferral period on profitability. The results denote a positive relationship between payables deferral period and the ROA, implying more profitable companies wait longer to pay their bills.

Conclusions

This article provides comprehensive evidence regarding the relationship between working capital management and company performance using a sample of Romanian companies from construction industry listed on the Bucharest Stock Exchange between 2003 and 2015. In order to examine how well a construction firm's working capital is being managed, the cash conversion cycle was used. For measuring the company's profitability, the indicator return on assets was used. The findings of this research confirmed a negative relationship between the cash conversion cycle and company's profitability, which means that a shorter cash conversion cycle will lead towards enhanced profitability for the construction firms. The results of this study showed a negative relationship between firm profitability and the inventory conversion period and as well as receivables collection period. This means that in order to improve profitability, managers of

listed construction companies should manage inventories efficiently and decrease their average collection period. This study also found that extended payment periods to companies' creditors will lead towards enhanced profitability of the construction firms. Overall, the findings show that an efficient working capital management is vital for corporate profitability.

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DIFFICULTIES IN FINDING EMPLOYMENT: WHO IS TO BLAME?

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Abstract

Purpose *– identify and analyse internal and external factors perceived by students to deter them in finding a job in their specialty in relation with their predisposition to work during studies*
Methodology/approach *- Literature review and depth interviews with students from an Industrial Chemistry Faculty were conducted to understand and depict respondents' perceived weak points and external conditions. Data analysis based on crosstab and independent sample t-test*
Findings *– The most frequent weak points perceived by respondents are self-belief and interpersonal communication. Statistical analysis revealed the importance of work experience, self-belief and initiative in performing specific tasks and knowledge and skills in specialty*
Research limitations/implications *– Small survey sample generated very small sub-sample (master students, students working in a field close to their speciality) leads to limited statistical testing. Further qualitative analysis would enable a better explanation of the student behaviour)*
Practical implications *– increase awareness for both students and academic staff regarding the obstacles perceived to deter finding a job in specialty and further efforts to be made by the faculty*
Originality/value *– the research links perceived internal and external barriers from finding employment with propensity to work during studies and proposes improvements for university policies.*
Key words: *student employment*

Introduction

Whilst crisis makes it even harder for some students to find a job, some work (to support themselves or to learn on the job), whilst others do not seek any kind of employment during their studies. However, the vast majority assigns some sort of blame to both external conditions (i.e. overall economic situation, University, employers, luck and "influence") and personal weak points (specific knowledge, self-trust, interpersonal communication, driving licence, etc.).

An analysis of the student's perceptions of "blame" for internal and external factors would reveal significant insight that can be used to improve the educational process and policies that would enhance their ability to find appropriate employment in their specialization.

Aim

The research aims to identify and analyse the factors perceived by the students that deter them in finding a job in their specialty. As student behaviour is determined by personal factors and external conditions, the research focused on both aspects and considered personal weak points and external environmental conditions for the analysis. As the practical experience plays an ever-increasing role in finding a job in specialty, the student's propensity to work was considered a key variable to be tested in their work seeking process.

Student's willingness to work was depicted on three levels:

- Whether they searched or not for a job;
- Whether they worked or not (never worked, worked only during on holydays, only during semesters and worked both during holydays and school semesters) and
- Whether worked in a domain close to their specialization.

Objectives

The research investigates the weak points (internal) and external environmental conditions as perceived by the students as difficulties in finding a job in specialty in relation with their predisposition to work and practical experience.

Methodology

There is a growing literature dealing with part time employment (Shaw and Oglive 2010, Damian 2001, Riggert 2006, McCoy and Smyth, 2007, Rusu 2016) and their impact upon students (Howieson et.al. 2012, Metcalf 2005, Warren, LePore and Mare, 2000).

Student's perception of causes that affect the employment finding process in their specialty and "who is to blame" revealed two categories of factors: internal (as related to self) and external conditions. Based on literature review, interviews with students and personal experience three categories of factors were considered to influence student's behaviour:

- Personal perceived weak points (internal blame)
- External environment conditions blamed by the students
- Student identification data (student profile, gender, year of study, age, number of failed exams, final grades for last year)

For each category, statistically significant differences were tested for respondents that

a) Searched or not for a job
b) Did not work vs. worked only during holydays
c) Did not work vs. worked only during semesters
d) Did not work vs. worked both during holydays and school semesters

Table 1. Sample distribution

								Total
Gender	**M**	**F**						
	38	89						127
Specialization	**SPEC1**	**SPEC2**	**SPEC3**	**Master**				
	60	44	16	7				127
Year of studies	**4th year**	**Master 1**	**Master 2**					
	120	3	4					127
Age	**21**	**22**	**23**	**24**	**25**	**26-30**	**> 30**	
	1	31	60	20	11	2	2	127
Failed exams	**> 5**	**4**	**3**	**2**	**1**	**None failed**		
	13	9	7	9	19	70		127
Grade (last year)	**6-6,99**	**7-7,99**	**8-8,99**	**9-10**				
	9	42	40	36				127

Based on interviews with students seven "weak" points and sixteen external influences which could decrease the student' ability to find a job in specialty were identified (see Appendix 1).

Whilst questions related to weak points were dichotomous, those referring to the external environment use Likert scale (1 – To a very small degree, to 5 – To a very large degree). Respondents had to rank the importance of each item referring to what should the Faculty do in order to improve the student's ability to find jobs in their specialty.

The sample consists of 127 students from the 4th grade and master specializations from an Industrial Chemistry Faculty. Sample distribution is exhibited in Table 1

Main findings

Analysis of personal perceived weak points

The graph depicted in figure 1 based on counting the perceived weak points of the respondents. The leading factors from the sample are self-belief and initiative in performing specific tasks and interpersonal communication, with the least importance the driving licence.

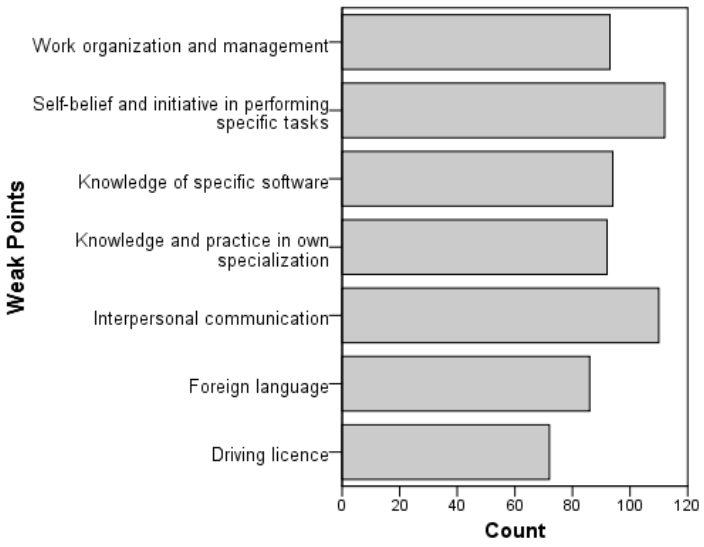

Figure 1. Frequency of personal weak points as perceived by respondents

There are 67 students that did and 60 that did not search for a job during faculty using the 7 means depicted previously.

Crosstab analyses were performed considering personal weak points perceived by respondents. No statistically significant differences were identified between those that did not search for a job, worked only during the holidays, worked only during the semester or worked both during holydays and school semesters.

Analysis of external environmental conditions blamed by the students

The external factors are perceived to have different amounts of "adversity". Averages of respondents' perceptions are depicted in figure 2. Highest impact is due to "Work experience required", be passionate, encouragements from spouse and family. High score received the need to be "well connected" in order to find a job in specialty and the blame for overall economic conditions.

The smallest impact was associated with University and Faculty being involved in supporting students to find a job in their specialty (see figure 2.)

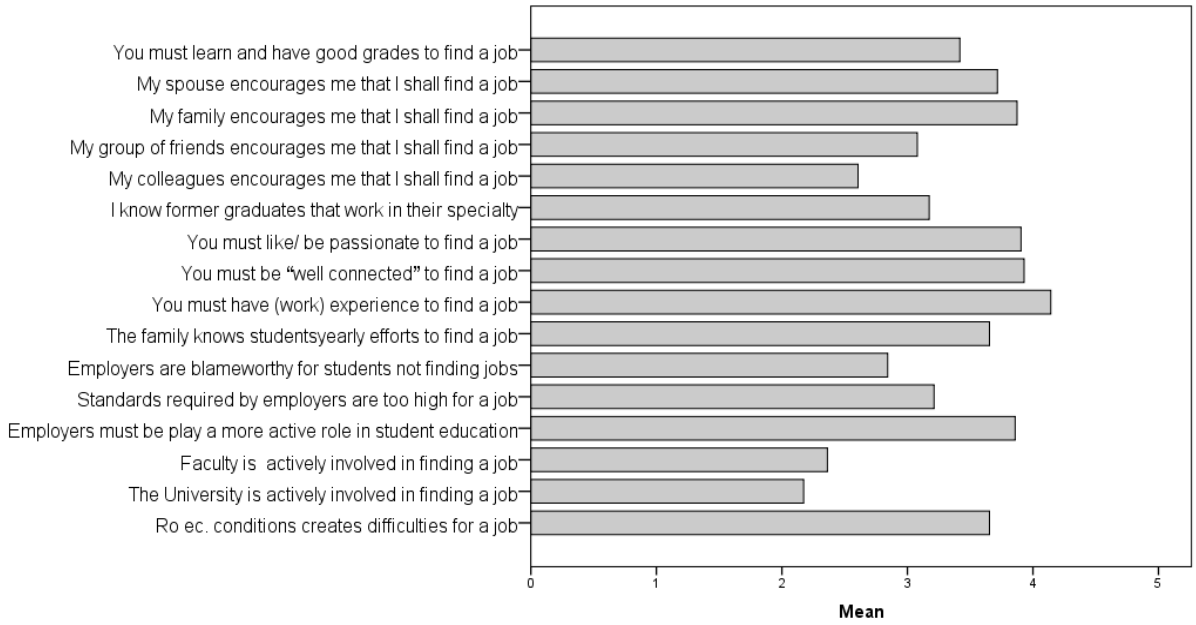

Figure 2. The mean values of the external environmental conditions perceived respondents to blame for difficulties in finding jobs in their specialties

Statistical analysis based on independent sample t-test of the external environment conditions blamed by the students seeking whether is influenced by propensity to work.

a) For those that searched or not for a job
b) Did not work vs. worked only during holydays
c) Did not work vs. worked only during semesters
d) Did not work vs. worked both during holydays and school semesters
e) Worked in a field close to speciality

Those that searched for a job during studies became aware that you need knowledge and practical experience compared with their colleagues that did not (see table 2.).

Those that worked only during holidays were convinced that you need to be "well connected" to get a job compared with those that never worked (see table 2).

Interesting results were generated by the comparison between those that worked or not in a domain close to their specialization. Significant differences occurred for the need to have work experience, be passionate by what you do and encouragement received from your colleagues and group of friends that you can succeed in finding a job in your specialization (see table 2). These four variables may be considered to be linked as if someone is passionate will work harder and smarter and thus gain the necessary work experience and would also gain support from colleagues and friends that may also be passionate or appreciate your perseverance and determination to do something that you believe that is important.

Table 2. Independent sample t-test for external conditions blamed by students

	Levene's Test for Equality of Variances		t-test for Equality of Means		
	F	Sig.	t	df	Sig. (2-tailed)
I have searched for a job during studies Yes 67 No 60					
Knowledge and practical in own specialization	4.828	.030	2.030	110.005	.045
I have never worked 69 Only during holydays 21					
You have to be „well connected"	11.158	.001	-2.559	61.482	.013
I have never worked 69 Only during semesters 8	**No statistically significant differences**				
I have never worked 69 Both during holydays and semesters 29	**No statistically significant differences**				
I worked in a domain close to my specialization Yes 4 No 54					
You must have (work) experience to find a job in your specialty	7.685	.008	4.859	53.000	.000
You must like/ be passionate by your qualification	4.340	.042	3.693	6.427	.009
My colleagues encourages me that I shall find a job in my specialty	.001	.970	2.549	56	.014
My group of friends encourages me	3.347	.073	2.988	56	.004

Influences of student identification data

Student identification data (student profile, gender, year of study, age, number of failed exams, final grades for last year) was tested to see whether is influenced by propensity to work

a) For those that searched or not for a job
b) Did not work vs. worked only during holydays
c) Did not work vs. worked only during semesters
d) Did not work vs. worked both during holydays and school semesters

Crosstab analysis for student identification data revealed no statistically significant correlations between those that searched or not for a job.

In order to avoid restrictions occurring when using Crosstab several variables were recoded to reduce the number of categories:

- Work was reduced to only two categories: work and did not work (aggregating any type of work during studies: holidays, semester and holidays and semester)
- Age was reduced four categories (to up to 22, 23, 24 and 25 and over)
- Master degree was eliminated from the sample (as only 7 out of 127 respondents)
- Failed exams were reduced to four categories (None failed, 1, 2 to 4 and over 5 failed)

Significant differences were identified among those that worked and did or not work during studies but only for student age (Pearson Chi-Square = 10.073, Sig. (2-sided) = 0.17, Cramer's V = 0.018).

Such differences occurred when respondents are 23 (Adjusted Residual = 2.6) and over 25 (Adjusted Residual = 2.6). The age corresponds to graduating the university and most of the student did not work whilst studying 68 compared with 34 working). The rest of 18 students age 24 and over 25 experience the second shift when over 25, where only 3 did not work during studies compared with 10 that reported working during studies.

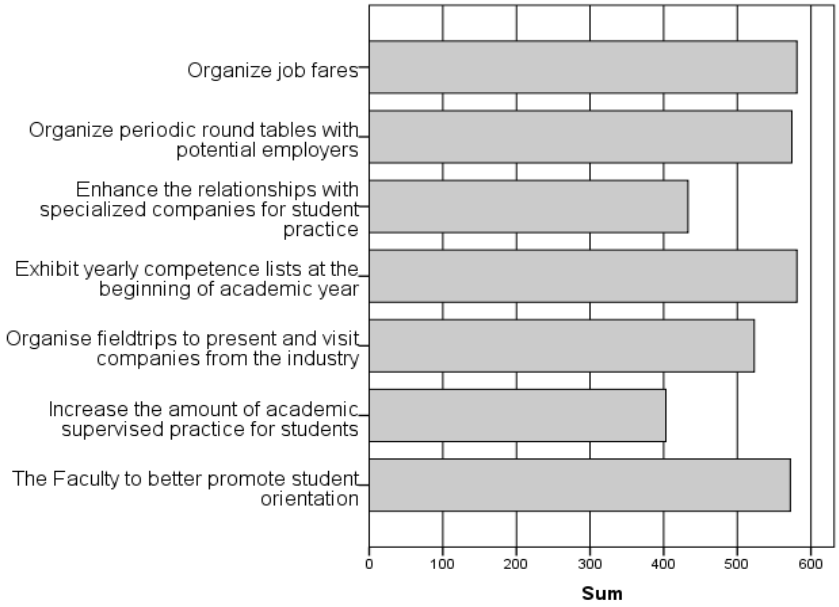

Figure 3. Specific actions proposed by respondents to be undertaken by the Faculty in order to improve their ability to find jobs in their specialty

Specific actions proposed by respondents to be initiated by the Faculty

Students from the sample were required to rank the importance of the seven actions to be performed by the university (see figure 3), where number one being most important. By adding all reported scores, the most important feature (Increase the amount of academic supervised practice) has the smallest total score. Second most important action proposed by the respondents also relates to student practice (Enhance the relationships with specialized companies for practice). Job fares, periodic round tables with organizers and promotion of better student orientation were the least important as perceived by respondents.

Research limitations

The research bases on a small sample that is heterogeneous for some subsamples such as master students (only 7 respondents out of 127). Only 58 out of 127 respondents provided a valid response to “worked close to my specialty” and due to only 4 positive answers, this variable was excluded from all further Cross Tab analyses. Such limitations prevented some statistical tests to be correctly performed such CrossTab because generated breech of condition “expected Number of Cells smaller than 5” when using Chi-square test.

Further distortion of the sample may occur due to larger number of female respondents (87 out of 127) which is a particularity of students from Chemical Faculties across Romania.

Other significant limitation resides with the study of a single Faculty

Conclusion and recommendations

The theme of “need more practice” appears consistent across the research from the self-reported weak points (belief they can perform specific tasks), to the external environment (you must have work experience) and the students recommendations to increase faculty’s efforts towards practice for students.

Whilst being easer to blame others for your problems instead of assuming responsibility for your actions, the research investigates the weak points (internal) and external environmental

conditions as perceived by the students as difficulties in finding a job in specialty in relation with their predisposition to work and practical experience.

Respondents indicated lack of self-belief and initiative in performing specific tasks and interpersonal communication as most important personal weak points. Whilst further in-depth interviews are needed to explain these responses, possible causes may reside in the need for practical knowledge and experience of most of the respondents. It is important to further investigate specific perceptions of each sub-segment of students according to their propensity to work. Those that neither searched nor worked at all probably have a significantly different values and beliefs compared with those that have work experience (holidays, semester or both) and even more different from those that experienced work in a field close to their specialty.

However, such hypotheses must be treated with great care as students with excellent grades and theoretical knowledge reported that their family completely forbidden them to work while providing them with all the financial and emotional support during studies.

The shift between graduation and enrolment in master and passing to second year of master also determines a significant change in beliefs and behaviour also correlated with age (see influences due to student identification data).

It was interesting to notice that there were no significant differences between gender or specializations which may occur due to external conditions such as economic factor and particular conditions of the chemical industry.

Faculties must continue to support and enhance student practice process by increasing the amount of academic supervised practice and enhancing the relationships with specialized companies for practice. It is also important to identify appropriate mans to better involve companies in the educational process by defining specific skills and abilities for students, a larger number of places of paid practice and internships where students will have appropriate level of responsibility for their actions.

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Appendix 1. Internal and external influences that may decrease ability to find employment

Perceived weak points
1. Knowledge of specific software (CAD, drawing i.e. AutoCad, MS Word , Excell, etc.) 2. Knowledge and practical in own specialization 3. Foreign language 4. Work organization and management 5. Self-belief and initiative in performing specific tasks and/or activities 6. Interpersonal communication 7. Driving licence
The main external influences identified as related
1. Economic situation in Romania is the main cause for the difficulties in finding employment in my chemical engineering / environment/ engineering and management specialization 2. The University is actively involved in finding a job in my specialty 3. Faculty is actively involved in finding a job in my specialty 4. Employers must be play a more active role in student education 5. The standards required by the employers are too high for a job in specialty 6. Employers are blameworthy because students do not find jobs in their specialty 7. The family knows yearly efforts made by the students to find job in specialty 8. You must have (work) experience to find a job in your specialty 9. You must be “well connected” in order to find a job in your specialty 10. You must like/ be passionate by your qualification in order to find a job in your specialty 11. I have seen/ I know former graduates that work in their specialty 12. My colleagues encourages me that I shall find a job in my specialty 13. My group of friends encourages me that I shall find a job in my specialty 14. My family encourages me that I shall find a job in my specialty 15. My spouse encourages me that I shall find a job in my specialty 16. You must learn and have good grades to find a job in your specialty

COMPARATIVE STUDY OF THE MARKETING METHODS USED BY THE MAIN MEDICINE DISTRIBUTORS FROM ROMANIA

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Abstract

The topic of this paper consists in the identification of the marketing particularities used by different medicine distributors from Romania. Through this paper we wish to find a more efficient marketing method for the commerce of such products. We have conducted a theoretical research based on the marketing methods applied by the medicine distributors. In order to perform this research we talked to the marketing department staff from the distribution companies in order to obtain information concerning the marketing methods used by the main companies.

1. Introduction

The medicine is a special product which needs an appropriate type of marketing because it is a product necessary for a medical condition. The Romanian distribution companies have marketing methods which respect the general theory of discipline, but there are certain particularities which we want to emphasize in this paper.

Unlike other fields of marketing, in the case of the pharmaceutical marketing the medicine is not just a regular product, but it is created and produced by the pharmaceutical industry. The medicine will not be bought freely, or according to the consumer's choice or preference. The medicine is a special product which must be made available to the patient with the purpose of treating certain diseases and of protecting or improving his health.

2. General notions of pharmaceutical marketing

In general, the marketing is "the science and art of convincing a customer to buy". Philip Kotler defined the marketing as a "social and managerial process through which a person or a group of people obtain what is necessary for them and they wish to attain a certain value by creating, offering and exchanging goods and services". In a few words, the marketing is the art and science of selling.

The word "marketing" comes from English and is the gerund form of the verb "to market" which means to perform transaction on the market, to buy and to sell. Thus, the marketing as a process comprises all the activities of planning, organizing, coordinating and controlling the organizational compartment in order to profitably satisfy the needs and wishes of the clients to whom the products and services are offered. The conceptual essence of modern marketing is not the selling of products and services, but the satisfaction of the clients´ needs, requests and wishes (Brătianu, 2006)". As a process, "the marketing deals with the identification and satisfaction of the human and social needs. One of the shortest definitions of marketing states that it profitably satisfies certain needs. (Kotler, 2002)"

According to Kotler, the numerous definitions of marketing can be grouped into two categories: social and managerial. The social definition emphasizes the marketing's functionality in a society

characterized by complex dynamic and turbulent processes, globalization and deregulation (Brătianu, 2006). As far as the managerial definition is concerned, the marketing uses a series of methods and specific research and planning techniques in order to perform its activities (http://www.lectiieconomice.net/marketing-concept/1-marketing-concept-ce-este-marketingul.pdf). This way we can consider marketing "as a social and managerial process through which people and groups obtain what they need and want through creating, offering and freely exchanging valuable goods and services (Kotler, 2002).

Unlike other fields, in the case of the pharmaceutical marketing the medicine is not just a regular product, but it is created and produced by the pharmaceutical industry and it is made for the patient. The pharmaceutical marketing is a subspecialty of the marketing which can be defined as a process through which the market is being updated for the pharmaceutical products and services. It has a wider meaning than the marketing of medicine because it also involves the pharmaceutical services offered by the specialists in the field. The focus is put on the pharmaceutical care of the patient, emphasizing the fact that the pharmaceutical market will only be extended for the patient and not for the medicine producer or tradesman.

In conclusion, the pharmaceutical marketing is an activity oriented towards the research of the patient's needs from a pharmaceutical point of view and towards the complete satisfaction of the needs using a more effective and attractive way than the competition does (Dogotari, Lupu and Peschin, 2013).

3. The main medicine distributors from Romania

In the table below, the main competitors from the field of medicine distribution are presented along with their turnover, profit or registered loss. It can be observed that on the first position according to the turnover there is Mediplus Exim SRL, followed by Farmexpert DCI S.A, Fildas Trading SRL and Farmexim S.A. As far as the registered profit is concerned, Farmexpert DCI S.A. occupies the first position, followed by Mediplus Exim SRL, by Fildas Trading and Farmexim S.A.

Table 1. The medicine distributors' market

Company	Turnover (millions of lei)				Profit/loss (millions of lei)			
	2011	2012	2013	2014	2011	2012	2013	2014
Mediplus Exim SRL	2700,5	3146,6	3256,2	3163,9	66,9	74,5	25,4	43,9
Farmexpert DCI S.A	1821,3	2053,8	2250,9	2655,9	100,3	100,1	109,1	103,6
Polisano SRL	1245,5	1311,5	1461,1	1326,0	50,4	33,8	12,7	7,9
Fildas Trading SRL	935,1	1115,2	1278,6	1483,7	27,5	30,4	42,9	40,71
Europharm Holding SA	407,7	463,4	966,4	N/A	30,3	60,6	N/A	N/A
Farmexim S.A.	972,4	1122	1284,4	1473,6	14,2	14,5	22,62	17,9
ADM Farm SRL	781,8	768,2	695,7	455,3	11,3	2,4	-3,6	-46,3

Source: http://www.zfr.ro/companii/top-10-distribuitori-de-medicamente-in-2014-11753208/

Mediplus Exim SRL is the number one company in the field of pharmaceutical and parapharmaceutical distribution from Romania and they have been the market leader for more than 10 years. They started their activity in 1994 at Cluj through Plurifarm. In 1997 Mediplus is founded which unites more import divisions, distribution and product promotion, thus becoming a complete portfolio distributor. Mediplus is a part of A&D Holding and besides the distributor, the

group also owns the pharmacy chain Sensi-blu, who bought the chain City Pharma (http://www.wall-street.ro/articol/Companii/131156/sensiblu-city-pharma-tranzactie-cea-mai-mare-retea-farmacii.html). The group A&D Pharma includes besides Sebsi-blu, the Mediplus distributor and the Anima clinics.

Farmexpert DCI S.A covers three big and important segments from the pharmaceutical market:

- Pharma Retail, dedicated to the pharmacies' customers;
- Hospital, dedicated to the hospital services;
- The promotion department Farmexpert which represents Romania: Thea Laboratories, Topfer, Bausch&Lomb (the eye surgery division).

In the year 2006, Farmexpert and the German concern Andreae-Noris Zahm A.G. (ANZAG) sign an agreement through which the German group with the headquarters in Frankfurt takes over 80% of the Farmexpert shares.

Fildas Trading SRL is a company which has a Romanian capital and was founded in 1991. In 1998 the retail part was created through the acquisition of a company which owned 60 pharmacies and the warehouse in Pitesti from the former public pharmacy net. At present, the net has 480 pharmacies in all of the country's districts under the brand of Catena. Also, in 2005 the Fildas group created a new brand – Naturalis which promotes cosmetic, nutrition and caring products based on plants.

Farmexim S.A. is the first company that deals both with import and pharmaceutical products distribution in the Romanian market. It was founded in 1990 in Bucharest. Farmexim is a member of a group of three companies which cover the following fields of activity:

- Farmexim S.A: import and pharmaceutical product distribution
- HELP NET PHARMA S.A: their own pharmacy chain with more than 150 subsidiaries;
- GREEN NET S.A: import and distribution of cosmetic products and nutritious supplements.

Polisano SRL was founded in 1993 and activates in the field of import and pharmaceutical, para-pharmaceutical and cosmetic products distribution and medical appliances. Their headquarters is in Sibiu. Starting with July 2016 the company became insolvent.

Europharm Holding S.A. is part of the GlaxoSmithkline Romania group (GSK). It is one of the most important local companies that deal with the pharmaceutical distribution. They have been active on the local market for 18 years. It was also founded as the distributor of the producer who bears the same name and that was later on bought by GSK.

ADM FARM SRL was born in 1998. In March 2005 the first pharmacies from the Sante chain are opened (a pharmacies' net member of ADM FARM). In December 2014 the company became insolvent at their own request with the possibility to have a judicial reorganization (http://www.zf.ro/companii/distribuitorul-de-medicamente-adm-farm-un-business-de-160-mil-euro-a-intrat-in-insolventa-13776648).

4. The main marketing methods identified at the medicine distributors

Among the marketing activities, the research of the market in order to identify the desire and preferences of the consumers is used to project different products and services, to establish the prices or to modify them, to prepare the launching of the offer, to raise the buyers´ attention, to establish the distribution channels and the forms of presentation and selling of the products. Thus, marketing means to act on the market, to develop and distribute products and services in such a way so that the buyer can find the products at the right time and place, in quantities and at prices which are correspondent to his power of consume. The specialists in pharmaceutical marketing are involved in the study of the market, in the development, distribution and commerce of the products, in the price setting and in the promotion and communication with the consumer.

The most important medicine distribution companies from Romania are: S.C. Mediplus Exim, Farmexpert DCI S.A, Farmexim S.A., Fildas Trading. The majority of the medicine distribution companies use almost the same marketing methods which will be detailed in the following lines.

Mediplus, the distribution company of the group A&D Pharma has significantly raised the efficiency of its sales force by implementing the Hermes SFA mobile solution, provided by Transart (http://www.transart.ro/hermes-sfa-implementat-la-liderul-distributiei-de-medicamente). Because of the numeric growth of the sales force, A&D Pharma felt the need to implement a unitary informatics system which would be easy to use by the entire sales force. The attention was drawn towards simplifying the entire ground work performed by the agents, growing the capacity to collect the market cash, as well as towards reducing the logistic costs of the sales force. The HERMES solution offers an increased capacity of coordination and control of big teams and insures the improvement of the services offered to the clients from the distribution area, for various reasons, such as:

- Reducing the delivery time; this is possible due to the functional expansion of the HERMES system through a specialized module dedicated to the automation of the delivery agents' activity.
- Creating solid premises for the growth of the company's sales; this will be a consequence of the fact that the medical representatives' activities have become more efficient.
- Increasing the capacity to collect cash from the clients who have due payments and the automation of the process through which the receipts correspondent to these debts are immediately issued.
- The high percentage of the Transart clients (references) that use the HERMES solution who are satisfied – multinational companies which have a sales force comparable from a numeric point of view (hundreds of agents) to the one of the A&D Pharma group.

Consequently, by using the HERMES solution for an extended period of time, A&D Pharma obtained a series of advantages:

- the increase in sale of the company during a crisis, due to the more efficient usage of work time by the sales department
- the increase of productivity of the sales department by the complete automation of the activities of the on site agents
- the usage of a unitary system of booking of the indent from the clients (pharmacies) for the entire sales department (all the divisions / distributors with whom A&D Pharma works) as well as for the delivery department
- the shortening with 40% of the formation and validation of indents booked by field agents
- the control of bad payers, being blocked the possibility of registering new indents for the clients whose delay of payments exceeds the maximum of established credit
- the improvement of planning and control of sales activities at department level as well as at the level of each sales representative
- Extensive support for the implementation of promotion and sales actions, such as the clearance sales for some products with close usage expiration date, special offers and presentation actions for newly introduced products in the distribution portfolio
- The reduction and keeping under control of some logistical and operative costs (fuel, promotional materials) thanks to a better control of the activity of field agents

The marketing methods used by medicine distributors are:

- the creation of some brands, meaning the products which register sales over 1,000,000 euro, especially in today's context the notion of brand has a specific importance, many times the sales of a company are made due to the value and fame of a brand more than to the superior quality of the product. There are many examples in which the fact that you are not a name on the market makes you unable to have sales at your real potential – this is how we can explain the fact that all companies try to build successful brands to sustain marketing activities.
- National sponsorship programs – the company through its medical representatives offers to doctors and auxiliary medical personnel certain products for free, such as medical equipments (smocks, hospital slippers, bonnets) or certain medical equipment (stethoscopes, blood pressure/ glycaemia measuring equipment, etc)

- Gifts – these represent small presents given by the medical representatives to those prescribing medicines, usually at their first meeting, so that the doctors would remember the company, its products, and even the medical representative; these gifts refer to key holders with the name and symbol of the company, ball pens, USB sticks, supports for pens, agenda, or calendars with the name of the company they represent
- The organization of national conferences for the promotion of the products of the companies credited with points by the Continuous Pharmaceutical Education – these are organized by companies in the conference halls of hotels and aim at informing the medical personnel (doctors, pharmacists) about the new products of the company; each company has its own stall, and at the end of the presentation the participants get folders with the products of the company and some products as gifts.
- The organization of some round tables – the medical representatives invite more doctors to a meeting in a conference hall where they present the given medicine and argue the advantages of this as compared to other similar products; at the end of the conference, the doctors are invited to a dinner organized by the medical representatives and paid from the company budget;
- Presentations in hospital wards – the medical representatives pay visits to doctors in the hospital to let them know about the new products of the company
- Clinical studies – after the medical representative presented the medicine, he offers the doctor the possibility of conducting medical studies in order to verify the efficiency of the medicine (for example the doctor will choose a number of patients; to half of them he will administer the given drug, following their evolution, to the other half he will not administer the drug and the results will be compared);
- Offering material for information, such as: folders, flyers, brochures – the flyers contain only data referring to the name of the product and the company, the folders offer more detailed information about the product, and the brochures offer information about more products of the company;
- Offering some samples at the presentation and promotion of the product – after the presentation of the product the medical representative usually offer the doctor and the pharmacist some samples with the given products
- Organization of commercial campaigns – such campaigns offer certain promotions, such as 1+1 free, 2+1 free or packages of 10+2 free;
- Personalized prescriptions with the name of the company and a 10% discount for the patients who use these prescriptions – the doctor offers the prescription to the patient, guiding him to certain pharmacies in order to get the discount;
- The choice of the right time for promotion according to season: for example in the winter there are offers and discounts for products for colds, at Easter and Christmas for digestive products and in summer for rehydration and dermatological products;
- The launching of new drugs – in order to resist on a dynamic market which is constantly increasing companies need innovations, this making the difference between success and failure;
- Indoor publicity – is made just for OTC drugs inside the pharmacies ;
- Outdoor publicity – is made just for OTC drugs and consist in street posters of any kind: boards, poster, mobile supports and inscriptions on cars;
- Online publicity – it has the advantage of better targeting the desired clients and can offer more information through expandable banners and it also gives the client the possibility of buying the OTC drug at a cheaper price than in pharmacies;
- Advertising – on radio and TV also just for OTC drugs
- Actions dedicated to sales force – such as: motivation schemes, bonuses at reaching qualitative and quantitative targets, courses for information, preparation and refresher courses, as well as courses regarding the product portfolio, the communication and relating with the client, courses of personal development, courses for assuring the sales team to have the best approach methods so that the process would be a win – win one;
- Market research – which indicates the degree of client satisfaction, as well as their suggestions and recommendations regarding the products and services;

- The creation of its own chain of pharmacies – each top 4 distributor has its own chain of pharmacies such as: Mediplus – Sensiblu pharmacies, Farmexpert – Dona Pharmacies; Farmexim – Help Net Pharmacies, Fildas – Catena Pharmacies.

Also some distribution companies use other, more special, policies suggesting the medical representative to put a photo of himself on the on the personal social site in order to show his head what products he promoted in that moment. Another used policy refers to some availability programs. These availability programs refer to the fact that at his first visit to a pharmacy he offers informing materials about the company and its products, gifts and samples to all the people in the pharmacy.

A good cooperation and organization is needed in order to an efficient realization of the marketing processes, starting with the marketing director of the company and continuing with the regional managers and medical representatives. Medical representatives must have a database made up of doctors and pharmacies with potential. They must refresh the database, keep the frequency of the visits and keep in touch with distributors.

One of the main attributes of the medical representatives is promotion. During this activity, the representative has the mission of paying efficient visits to the doctor, revising the last visit, getting a feedback from the field, exercising the interview and respecting the client's time. He must also know his target in order to divide it on days, visits and products. At the end of the day he must make up his tour plan for the next day and send the activity reports on the current day.

The representative must refresh his knowledge about the products and he must also know the competition in order to be able to have a high level discussion with the doctor.

Conclusions

The drug market is a dynamic market having a sustained increase in the last year due to the emergence of modern products with higher prices and due to an increased care for the man's health which led to the increase of the market in real terms. The drug market is a highly controlled market:

- the products are registered at an authority
- the price of the products is controlled on the whole distribution chain, except the OTC drugs
- the ways and methods of advertising are controlled
- the prescription and issuing of drugs is controlled
- the activity of distribution is also controlled, in the past being a coercion for the producers to use distributors as agents

On a continually developing market, but in difficult macroeconomic situation given by the international economic context, the adverse budget assigned to health, the importance of working out marketing strategies and methods is vital. This is demonstrated by the number and evolution of active distributors on the Romanian market which decreased in the last 15 years from 400 to 40 – 50. Distribution companies depend on the decrease of market, at pharmacy level, as well as on evolution of manufacturers, represented by producers.

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A CASE STUDY FOR COSTS OPTIMIZATION IN A CONSTRUCTION COMPANY

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Abstract

Purpose *The objective of a good manager is to reduce costs, obtain more profit, but not at any price, striving to optimize costs keeping or increasing the quality level to cope with market trends and customers demands.*
Methodology/approach *The method applied in this research study was by focusing on 2 concrete building projects where construction activities were underway. A set of empirical methods were analyzed and checked for feasibility to these projects from the costs perspective.*
Findings *The study was conducted at a construction company using concrete data on optimizing the cost of construction activities underway, using empirical methods.*
Research limitations/implications *The proposed research problem is selecting the best way to optimize costs, that are readily available to every manager by choosing the simplest solution with tangible results.*
Practical implications *Managing in a Time of Crisis in construction sector for example, is dealing with markets trends of price drop, building projects frozen, harder conditions to get financing/credits, therefore low demand, unemployment etc. To cope with this there are simple empirical methods to manage civil engineering activities costs and influence positively profitability and these are presented in this paper with focus on a concrete study case.*
Originality/value *The paper presents a case study regarding the way in which the cost reduction is achieved. For this an optimization cost model is applied keeping the ration between benefits and quality.*
Key words: *cost optimization, crisis, empirical methods*

Introduction

The costs optimization is one of the essential problem of all entrepreneurs, use good methods result in getting the desired profit. Cost optimization methods fall into the general problem of optimization with outstanding practical applications in various economic and technical fields. The study of an optimization problem is ussually done starting from several possible solutions from which it will be chosen the best one.

In order to achieve this, it is necessary to have in the system several variables available, from which one can choose one or more possible values, and those are called decision variables. Of course to do this it is necessary to establish and define in advance a point of view from which we intend to optimize a system, point of view that can shape into a form of a measurement, in order to measure the effectiveness of different possible solutions and respectively of different datasets of values given to the decision variables.

This point of view that allows at the same time, through the numerical values that it can take, the measurement of the effectiveness of different solutions, is called optimization criterion. In fact it is expressed as a function of decision variables and it is known as the purpose or objective function. In any optimization problem it is necessary to establish those values of decision variables that ensure the highest or the lowest optimization criterion. As the number of decision variables is greater, the optimization problem's size is larger.

It is known that the problem of optimization has applications in a broad range of industries, being found in construction by optimum planning of the works, transportation, supply and distribution, in terms of stock management, investments, structuring optimal production, in chemistry, in maintenance activities and let's not forget in terms of empirical modeling of a product or in experimental finding of the optimum.

Optimization methods and criteria

As it is clear from the given definitions for optimization, its purpose is to choose from the multitude of possible solutions, the one that is the best with respect to the criterion specified/used. It is important to remember that the best solution depends on the optimization criterion chosen, because even if the decision variables remain the same, their correlation with the optimization criterion, namely the form of objective function depends on the nature of the criteria used.

The optimization criteria that may occur are classified into two major classes, namely economic criteria and technical criteria. In this paper we will present the economic criteria, which we are interested and opposed to technical they are clearer and less variable.

Regarding the economic criteria, their importance results in the fact that regardless of business type, the basic requirement is efficiency as a result of this profit is a criterion which reflects the efficiency of an activity being actually the difference between product price and production cost.

The applicability of this criterion can be found in existing systems, in which case we can talk about a fixed investment, the aim being to maximize profit. In conclusion this criterion is desired to be maximized and the same thing we can say about the recovery time of an investment, knowing that an investment payback period is the ratio of the investment and the benefit obtained per year.

From the criteria that must be minimized we should mention minimized material costs and operational costs.

In order to use a mathematical model for an optimization process we must go through some steps from which the most important one is choosing the appropriate optimization criterion for our optimization problem and the proposed system to be optimized.

The next step will be to establish a mathematical model of the system and also to choose the decision variables, eliminating the state variables. In what follows the optimization criterion will be expressed, depending on the decision variables, then the objective function is written in a mathematical form as simple as possible, choosing afterward the method of determining the optimal solution.

Establishing objective function and restrictions involved in the calculation process of optimization is rather a complicated process due to their variety and complexity, which led to the development of a number of methods and techniques of finding the optimum. Most often in companies, optimization problems are solved empirical by experiment, trying to maximize profits by reducing costs.

The experimental or also called empirical method of searching for the optimum will be treated specifically in this paper since it is simple and much easier to apply in companies. It can be divided in turn into:

- Direct Search Method, used to minimize costs in certain activities of a company by measures taken by decision makers and practically by working smart, amending certain decision variables required to achieve optimum, which in reality is not know if it was touched or not during the direct search process. In this case there is practically no model, no objective function, which is why the method is empirical;
- Exhaustive Enumeration Method, which is rarely practiced and is searching the objective function value for a large number of decision variables values, chosen so as to be sure that the optimum is not missed. It usually applied when the number of sets of values for the decision variables for which we calculate the objective function is relatively low, to reduce the number of operations.

A Case Study in a construction company

In this paper we have conducted a case study on the direct search method in a construction company in Cluj-Napoca, starting with two undergoing projects, in which there were obtained concrete solutions and where we have proposed their application in practice.

The first project was relating to the construction of a new building with kindergarten destination together with all needed utilities like electrical and pluming installations, based on a contract with a fixed price. The building being raised with external foreign funds.

The paper was prepared on the basis of planned works and initial estimate offer accepted by the parties. The project manager had in this case an important role in optimizing the costs and namely in the way he negotiated the terms with suppliers to get high-quality materials at lowest prices possible. In the following tables we present the way cost optimization was realized, comparing the data from the offers made by the suppliers with the contracts closed with the same supplier companies.

Table no.1 - Materials status in RON

Materials	Figures from the costs' estimates	Figures from the contract with suppliers
Radiators	48.536	48.487
Wood joinery	62.493	62.457
PVC Windows	86.584	86.524
Total	**197.613**	**197.468**

Comparing data from Table no.1, where is presented the estimate situation, with the situation of materials offer negotiated with suppliers, we can see that we have a small prices decrease by negotiation.

Table no.2 - Situation of the construction for the first year in RON

Description	Materials	Work-manship	Social Security	Machinery	Transport	Indirect	Total cost	Income	Profit
Accounting	743.988	137.984	42.487	88.189	54.772	105.576	1.172.996	1.380.045	207.049
Work estimate	791.730	163.111	54.360	94.410	61.392	127.504	1.292.507	1.380.045	87.538
Difference	47.742	25.127	11.873	6.221	6.620	21.928	119.511	0	-119.511

In the table no 2. is presented a part of the situation of the construction in the first year of work, where we can see that the manager of the project managed well the activity and he negotiated good prices with the providers.

Table no.3 - Situation of installation for the first year in RON

Description	Materials	Work-manship	Social Security	Machinery	Trans port	Indirect	Total cost	Income	Profit
Accounting	65.942	40.610	12.290	7.782	8.089	19.143	153.836	182.640	28.784
Work estimate	86.950	42.858	14.284	6.610	8.311	15.706	174.719	182.640	7.921
Difference	21.008	2.248	1.994	-1.172	222	-3.437	20.863	0	-20.863

In table no 3. we can see the situation of the installation in first project, when the benefit realized was very good in comparison with estimated.

Table no.4. - Situation of the construction for the second year in RON

Description	Materials	Work manship	Social Security	Machinery	Trans port	Indirect	Total cost	Income	Profit
Accounting	224.675	100.100	25.529	27.913	13.508	45.369	437.094	473.657	36.563
Work estimate	241.170	94.709	29.671	28.465	12.087	44.926	451.028	473.657	22.629
Difference	16.495	-5.391	4.142	552	-1.421	-443	13.934	0	-13.934

Table no.5 - Situation of installation for the second year in RON

Description	Materials	Work manship	Social Security	Machinery	Transp ort	Indirect	Total cost	Income	Profit
Accounting	471.299	231.796	65.424	13.871	7.222	85.439	875.051	1.188.048	312.997
Work estimate	537.183	248.763	77.934	4.188	1.146	92.823	962.037	1.188.048	226.011
Difference	65.884	16.967	12.510	-9.683	-6.076	7.384	86.986	0	-86.986

Table no. 4 and no. 5 present the same situation but for the following year.

The second project was the modernization of a hospital, when the company carried out upgrading construction activities.

Table no.6 - Situation of the construction for the first year in RON

Description	Materials	Work-manship	Social Security	Machinery	Transport	Indirect	Total cost	Income	Profit
Accounting	136.974	35.808	10.095	16.775	22.469	27.303	249.424	260.714	11.290
Work estimate	144.593	34.205	11.400	13.735	11.608	25.864	241.405	260.714	19.309
Difference	7.619	-1.603	1.305	-3.040	-10.861	-1.439	-8.019	0	8.019

Table no.7 - Situation of installation for the first year in RON

Description	Materials	Work-manship	Social Security	Machinery	Transport	Indirect	Total cost	Income	Profit
Accounting	785.238	168.080	47.418	48.230	20.512	80.056	1.149.534	1.349.217	199.683
Work estimate	866.797	186.971	62.316	49.049	21.037	104.552	1.290.722	1.349.217	58.495
Difference	81.559	18.891	14.898	819	525	24.496	141.188	0	-141.188

Table no.8. - Situation of the construction for the second year in RON

Description	Materials	Work manship	Social Security	Machinery	Transport	Indirect	Total cost	Income	Profit
Accounting	173.071	136.575	37.981	36.336	34.458	55.640	474.061	504.640	30.579
Work estimate	182.721	123.841	41.274	33.202	32.825	58.395	472.258	504.640	32.382
Difference	9.650	-12.734	3.293	-3.134	-1.633	2.755	-1.803	0	1.803

Table no.9 - Situation of installation for the second year in RON

Description	Materials	Work manship	Social Security	Machinery	Transport	Indirect	Total cost	Income	Profit
Accounting	302.981	146.908	40.839	7.102	5.684	62.445	565.959	733.752	167.793
Work estimate	363.474	169.118	53.135	6.766	5.467	69.937	667.897	733.752	65.855
Difference	60.493	22.210	12.296	-336	-217	7.392	101.938	0	-101.938

Conclusions

In real life the empirical methods of optimization gain more and more importance since a lot of times they reach very close to the exact value of the optimum.

Construction companies have a lot of activities that can be enhanced through optimization methods, their study and practical applicability of such methods in this domain is the scope of further continuous research.

Optimization methods are applied to a certain concrete model which most of the times is simplified in order to be resolved, with this purpose a series of decision variables have to be eliminated in practice. This approach can be performed in real life for each specific construction company where a problem of this type is applied.

In a crisis period like the one the world economy passed in the last years, construction companies face a lot of difficulties and challenges which request new ways and methods of managing and solving them. Project managers have the essential role in identifying and applying the right optimization methods that have the desired results in real life.

The study case was realized for the two distinct projects of relatively small size, from which one can see that the overall economical status of the construction company in discussion is a good one. A comparison was made between the figures of the initial estimates offer and the final figures that were finally recorded in the book-keeping accounting. The results of applying the optimization method have materialized in negotiations that were done with the supplier companies, succeeding a good reduction of the acquisition's costs through price discounts. The optimization method applied by this specific construction company does not assume necessarily the attainment of the optimum still it was very close to it.

The study has been successfully finalized with concrete results related to costs reduction.

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ISO 9001 FROM THE 2008 TO THE 2015 VERSION. UNDERSTANDING THE CHANGES TO GAIN PERSPECTIVE

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Abstract

Purpose *– The transformations brought about by ISO 9001:20015 represent a significant paradigm shift and bring with them a relevant workload that organizations must manage in parallel with their day to day activities. There are many handbooks, brochures, sites and trainings on topics related to this transition, but most of them focus on the pragmatic implementation issues that a system manager would have to take into consideration within the processes and procedures he or she administers.*
Methodology/approach *- The current paper attempts to take a more scientifically sound look at these changes and to uncover the reasons for their existence and to put organizational prospects into perspective. A methodology based on the Cause & Effect matrix is proposed, which takes into account the most important requirements from the 2008 versions and investigates their correspondence with the 2015 version, in order to draw conclusions.*
Findings *– After application of the methodology, the main findings consist in a ranked list of new or transformed requirements which are considered important to the management system in the new version ISO 9001:2015 and an interpretation of why changes occurred and what it means for companies.*
Research limitations/implications *– The approach proposed in this paper is based on a limited consultancy experience with various companies in Romania and its findings are mostly adequate to this socio-economic and cultural background. The possibility to generalize them exists, but this should be done factoring in other experiences and know-how, specific to other environments.*
Practical implications *– Standardized management systems are one of the many forms in which companies can become more robust and more competitive, by using readily deployable knowledge. Due to this feature, they are a solution for organizations battling strong changes in times of economic crisis. In the current context, if they will know why things have changed, they will be capable of making the transition faster and better.*
Originality/value *– The novelty of the paper consists in the deployment of a customized methodology and the valuation of the experience of a group of persons skilled in quality management system implementations for the analysis - comparison of the two ISO 9001 versions. The obtained results can constitute reference elements for consultants, company representatives and academics.*
Key words: *ISO 9001, quality management, cause and effect matrix*

Introduction and context

The world of standardized management systems is undergoing radical transformations in the period 2015-2016. Both ISO 9001 (quality) and ISO 14001 (environment) have new versions, and the all new ISO 45001 for occupational health and safety will be published soon. These new standards come with a new philosophy, with a stronger focus on activities and less preoccupation with documents. Risk based approach becomes considerably more prominent and, also, a 3-year

transition period is initiated for the companies with systems already implemented and certified to the previous versions.

In the complex economic landscape of the present, which must respond to the challenges of sustainability in the context of diminishing lead times, companies must always be on the lookout for ways to improve their competitiveness (Oprean et al., 2011; Brad et al., 2016). With a history of almost 30 years, ISO 9001 quality management systems, quickly followed by other standardized systems in fields such as environment, occupational health and safety, social responsibility, information security, risk management and others, have become established solutions to making the various types of organizations perform better and meet the expectation of their stakeholders (Țîțu, Oprean & Grecu, 2010; Popescu, Țifrea & Codre, 2011; Olaru et al., 2014). One of the main keys to success is to continually adapt to the challenges coming from the external environment and the revision process of the International Organization for Standardization has proven to be able to keep the standards in line with the provocations of our time.

The purpose of this work is to identify the strength of correlations between the old and the new versions and draw conclusions based on them. We believe that such a treatment of the topic is interesting for both professionals and, even more so, for researchers.

Methodology of the study

In order to perform the study, a focus group of practitioners in quality management systems has been consulted. The group contains a number of 8 persons with considerable consultancy and company experience in developing, implementing and running these systems in various industries, such as automotive, manufacturing, services, etc. These experts have participated to two meetings where their input was required, and then processed with the help of the specific analysis tools deployed through specialized software. One of the meetings was focused on understanding the underlying structure of the ISO 9001:2008 standard (ISO, 2008), where considerable experience has been amassed, and the other one was focused on relating this to the changes that can be observed in ISO 9001:2015 (ISO, 2015a). The already known causes of change presented by the International Organization for Standardization when disseminating the standard have not been addressed anymore, as that would not be productive. The aim of this study is to uncover, quantify and reason about the subtler changes in the clauses of the document, which can influence the performance of systems already functioning in various companies.

The backbone of this study's approach is represented by a deployment of the Cause & Effect matrix, with the help of the Qualica QFD software, which aims to identify for the top level clauses the connections that exist between the 2008 version of the standard and its current 2015 incarnation. Other tools, such as brainstorming and the pair-wise comparison, are used to convert the experience of the authors and of the specialists' focus group into workable knowledge that can be further used and disseminated for achieving better quality management systems. The flow of the approach that we have used is presented in Figure 1 below.

Figure 1. Methodology used for the study

Specific steps, results and implications

The implementation stage of the above methodology involved at first the raking of the requirements (clauses) of the ISO 9001:2008 standard based on the experience of the quality management systems experts. For this purpose, the instrument used was the pairwise comparison which was

implemented using the template for Analytical Hierarchy Process from the Qualica QFD software. Although this method is a complex one, the focus of the demarche was on the comparison matrix which allowed the participants to rank each clause as more or less important than all the others in the same standard, using a finely defined scale with 19 levels. The main driver of this step was to determine an aggregate factor of importance for each main requirement axis related to its potential impact in combination with the complexity of its implementation. The analysis involved two steps: pairwise comparison of the main clause chapters and pairwise comparison of the second level clauses in each of these chapters (sub-clauses), with the final rank being obtained by compounding the two. In Figure 2, these matrices are presented (we must underline that since the matrix is skew-symmetrical, only the top half should be filled in and that no consistency check was performed due to the very diverse nature of the backgrounds of the work team members, which can generate diverging opinion in different areas of the analysis).

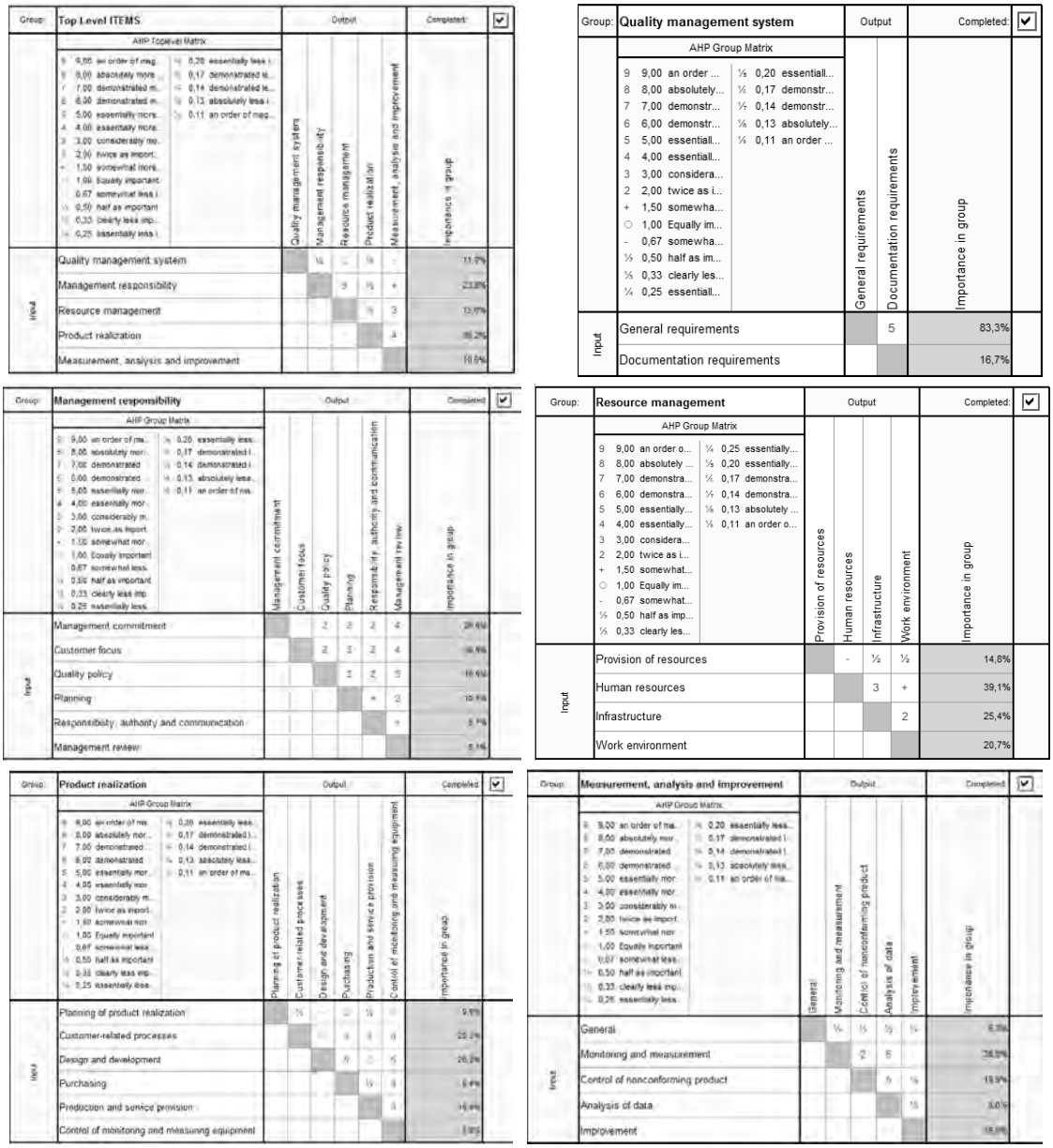

Figure 2. Pairwise comparison of ISO 9001:2008 clauses and sub-clauses
(top to bottom, left to right order)

The results obtained highlight this score for each sub-clause and allows for determining the concatenated score of the 5 main chapters of the standard, each dealing with a macro process or function of the organization (management, resources, product/service, quality system, continual improvement). This hierarchy can be in itself very valuable for companies that are still working with the old standard (the transition period lasts until 2018) and also for working with standards still connected with it that are not replaced yet and for contextual studies such as the one presented in this paper. The ranking of sub-clauses and the grouped importance degree per main clause can be seen below, in Figure 3.

Sorted ITEMS 1 / Importances	Calculated Importance %	Final Importance %
Customer-related processes	11,5%	9,2%
Design and development	10,3%	8,4%
General requirements	9,1%	7,6%
Production and service provision	7,6%	6,6%
Customer focus	7,4%	6,4%
Management commitment	6,4%	5,8%
Human resources	5,9%	5,4%
Quality policy	4,0%	4,1%
Improvement	3,9%	4,0%
Planning of product realization	3,9%	4,0%
Infrastructure	3,8%	4,0%
Purchasing	3,7%	3,9%
Monitoring and measurement	3,3%	3,6%
Work environment	3,1%	3,5%
Planning	2,5%	3,1%
Control of monitoring and measuring equipment	2,3%	2,9%
Provision of resources	2,2%	2,9%
Control of nonconforming product	2,2%	2,9%
Responsibility, authority and communication	2,1%	2,8%
Documentation requirements	1,8%	2,6%
Management review	1,5%	2,4%
Analysis of data	0,9%	2,0%
General	0,7%	1,8%
Most important item:	11,5%	
Least important item:	0,7%	

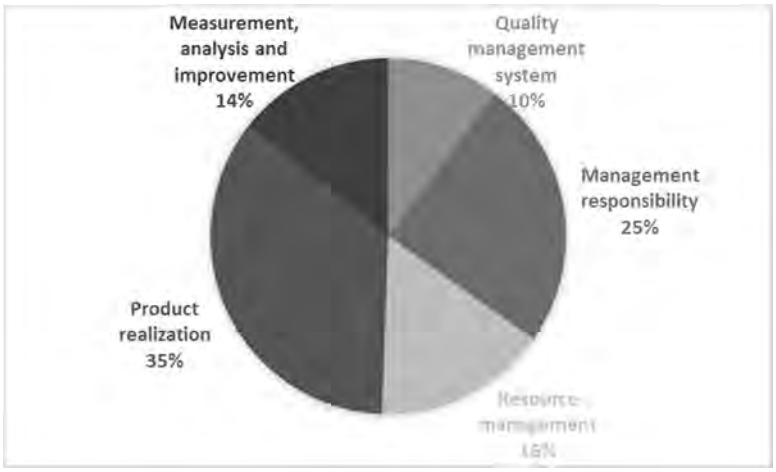

Figure 3. Final normalized ranking at both levels of ISO 9001:2008

It can be observed that three out the first four requirements present in the list are relating to processes (customer interface, design and production) amounting for cca. 25% of the total importance of the standard. At the same time, at system level, a strong emphasis can be noticed on product generation and management related obligations. These aspects are considered to be a testimony to the strong process orientation of ISO 9001 so far and to the belief that the role of management should be prevalent and visible to determine the desired actions and changes in the system and company it coordinates.

We must also observe that the sub-clause for general requirements, which acts as a summary for all the other clauses is situated on the third place, which attests the holistic approach of the 2008 version of the ISO 9001 standard. Some general provisions of the measurement and analysis function, including the collection and processing of data, ranked on the last places, mainly due to their implied character, whose detailing can be considered superfluous in practice.

The next step involved the most considerable body of work, as the Cause and effect matrix was used by the team to identify, discuss and assess correlation degrees among the 2008 requirements at sub-clause level (considered causes due to their historic precedence) and the ISO 9001:20015 sub-clauses which were assimilated to effects, as they are the ones that will be manifest from now on. The starting point for this analysis was ISO's own correlation reasoning presented in the document (ISO, 2015b). The rest of the correlations and the association of a strength level with them are based on the experience of the practitioners questioned. It must me noted that no other causes of variation have been analyzed and that some requirements have been marked as essential to functioning or safety of the system, depending on the need to stimulate performance or avoid failures. The results are presented in Figure 4.

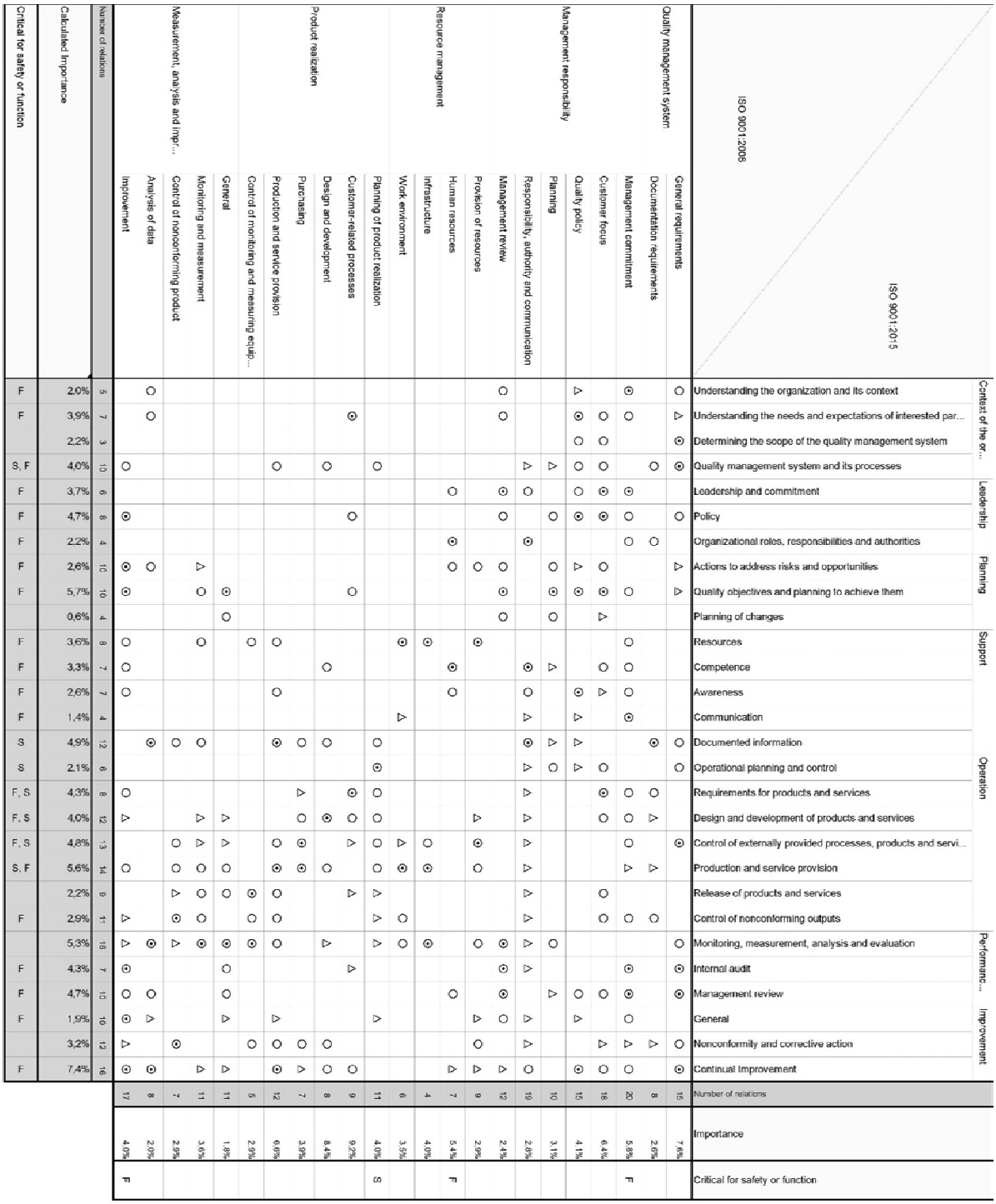

Figure 4. Cause and effect matrix analysis from ISO 9001:2008 to ISO 9001:2015 sub-clauses

The results obtain from the Qualica QFD software reveal that almost all of the new requirements in the 2015 version of the standard become critical to functionality and some of them even have combined functionality-safety character. We consider that this happen due to the more integrated character of the new standard as opposed to the previous one. In consequence, the implementation effort should be more distributed in the organization. Concerning the sub-clauses ranking, we will address here the first three and last three from the list, with the rest of course requiring the attention of the specialist during implementation of a quality management system using the 2015 reference.

Continual improvement provisions occupy the first place, with a very large percentage, at a significant distance from the others. We consider this happens due to the pressure of markets upon companies and is reflected both in the intent of the standardizing committee and the best practices of the experts. The role of management is seen in the requirements towards clear, practical and measurable objectives which occupies second place; to be noted that in the new standard there is a clear indication to establish ways to implement them, so they don't remain as simple good intentions. Almost the same as in the old standard, the requirements for product/service generation come on the third place. This signals that classical business models are still relevant: you cannot be successful without providing a concrete solution to your customers' needs and expectations.

Generalities about improvements, communication processes and the provision for planned changes to the quality management system are situated on the last places. This mainly due to their supporting nature for other clauses or for the system in general. Although there are still important for obtaining a robustly functioning system, they are mostly helpful to round up other functions

In relation to the aggregated score, at chapter or main clause level, we observe the following significant changes (see Figure 5):

- the obligations of management are more clear but less prominent (going from 25% to 20%), and also distributed in more detailed manner in two distinct chapters (Leadership and Planning);
- the process related chapter is decreased significantly from 35% to 26% importance, reflecting a more complex internal environment for companies implementing quality systems nowadays and the addition of a new focus on risk management, which should be addressed at activity/task level and not at process level;
- the chapter dedicated to closing the improvement cycle from ISO 9001:2008 is split in two chapters in the new standard, for more clarity and usefulness, and the total importance percentage increases from 14% to 26%, reflecting the importance of corporate dynamics towards improvement and innovation over the rigidity of structure and procedures.

The generalities and support chapters remain with the similar levels of importance, but the first one becomes significantly more detailed and pushes the organization for connection and relation with the outside world.

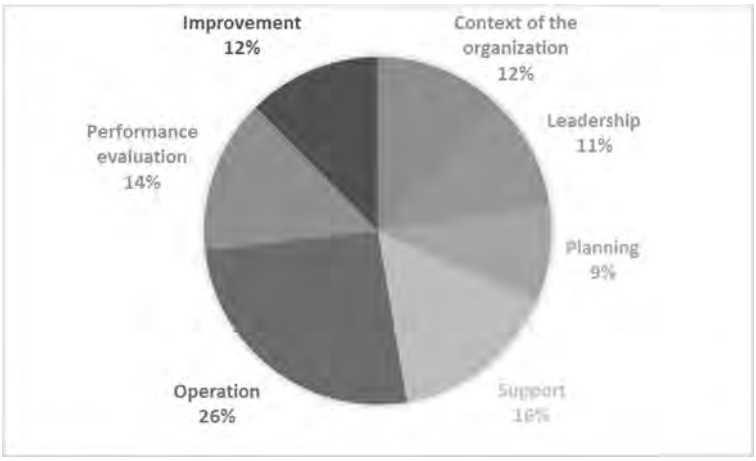

Figure 5. Final ranking of main clauses of ISO 9001:2015

Conclusions

The new ISO 9001:2015 represents both a good continuation of the legacy of its predecessor ISO 9001:2008 and a significant change of paradigm. The results obtained within this study bring about helpful clarifications for the specialists involved in designing and maintaining quality management systems in various organizations. By using the quantification model proposed, which can be further adapted to their specific needs, they can more correctly dimension the efforts spent in making the system functional. Also, it contributes to a deeper understanding of the inner workings of the organizational approach proposed by ISO 9001, which is beneficial both in practice for strengthening the resolve of management and employees and in academia, for exploring further improvement avenues that might prove useful for future revisions of the standard.

Among the limitations of the approach, besides the caveats mentioned in the article, we must underline the fact that these findings are based on the experience of a limited group of people, who, even if they have significant experience in the field, working with hundreds of quality management system, are still coming from a limited geographical area, with its own economic, social and cultural constraints.

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SIMULATION OF THE INFLUENCE OF MAJOR INDICES OF THE RESULTS OF HUMAN ACTIVITIES OVER THE URBAN POPULATION EXPOSURE TO AIR POLLUTION BY PARTICULATE MATTER

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Abstract

Purpose *– determining the first steps in new ways of analyse and manage the human activities with influence over the humans' wellbeing.*
Methodology/approach *– Considering the above problems and the authors' previous experience in using this method, an artificial neural network (ANN) approach was used. The ANN has a feedforward structure with a quick propagation algorithm for training.*
Findings *– The testing of difference between the real data and the simulated ones was smaller than 4.2% - one of the research objective. The ANNs can simulate the influence between macroeconomic indicators and human's welfare.*
Research limitations/implications *– The paper present a method of research in its early stages that is used for management decision (specific the management of pollution).*
Practical implications *– the research and the method can be developed and used for management decision in order to establish the most influential human activities to prevent pollution and also in a time of crisis.*
Originality/value *– the use of Artificial Neural Network for simulation of influences between different parameters is not new, but we use it in a new way regarding the data that are used, considering indices of human activities over the pollution generated from those activities.*
Key words: *simulation, GDP, services, artificial neural.*

Introduction

Analysing and managing the human activities can find new problems but also solution on developing methods to determine the diminishing of pollution. The influence of results of human activities on urban population can be used to offer the possibility of the former administration to minimize the effects of pollution.

The ANNs are used in many fields of research and applications such as: pharmacy, medicine, financial forecast, process and system modelling and simulation, meteorology, speech, handwriting and face recognizing, management decision-making etc.

In order to model and simulate the data the following difficulties were determined: a) The heterogeneity of data values; b) The small number of data samples; c) No mathematical equation are calculated in order determine the influences between the input data and output data.

Data

Data represent values consider for Romania between 2005 and 2014 and are as follows, according to Eurostat website:

Material flow accounts [MFA] (in thousand tonnes), is the biomass produced in Romania between 2005 and 2014.

The number of organizations and websites registration with management and environmental auditing (in numbers) [EMAS].

The size of population aged 30-34 years with tertiary level education (in percent) [PTEAL], where The educational attainment level of an individual is the highest ISCED (International Standard Classification of Education) level successfully completed, the successful completion of an education programme being validated by a recognised qualification, i.e. a qualification officially recognised by the relevant national education authorities or recognised as equivalent to another qualification of formal education. In countries where education programmes, in particular those belonging to ISCED levels 1 and 2, do not lead to a qualification the criterion of full attendance of the programme and normally gaining access to a higher level of education may have to be used instead. When determining the highest level, both general and vocational education should be taken into consideration. The ISCED definition of education includes training. Data on educational attainment level exclude persons who did not answer to the question 'highest level of education or training successfully completed'.

Resource productivity [RP] with effect on environmental pollution (in Euro per Kilogram).

Urban population exposure to air pollution by particulate matter (particles <10μm, in $\mu g/m^3$) [UPEAP]. The indicator shows the population weighted annual mean concentration of particulate matter at urban background stations in agglomerations. Fine and coarse particulates (PM10), i.e. particulates whose diameters are less than 10 μmeters, can be carried deep into the lungs where they can cause inflammation and a worsening of the condition of people with heart and lung diseases.

Methodology

Taking into account the heterogeneity of the data and the nonlinearity of the relations between the input and output data we considered that the ANN are one of the best methods of simulations for this type of problem.

The method used computational modelling using Alyuda NeuroIntelligence 2.2 software.

The ANNs are mathematical representations of the biological human brain as proof to use the most powerful processing tool. Hence, the human biological neurons are replaced by artificial ones and the functions between them are substituted with mathematical function such as linear, hyperbolic tangent, sigmoid, etc.

The training and testing ANNs consist in several main steps: data analysis; data pre-processing; ANN design; testing and validation. Considering those steps the research was structured accordingly to them7

Regardless of the type, ANN has a few certain common unchallengeable elements, mentioned by Zenon WASZCZYSZYN in his book: “Fundamentals of Artificial Neuronal Networks” [Institute of Computer Methods in Civil Engineering, 2000]:

- Micro-structural components: processing elements – neurons or nodes;
- Input connections of the processing elements;
- Output connections of the processing elements;
- The processing elements can have optional local memory;
- Transfer (activation) function, which characterizes the processing elements.

Research

Analysis. Data analysis consist of dividing data into separate columns, defining types of these columns, filling out missing number values, defining the number of categories for categorical columns, etc. The data analysis determined the following results: Data analysis results: 7 columns and 10 rows analysed; 5 columns and 10 rows accepted for neural network training; 5 numeric columns: MFA, EMAS, PTEAL, RP. The Output column: UPEAP. Data partition results: 8 records to Training set (80%), 1 records to Validation set (10%), 1 records to Test set (10%).

Pre-processing. According to Alyuda NeuroIntelligence ANN software website, Pre-processing transforms the data to make it suitable for neural network (for example, scaling and encoding categories into numeric values or binary) and improves the data quality (for example, filtering outliers and approximating missing values), as different software uses different methods. The pre-processing used for the present research, considering the type of problem and the previous analysis, but also the researches, the pre-processing type used was numeric encoding. Numeric encoding means that a column with N distinct categories (values) is encoded into one numeric column, with one integer value assigned for each category. For example, for the Capacity column with values 'Low', 'Medium' and 'High', 'Low' will be represented as {1}, Medium as {2}, and High as {3}.

Table 1. The characteristics of pre-processed data.

	MFA	EMAS	PTEAL	RP	UPEAP
Parameter	Value	Value	Value	Value	Value
Column type	input	input	input	input	output
Format	numerical	numerical	numerical	numerical	numerical
Scaling range	[-1..1]	[-1..1]	[-1..1]	[-1..1]	[0..1]
Encoded into	1 columns	1 columns	1 columns	1 columns	1 columns
Min	334836	0	11,4	0,2396	23,9
Max	551298	5	25	0,3524	52,7
Mean	425604,7	2,5	17,87	0,2945	37,37
Std. deviation	54560,60744	1,688194	4,348345	0,032423	9,242191
Scaling factor	0,000009	0,4	0,147059	17,730496	0,034722

Architecture. Considering the characteristics of the simulated process, many ANN structures can be determined and compared through the specificity of the process and the data that are belong used for simulations. Thus, the feed forward artificial neural network we considered the best choice for the present research. After building and testing several ANNs with feed forward structures the best ANN network was defined and had the following structure: 4 neurons in the input layer, 5 neurons in one hidden layers and 1 neuron in output layer as presented in Figure 1. The network mathematical functions were: Input activation – Hyperbolic tangent, Output activation – Logistic.

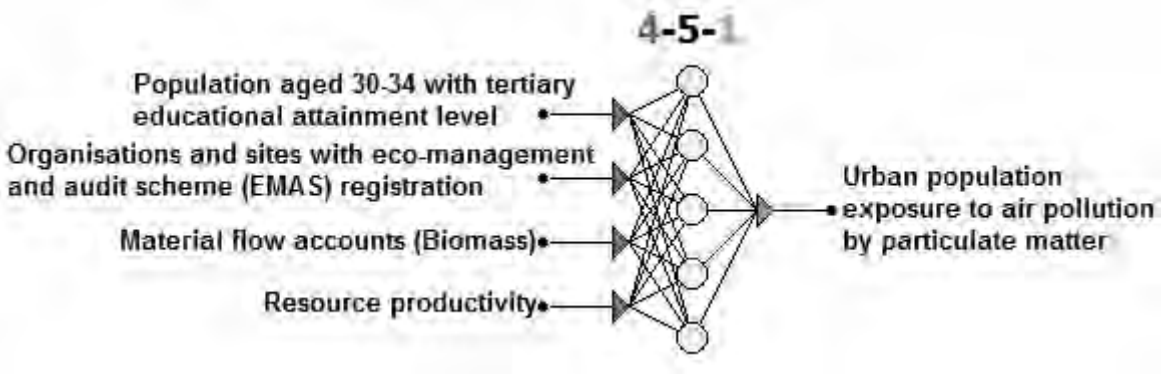

Figure 1. Structure of the Artificial Neural Network.
Source: Author's simulation.

Training. Being an essential step in the use of ANN, the training must use certain training algorithms which essentially modify the structural elements of ANN (weights) through several iterations. Those modifications establish the future ANN accuracy. For the selected ANN, the most common training algorithm is Back propagation algorithm. Back propagation is the best-known training algorithm for multi-layer neural networks. It defines rules of propagating the network error back from network output to network input units and adjusting network weights along with this back propagation.

The following network training options were established: Training algorithm: Quick Propagation, Stop training conditions: absolute error value ≤ 0.005 tracked on validation set, quick propagation coefficient: 0.75, learning rate: 0.1.

Quick propagation is a heuristic modification of the back propagation algorithm invented by Scott Fahlman. This training algorithm treats the weights as if they were quasi-independent and attempts to use a simple quadratic model to approximate the error surface. In spite the fact that the algorithm has not theoretical foundation, it is proved to be much faster than standard back-propagation for many problems.

The following training results parameters were established: time passed: 00:00:58 min, number of iterations: 763451, network error: 2×10^{-7}, training speed: 13162.91 iterations/s. The result of training process is presented in Table 2. Also, in Figures 2 and 3 are presented graphical results of the training, such as training error or network error.

Table 2. Training result details.

Retrain	Iters	Train error	Validation error	Test error	Correlation	R-Squared
1	763451	0,016137	1,550514	1,614371	0,999992	0,999976

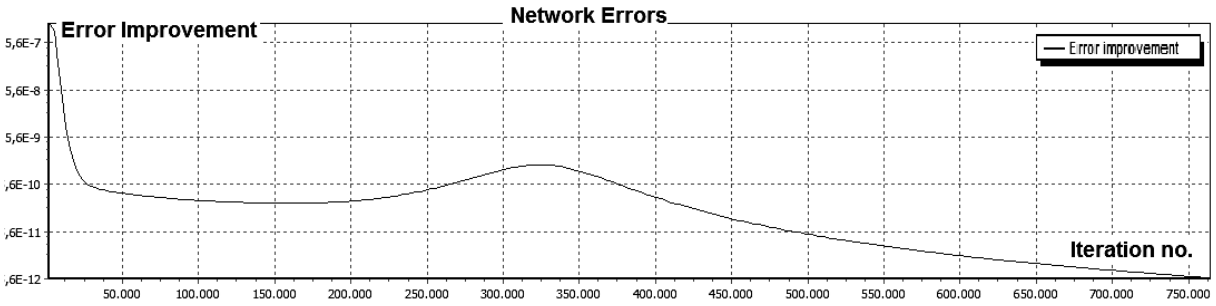

Figure 2. Network Errors Evolution through the Training Process.
Source: Author's simulation.

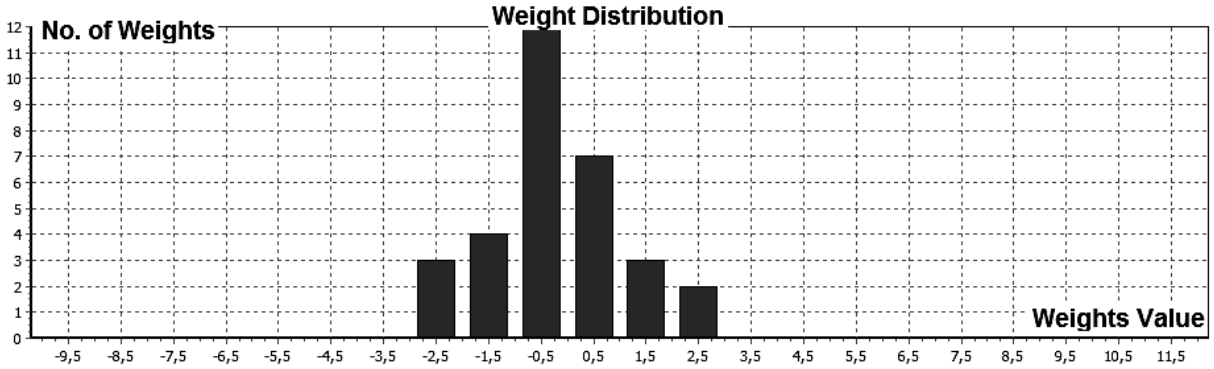

Figure 3. Weight Distribution after the Training Process.
Source: Author's simulation.

Validation and testing. Validation and testing is a process of estimating quality of the trained neural network. During this process a part of the data that is not used during training is presented to the trained network case by case. Then, the forecasting error is measured in each case and it is used as the estimation of network quality. The automatic testing evaluation is shown in Table 3.

Table 3. Testing summary.

	Target	Output	Absolute error [AE]	Absolute relative error [ARE]
Mean:	37,3700	37,0646	0,3294	0,0076
Standard Deviation:	9,2422	8,9563	0,6276	0,0142
Min:	23,9000	24,0184	0,000000253	0,00000000555
Max:	52,7000	51,1495	1,6144	0,0413

Also, differences between the Target (real) values and the Output (simulated) values for UPEAP are presented in Fig. 4.

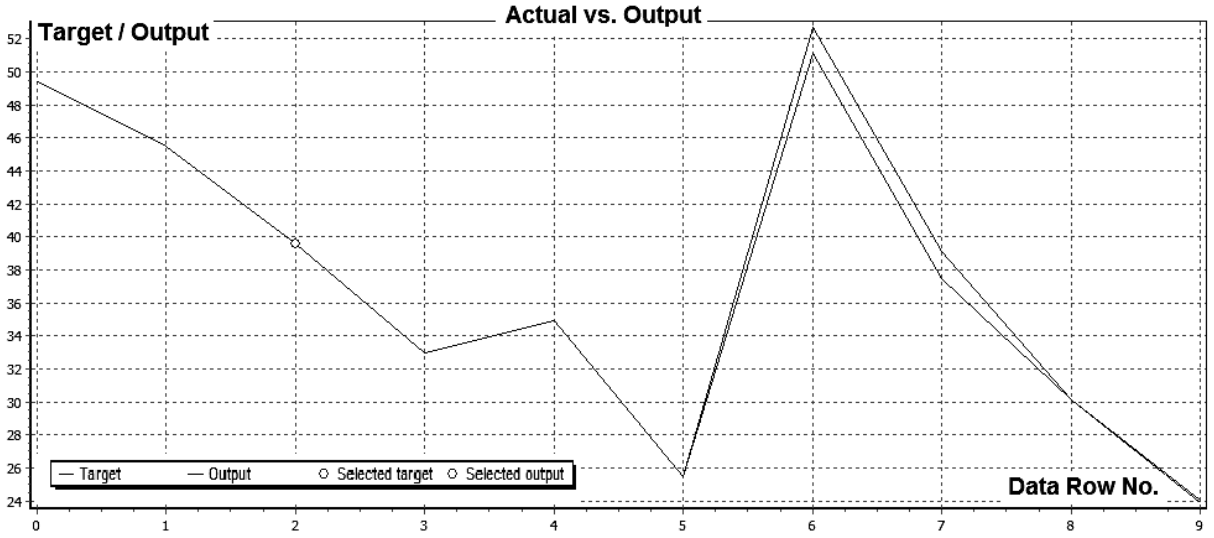

Figure 4. Actual vs. Output data on Testing the Training Results.
Source: Author's simulation.

Findings

The ANN training process reveals the input importance of each input parameter. Input Importance (Table 4) shows the relative importance of each input column over the output for training. It also helps to understand the most important columns that had the biggest influence on the network training. The result of input importance analysis is (percent): MFA=1.13; EMAS=14.15; PTEAL=75.38; RP=9.34. We can conclude that the ANN considered that population exposure to air pollution by particulate matter is influenced the most by the size of population aged 30-34 years with tertiary level education or simply by education. The least important influence belongs to material flow accounts.

Table 4. Input data importance in training.

Input column name	Importance, %
MFA	1,129901
EMAS	14,151979
PTEAL	75,379219
RP	9,338901

The differences between the Target (real) values and the Output (simulated) values for UPEAP are best seen in Fig. 4. Here we can view the accuracy of the ANN training from the very small difference between the real and simulated data.

Discussion and conclusions

The results confirmed the objectives, giving an error of evaluating the success of training less than 1.62 absolute units (mg / m3) or below 4.2% relative values.

Considering the results revealed in the present paper the use of the ANN should be considered as a tool for evaluating the influence of different human activities indices over the various pollution causes. Also, if there is more need to be emphasized, the education is the major influence over the cause of the pollution activities and industries.

The research should continue with new modelling and simulations including larger amount of data from a longer period of time. Also, new indices and pollution activities must be added in order to obtained a more trained and so a more accurate ANN.

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SUSTAINABLE PUBLIC PROCUREMENT - NEW OPPORTUNITIES FOR COMPANIES

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Abstract

Purpose – This paper aims at investigating the legal capability of public authorities of making sustainable public procurement in order to generate new opportunities for the companies that offer products/services/works which incorporate energy effective, socially responsible ecological solutions, offering a starting point in initiating new research regarding development mechanisms of promoting sustainable procurement. Integrating sustainable procurement in annual public procurement programs at a greater scale will trigger the choice of the most beneficial economic offer to the detriment of the cheaper ones.
Key words: Romania**,** Public procurement, Sustainable procurement, e-procurement

Introduction

The concept of sustainable public procurement has been highly regarded lately at a European level, due to the spread of environment-oriented policies, energy efficiency and social responsibility at the level of member states. The instruments available for the member states, introduced by the new European directions on public procurement, enhance the capability of public authorities of meeting the new objectives and developing new architectures of public procurement, entirely oriented towards products/services/works that incorporate energy effective, socially responsible ecological solutions. This new approach fights the companies offering high-end solutions, designed to satisfy the needs of the public sector, enabling the bidders to conquer new market opportunities in the context of their continuous growth.

General considerations about public management

The interest in high performance, in the context of competition, has stimulated for more than a century the research in the management of economic organizations. But, both at the level of the European Union and the strongly developed countries, despite the difficulties triggered by the different legal and normative frameworks, one can notice, for the past decades, an increase in the popularity of the concept of public management and the interest of the public sector governing in calling on analyses and studies in this particular field.

Starting with this assumption, we must point out a few things regarding the common definitions given to the two forms of management.

Thus, for the organizational management, specific to economic organizations, we can use a general definition that refers to *coordinating the effort of the persons involved in meeting the objectives by making effective and efficient use of the available resources,* but I will call on a functional definition shaping organizational management as being "*the set of planning and decision-making activities, the organization, the training, the coordination and control-regulation, carried out in order to efficiently and effectively meet the organizational objectives".* (Rusu & Voicu, 2005)

In contrast, the public management can be generally defined as being *the set of activities linked to the implementation of public policies established by a government*, but I will call on again a functional definition shaping public management as being "*the set of management processes (relations) that exist between the administrative system components that, as public power, help carrying out (by organization or direct execution) laws and/or plan, organize, manage, coordinate, operate and control the activities involved in the services that answer to the general public interest".* (Imbrescu, 2010a, p. 50)

As you can see, we can already notice a set of differences between the public and private management, as far as the objectives and the mechanisms are concerned.

Thus, as Imbrescu pointed out (Imbrescu, 2010b), the first element that differentiates them is that of the objectives the two forms of management set, that is: (1) the management of economic organizations aims at, as its first objective, satisfying the shareholders (by meeting profit targets and efficiency), whereas (2) the public management aims at, as its first objective, satisfying the general interest of the population by implementing public policies.

The second element of differentiation is that of the way in which the act of management takes place: (1) the management of economic organizations has a capability that is strategically-oriented towards well-shaped objectives, with a great speed of reacting and adjusting to the competition environment, whereas (2) the public management lacks flexibility and reaction speed, being influenced, variably, by the governing politicians.

The third element of differentiation is the legal/normative framework in which the management act takes place, that is: (1) the management of economic organizations is governed by the laws of the market in which the organization works, with a simpler legal/normative framework, sometimes only complemented by internal rules set by the organization's management, whereas (2) the public management takes place in a complex legal context, with a high entropy, being permanently under the pressure of national/local legal/executive bodies, with an influence which does not always converge with the public organizations' specific objectives.

Awareness of these elements differentiating the two types of management helps us to understand the context in which it conducted the procurement function specific public organizations in comparison with the specific economic organizations.

But, in my opinion, we must not leave out the most important element of the two types of management, namely the beneficiaries of these objectives: the shareholders of the economic organizations – the citizens, respectively the way the management relates to them.

Analyzing in terms of committing the management to its beneficiaries, recent concepts bring into light a new approach of managing organizations, that is that of governance, identifying two similar concepts, considering some points of view: corporate and public governance.

Thus, if the management of organizations aims at operating management relations meant to meet assumed objectives, the relationship between management and shareholders, defining the boundaries between which the management exercises its decisional powers within the organization and the way the people involved in the management process commit to the objectives towards the beneficiaries, these are activities that are meant to be dealt with by the governance of the organization.

Skimming through different definitions for corporate governance, taking into consideration economy's globalization, I singled out as helpful for this study that presented by

Jean Paul Page (Page, 2005, p.2), who describes this concept as being "the legal, contractual and implicit framework that defines the exercise of power within an organization, influences the decision-making, allows shareholders to commit and ensures that their rights and privileges are respected".

In contrast to corporate governance, when separating politics from the public administration – practice or challenge, considering the degree of democracy for any specific state – the public governance manifests itself differently, making coming up with an universal definition a difficult task. Probably, for the same reasons, being a fairly recently developed concept, public governance has not benefitted from the same level of attention with the researchers, thus not having as many definitions available. In my opinion, one of the most thorough definitions is that of Grossi and Steccolini (Grossi & Steccolini, 2014), shaping it as "*the management, coordination and usage of institutional commitments defined within the processes of elaboration and implementation of public interest-oriented policies, in a polycentric, multi-sector context of the beneficiaries that targets the public interest."*

This is how both types of management specific to the economic and public organizations, irrespective of the way they reach their objectives, the way the act of management takes place or the legal/normative context in which they perform, must be oriented towards the beneficiary of the act of management and answer the same way to its control: the shareholder or the citizen – as appropriate.

If we consider corporate governance, the action models and frameworks are developed and transparent enough nowadays, we ask ourselves, in the case of public governance, which are the most appropriate action models and frameworks and to which level of transparency public management commits and answer to its "shareholders": the citizens. This is a first question that we will address to when considering setting objectives for public procurement management, as a strategic part of the public management concept.

Public procurement

In the context of public procurement, all planning, prioritizing, organizing and engaging products, services or works activities are reunited under the concept of public procurement.

When considering the concept of public governance, ensuring a certain level of commitment and transparency concerning the way public funds are given to awarded companies is a challenge, at least at an European level, and is normally ensured via a specific legal framework that governs public procurement.

The public procurement sector has always been a sensitive one, not only because of the volume of budgetary engagements that serve this end, but also by the way public decision makers chose to understand and/or apply the practices recommended by the legal framework applicable in every particular state.

As far as the involvement is concerned, the public procurement sector's role is more and more important, all existing strategy focusing on it, considering planning on attaining long-term objectives, becoming, within certain contexts, the European one for instance, "*a market instrument that can be used in order to ensure an intelligent, sustainable and inclusion-friendly growth." (*2014/24/UE Directive on public procurement, 2014a)

At a global level, public procurement constitutes a significant part of the world trade act, exceeding the threshold of EUR 1300 billion/year, representing 10-25% of the GDP of national economies. (EU Commission – DG Growth, 2016a)

This dimension of the trade supported by public funds has determined, since the 70's, defining, at the level of the World Trade Organization, of an international agreement on public procurement (Agreement on Government Procurement – GPA), setting rules and commitments for each signatory part, especially concerning the improvement of the degree of transparency and the easy access to engaging public procurement contracts, aiming especially at increasing the capability of the public sector of obtaining the best value for the earmarked funds, diminishing corruption and ensuring a transparent and equitable institutional framework.

At a European level, the earmarked funds for the public procurement sector grew considerably, once different institutions and authorities began to get involved at a larger scale, committing to active roles in the implementation processes of updating the public sector. Thus, annually, public authorities in the European Union, engage an average of 14% of the EU's GDP for purchasing products, services and works, with an average of Euro 1.892 billion in the period between 2012 and 2014 (The European Commission – DG Economic Growth, 2016b).

If in the beginning, the European public procurement sector was considered only a small part of the European market, considering the value of the contracts which have been recently awarded, this sector determined the shaping of a distinct market, with its own regulations, that can be generically named the Public Procurement Market.

As far as the involvement is concerned, the public procurement sector's role is more and more important, all existing strategy focusing on it, considering planning on attaining long-term objectives, becoming, within certain contexts, the European one for instance, "*a market instrument that can be used in order to ensure an intelligent, sustainable and inclusion-friendly growth."* (2014/24/EU Directive on public procurement, 2014)

According to the Lisbon Treaty (2007), following the associated action plan, a new dimension of the public procurement sector took shape. Redefining the new concept of "e-procurement", adopted in 2004, along with first European directives on public procurement, meant the beginning of the integration of public procurement specific actions into electronic platforms that granted free access to those concerned, targeting not only the growth of the transparency and non-discrimination degree when awarding public procurement contracts, but also the simplification of the access to information on public procurement, using new and modern electronic instruments.

For this purpose, public procurement electronic platforms emerged at the level of the member states, integrating, variably, stages, activities and information specific to the public procurement processes executed by contracting authorities in each member state.

As far as Romania is concerned, the electronic platform that maintains the virtual side of the public procurement system is called the Public Procurement Electronic System (PPES) and can be accessed at www.e-licitație.ro.

This platform integrates both data bases concerning the actors of public procurement processes (contracting authorities and business operators) and information regarding the initiation, execution and resolution of certain public procurement procedures, ensuring a high level of transparency regarding the way in which certain stages of the public procurement processes are initiated and concluded at a national level.

This electronic platform grants access to information about a greater and greater number of public procurement procedures, its annual growth being more than significant. The National Agency for Public Procurement's Report (NAPP, 2016) shows that, in the timeline 2014-2015, over 3.300 contracting authorities organized, in 2015, 22.227 award competitive procedures (about 21% more than the previous year), with a cumulated value of over 14,4 billion Euro, representing over 9% of Romania's GDP.

In terms of the type of contract awarded is notice that the highest value is attributed to the construction sector (about 46%) followed by supply sector (about 38%), services sector having a minor contribution (about 16%)

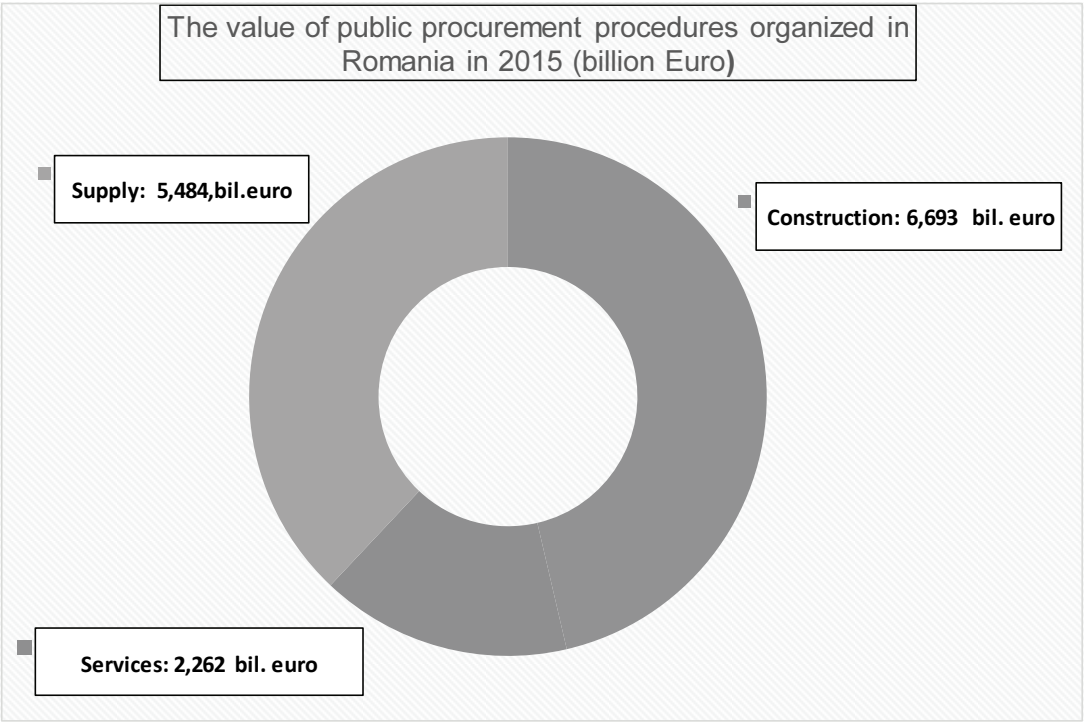

Fig. 1. The value of public procurement procedures organized in Romania in 2015 (billion Euro) – source Statistical Report –National Procurement Agency 2015

According to the principle of ensuring free movement of products and services within the European market, in order to facilitate the access of business operators throughout Europe to national public procurement markets, the information regarding relevant and significant public procurement processes are centralized on a common electronic platform which offers the opportunity for interested parties to read and get next to the objective need and/or the call for tenders of a contracting authority in a member state.

This virtual platform which integrates this information at a European level is called “Supplement to the Official Journal of the European Union” and can be accessed at www.ted.europa.eu.

As with The Public Procurement Electronic System (PPES), usage and access to information is granted for free. In order to eliminate language barriers in the European Union, in order for contracting authorities to be able to authenticate and publish with higher accuracy, a standardized nomenclature was devised, describing the main products, services and works that can be purchased by contracting authorities in the entire European Union – the CPV (Common Procurement Vocabulary).

Thus, irrespective of the language of a certain company, by using the CPV, one can easily identify and follow public procurement processes that meet the company’s own objectives.

Even if these electronic platforms are but mere instruments used by local authorities in order to execute public procurement processes, they will play a major part in the future of community public procurement due to the fact that they will be the main stream of communication between the public procurement system parties, and it is intended that, in the shortest time possible, almost all public procurement processes be executed exclusively via this electronic platform.

The new specific legal framework for public procurement

The legal framework for the European Union public procurement market is defined by a set of European Directives, the last update being made in 2014, when the following documents were issued:

1. The 2014/24/EU Directive of the European Parliament and of the Council of February 26, 2014 on public procurement
2. The 2014/25/EU Directive of the European Parliament and of the Council of February 26, 2014 on the procurement by entities operating in the water, energy, transport and postal services sectors
3. The 2014/23/EU Directive of the European Parliament and of the Council of February 26, 2014 on the award of concession contracts

These documents define the legal institutional framework of the public procurement sector at a European level, stating both the principles that are at the foundation of the award of public procurement contracts and the guidelines to be followed by member states in order to ensure the functioning of national public procurement systems.

At the same time, the three European Directives on public procurement also clarify certain concepts and notions on the public procurement system, closely linked to the rights and liberties of parties involved in this particular market.

Nationally, these directives on public procurement were put across tardily, by this recently approved legislative package:

- ✓ Law 98/2016 – on public procurement and Governmental Decision 395/2016 on the norms for the application of the provisions on the award of public procurement
- ✓ Law 99/2016 – on sectorial procurement and Governmental Decision 394/2016 on the norms for the application of the provisions on the award of sectorial procurement
- ✓ Law 100/2016 – on work concessions and services concessions
- ✓ Law 101/2016 – on remedies and appeals

Analyzing the old legislative package based on Government Emergency Ordinance 34/2006 and Government Decision 925/2016 on the norms of application (repealed starting May 2016), one can easily notice that the public procurement system in Romania has continuously had to adapt the specific legislative package both because of the frequent changes triggered by the evolution of the common European market and the faulty way in which different categories of contracting authorities understood to execute specific actions in the public procurement process, reason enough for the regulatory authorities to intervene at the level of the primary and secondary legislative package, modifying it for more than 30 times in the last decade.

These changes in the national legislative framework on public procurement not only rendered the act of public management more difficult for the contracting authorities, but also induced a series of mismatches in the applicable normative documents, triggering difficulties in managing different trans-sectorial situations specific to the public procurement process.

What is even more critical is the fact that, by changing the old legislative package, the regulatory national authorities in public procurement operated at the level of execution relationships specific to the public procurement processes, without considering the specific mechanisms by which sustainable procurement is promoted, with qualification or award criteria oriented towards energy efficiency (energy efficient procurement), environment (green procurement) or social responsibility (socially responsible procurement).

As a matter of fact, by all the changes made until 2016, the Government paid no attention to the management relationships specific to the public procurement processes, especially those oriented towards clear/actual mechanisms designed to enable contracting authorities set strategic objectives that meet the general objectives concerning the protection of the environment, the energy efficiency or the social responsibility Romania committed to as a member of the European Union.

The capability of local authorities to establish sustainable award procedures

Sustainable public procurement is a concept which is seldom used by public governance in South-Eastern Europe and especially in Romania. This concept has become smoother in the European Union, being promoted by the new package of European directives on public procurement.

The concept of sustainable public procurement can be defined as "the process whereby organizations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organization, but also to society and the economy, whilst minimizing damage to the environment." (United Nations, 2016)

From this point of view, in order to meet sustainable objectives, one can distinguish three major procurement processes that can be used by contracting authorities, namely:

a) Ecological public procurement processes – processes executed by contracting authorities and which are oriented towards the purchase of products/services/works with a minimum impact on the environment;
b) Energy efficient public procurement processes – processes executed by contracting authorities regarding the purchase of products/services/works by a mechanism oriented towards obtaining the best value for the earmarked funds, taking into account the efficiency in usage or throughout the lifespan of the product/service/work subject to the procurement;
c) Socially responsible public procurement processes – processes executed by contracting authorities considering one or more social aspects, such as: job opportunities, decent work, social and work rights, social inclusion (including challenged persons), equal opportunities, accessibility, projecting for everyone, sustainability, including aspects linked to ethical trade and a larger voluntary conformity to corporate social responsibility (the European Commission, 2011)

As an important element, by transposing the latest directives on public procurement new legislative package applicable national since June 2016 introduced elements of novelty that can turn into useful tools for organizing and implementing sustainable procurement procedures aimed to achieving objectives of environmental protection, energy efficiency and social responsibility.

Thus, from the point of view of defining the qualification criteria and the technical specifications in the award documentation, one can clearly identify the possibility for the contracting authority to use at least requirements regarding:

- ✓ Functional or performance technical specifications that favor innovation and/or elements of accessibility
- ✓ Ecologic, energy efficiency or ethical trade labeling
- ✓ The production processes and methods of all the stages in the lifespan of the product or the service
- ✓ The evaluation procedure on the conformity of the product or of the service
- ✓ Booking the contract for sheltered workshops
- ✓ Equal opportunities etc.

Also, when establishing the final classification and selecting the contracting party during the public procurement process, one can identify the possibility for the contracting authority to use award criteria such as "the best value for money" or "the best cost effective", enabling them to use a set of evaluation factors that include quality, environment, social, innovation criteria or performance criteria linked to the life cycle and the sustainability of the production process of the works, supplies and services

In order to develop new products, services or innovative works targeted to meet the needs of the public sector, the new legislative package makes available a new type of procedure named "innovation partnerships" by which, through specific mechanisms, one or more partners can be selected in order to develop an innovative product/service/work designed to meet the level of performance required by the acquirer. This partnership will include a step-by-step development, following the stages of the process of research and innovation, setting intermediate objectives for the partners, the local authority paying in installments for the results thus obtained.

All these elements introduced by the new legislative package on public procurement show the capability of contracting authorities to distance themselves from the classical procurement procedures and initiate sustainable procurement procedures that will enable them to award contracts to the business operators in the market which promote products/services/works oriented towards the protection of the environment, energy efficiency and social responsibility.

Conclusion

The market sectors targeted by sustainable public procurement are generally those which absorb innovative and social components, incorporating in the final price additional margins destined to ensure a higher quality, performance or conformity level of the classical products/services/works.

Of all these, we can easily identify market sectors such as IT&C, electrical and electronic equipment, transports, electrical engineering, constructions etc.

This orientation of public funds towards sustainable procurement contracts can be a challenge for companies, especially during crises.

In order to increase the degree of resorting to this type of procurement, we must adopt new action channels, both at the level of public authorities and the companies interested in this type of opportunities, namely:

a) at the level of public authorities:

- ✓ ensuring a high-level political commitment to sustainable public procurement development
- ✓ advocacy legislative factors (especially regional and local) to introduce environment, energy efficiency and social responsibility in their development strategies, attainable by the public authorities in question
- ✓ developing management skills and professional capability of contracting authorities involved in public procurement
- ✓ designing annual procurement strategies by setting environment, energy efficiency and social responsibility objectives
- ✓ developing and testing models of procurement documentations with the stress on qualification requirements, technical specifications and award formulae that can be used during the sustainable procurement procedures
- ✓ inclusion of professionals/consultants in sustainable procurement in order to design the architecture of future procurement procedures

b) at the level of companies:

- ✓ preparing and transferring the know-how on environment protection, energy efficiency and social responsibility to the public environment in order to enable it define the needs of contracting authorities
- ✓ developing the professional resource in public procurement in order to ensure the qualification of own tender during the sustainable procurement process
- ✓ developing research partnerships in order to obtain innovative products/services/works.

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CHANGE MANAGEMENT IN ARCHITECTURAL OFFER, AS RESPONSE TO CHANGING DEMAND STRUCTURES ON THE SPECIFIC MARKET IN THE POST CRISIS

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Abstract

The paper identifies and presents the coordinates of integration and innovation process of the activities presumed by the implementation of a architectural project / concept, starting from the changes in the demand / satisfaction of potential customers in the post crisis. The Architectural Management is structured as: customer satisfaction of customer / client / user; innovation; risks; projects; performance. All of these are in an architectural market facing continuous change caused by needs and motivations. At the same time, change management in architectural organization occurs through the interdependence of favorable factors against the resistive and the establishment of management strategies for change will determine the investigation, identification, resistance, solutions to overcome the obstacles and solutions for strategic optimizations. In this context, the paper defines the research problem as a synchronization of external perceptions with inner perceptions of the architecture consumers / clients.
Key words: *architectural products market, architectural products segmentation, resistance to change in architecture, architectural management, project, performance, demand, consumer, strategy, innovation.*

Motivations, context

The research aims to identify the elements opposing to changes in architecture and the measures to mitigate / overcome the resistance to change in the managerial system of Romanian architecture.

The scientific context of the research raises organizational / inter-organizational relationships from architecture, as effects of a fundamental culture in the field, expressed through science, technology and performant management, being a reference base in the start to real changes needed in the architectural activities.

The paper is focused on the need for exchanges / developments in the managerial system of Romanian architecture.

The managers from architecture (especially the architects) should perceive the current state of architecture and they should be committed that, through innovation to change their horizons („targets") by human transpositions at level of excellence for the forms of objects that define the environments.

Summarizing, the research problem appears as a synchronization of external perceptions with inner perceptions of the architecture consumers / clients.

The relevance of research results from the solutions that can be offered in the case of a significant number of problems which are specific to the field, namely:

- The changes / adjustments to the constraints in the economic / social / political environment are need to preserve the organizational potential.

- The synchronization of changing trends with cultural / organizational / inter-organizational determinations, must be practically solved by matching the Romanian architectural space.

- The results needed will be involved organisationally, by extensions applied in the managerial changes.

- The advantages of the research can produce competitive effects in the architectural organizations.

- Extension in the whole management area of the domain. As the causality of the effects of change are transposed in responses / results, the researches become real successful sources on the specific of the architectural products / services / experiences.

- The research results should be generalized interactively, in the managerial change, contributing to quantitative / qualitative increase of knowledge, experience and competitiveness.

Objectives

In the presented context, the research objectives are structured as follows:

- Establishment of some specific coordinates of architectural management in the market economy, with customizations in Romanian architecture.

- Evaluation on the architectural design role in the current economic climate.

- Establishment of management-marketing components on the market of architectural products / services / competences.

- Evaluation of internal market size of products / services / competences in architecture.

- Quantifcation of the innovative impact on the management of architectural projects.

- Integration of variables composed between socio-cultural environment and architectural organization (having as model the design workshop). These are / can be: architectural vision, managing the design process, information system, technologies, opportunities, solutions of development, planning migration, execution, management of the stages and changes along the way (Fig. 1).

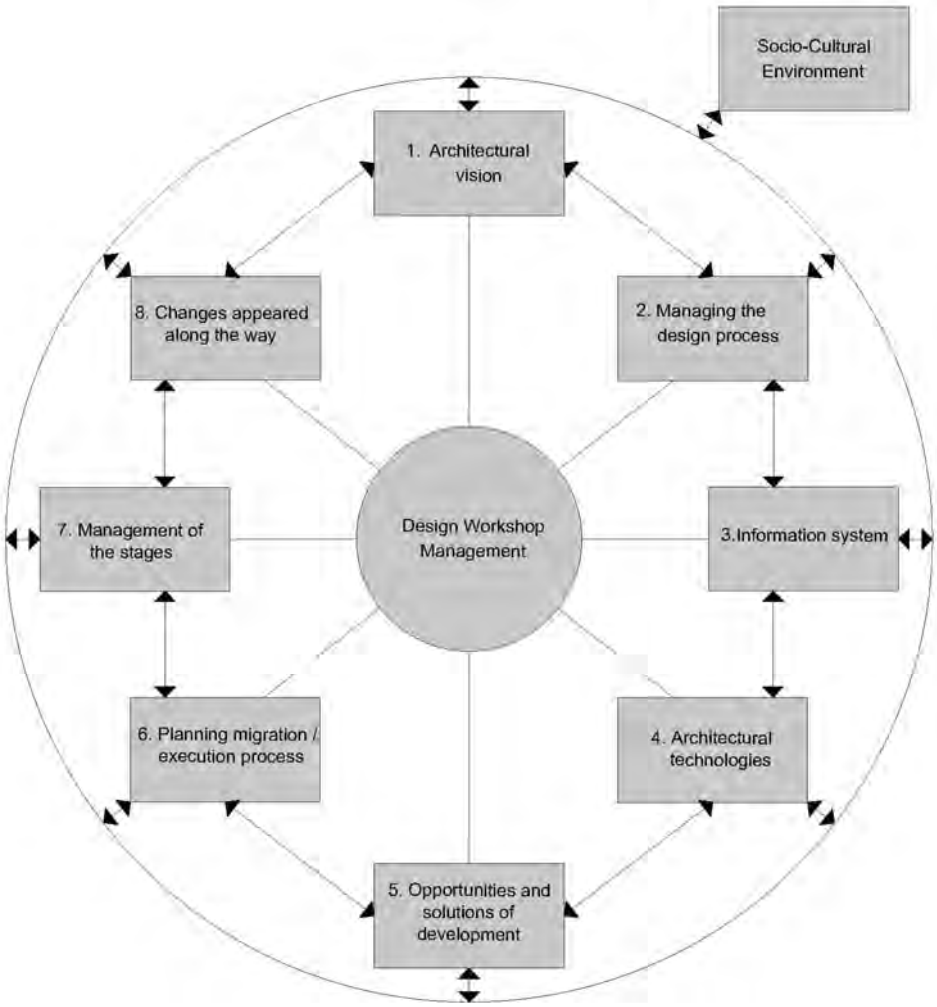

Figure 1. Research process scheme

Research Methodology

The research uses creative ways (structured research) and qualitative ways (unstructured research).

As research methods there were used documentary research (bibliography), mathematical modeling and comparative analysis. As data sources there were used documentary sources.

The study, by design, is exploratory / descriptive, explanatory and predictive. A program of measures designed to managerial development orders / guides, from an organizational point of view, the results obtained in terms of performance and competitive development..

The management, resistance to change and organizational change are conceptual reference vectors through which it becomes possible the analysis activity (of environment, necessity and resistance to change).

Environmental analysis and the need for change is made through a survey, using a questionnaire with relevant topics: architectural vision, architects missions, managerial values / competences. The research flowchart is presented in Figure 2.

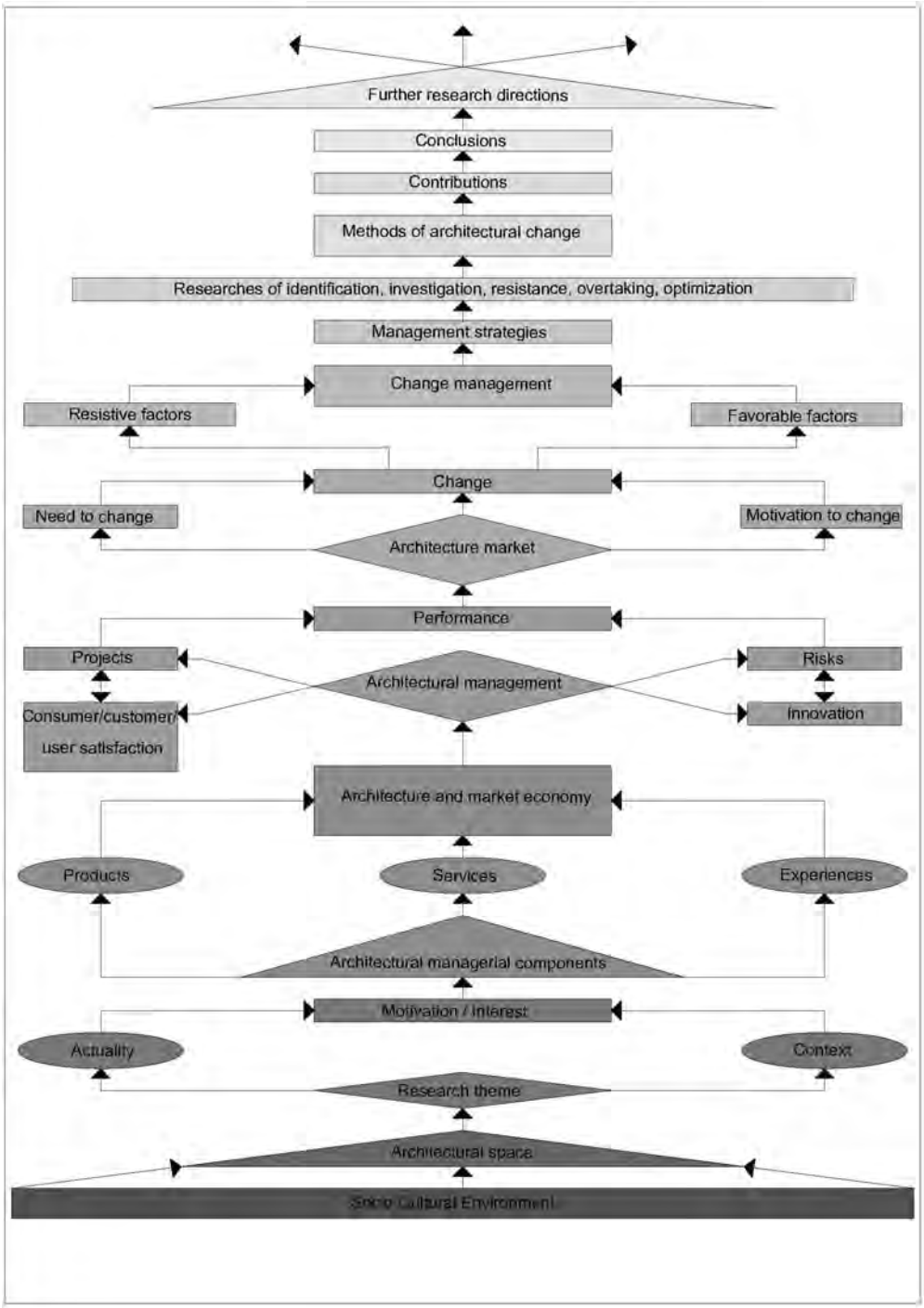

Figure 2. Research flowchart

Starting from the social-cultural status that foreshadows in the architectural environment, the research topic transpired through its opportunity (topicality) and context, setting motivations and interest for its theoretical and practical realization. With these reasoning the managerial architectural components are described as architectural products, services and that lead to an architecture economy, globally included in the free („market") economy.

This asserts a managerial action in architecture, structured from concrete management elements: consumer/ client/ user satisfaction, innovation, risks and project that through performance, lead to/ reach within the architecture market perimeter. Its penetration involves the need of some

changes as well as their motivation to understand/justify the change state. Change in architecture is made through specific management, evaluating the pros (favorable factors) and cons (resistive factors) of change.

The functions of the architectural products market management

The work goes on to identify the function of the architectural products market management, presented in a chapter under the same name. Most often, the architectural field has been analyzed from an artistic, visual or historic point of view, an important aspect, namely the efficient valuation of architectural products and services – basic structures that help obtain the architectural result, rarely being taken into consideration.

It is very important to first of all identify and study architecture economy. This study offers us information regarding the number of economic agents, behavior, profit, debt ratio, and evolution of equity. At the same time, aspects regarding turnover, productivity, costs, evolutions, data interpretation, tendencies.

By analyzing the work of Gerald A. Cole (2004) we discover a significant print of theoretical, practical and functional management in the architectural field, which helps us better understand the importance of the relationship between architectural market economy, performance and purpose. During the last period, the internal market of architectural works has evolved, therefore special attention must be paid to the detailed drafting of offer, price analysis, drafting of large works, to companies and especially to collaborators. A vast and distant study can only lead to a professional devaluation of the architect, placing him under the engineer and binding him to come up with cheap solutions, in the detriment of the project's quality and client's interests.

By law, architecture is defined as an act of culture and public interest with urban planning, economic, social and ecologic specifications, but once architecture is put into practice, the architecture creation act becomes more complex, with technical, esthetic and service-supply elements.

Professional organizations regulating the activity of Romanian architects are the Order of Architects of Romania that has legislative status and the Union of Architects of Romania, of an indirect nature. The Order of Architects of Romania has carried out a study regarding the Professional Service Market of Economic Agents with Architecture Profile for 2007-2012. Companies such as joint stock companies, limited liability companies and BIA with architecture activities participated to the study. Following the analysis of the statistics, and the fact that 2008-2012 were affected by economic crisis they noticed a decrease in the request for architecture services/products of 33%. These effects have caused profit and equity reductions as well as a very high degree of debt. Architects' productivity is below that of other liberal professions, so that the average net retribution is of about 500/600 euro per month, an income below that of comparable beneficiaries.

Segmentation of architectural products market

The segmentation variables of the architecture market are of geographic, demographic, sociologic and psychological nature. This classification belongs to Kotler Armstrong and defines segmentation as "the division of the market on distinctive buyer groups, based on some distinctive needs, characteristics or components that might require separate marketing products".

Another important aspect of the paper is the urban planning study that has the important role of optimizing human interaction and abiding by specific law and regulations, connecting functionality with endurance and aspect. Extending the observation on future directions, we identify new approaches in the field of the services, so that web design is more and more efficiently involved in the promotion of products and services.

Management system

In any organization, in the architectural one as well, work processes include specific activities. These are carried out through productive (material/non-material) factors. Their nature, along with the goals of the work processes divides these activities into two categories: execution and management.

The execution ones involve human intervention on the work products as material factors. The finality of these actions are economic goods (things / products / services / information). Through them the inter-architectural activities become practical.

The relationships between the members of an organization (internal relationships) or between them and the components of other organizations (external relationships) are built on organizational strategy elements (organization, coordination, control, training, forecast), their purpose being economic performance and, in the end, business excellence.

The management of client/customer/ user of architectural products

There is a strong connection between client and product in the architectural field, given the former's involvement in the purchase field. Thus, there is a new concept of buyer's experience, a concept developed by Pine and Gilmore (1998) in "The experience economy", Schmitt B. in "Customer Experience Management (2003) and Brian Lausmay in "Making Leisure Work" (2009). The study of these papers have the purpose of identifying the action, customer cult, autonomy and entrepreneurship, increase of productivity through the motivation of the staff, fundamental mobilizing values, awareness of the simple and adaptable structure component, versatility and rigor. The management of the architecture beneficiaries is evaluated through the degree of satisfaction, and is guided by the effects of the interaction between objectives, results and performances. Quality Management, under these circumstances, becomes strategic/ decisional. There are behavioral and organizational change opportunities.

Thus a new term asserts itself, that of *user* for the beneficiary of architecture products/services. This is particularized for architectural activity. Between client / user / consumer and architectural product / service there are active / reactive interdependencies. The customer/ user / consumer is personalized through its implication in emotional/ rational/ cultural context of the sale/purchase. This relationship in a functional (holistic) approach is based on portfolio performance, namely social l/ sensorial / emotional experiences. Active / reactive interdependencies between customer / user and architectural product / service render the nuances between the management of architecture product/service and marketing.

Innovation management in architecture

The managerial functions specific for architecture innovation, forecast/ the discovery of new ideas and themes, their organization, coordination, training, control and evaluation" functionally approached will strategically impose this type of management in the organization. And, perhaps architecture is one of the largest consumers of creative ideas in the human existential specter. It absorbs all elements dedicated to the environment and organizational/ inter-organizational comfort.

The results of an efficient innovation management are the competitive products. In case of architecture, they refer to architectural products/services. From these perspectives the grounds of innovation management, organizational managerial process, innovative managerial operations and implementation techniques/instruments become important.

The innovation process in this case starts from the analysis of environment signals that are later explored and investigated, then selected and optionally assumed, depending on resources. The implementation and evaluation of the process through success/failure variants follows.

In synthesis the innovation is expressed through design/structure/ size and innovative management. Structural design refers to culture, strategies, process organization, favorable connections connected to management (knowledge, human resources, projects, IT, control) and results. Innovation management can be a) “normative” (through vision, values, missions), b) strategy (resources, knowledge, competencies, technologies, markets, suppliers, collaborations / communication, competition); c) operative (configuration / innovation implementation, costs, achievement, time, quality).

An important role in this process is that of innovational marketing as an essential approach in the completion of technologic innovation, through aspects connected to research, development and innovation valuation, in general and the architectural one through valuation option of innovative project.

Gerald A. Cole (2004) presents information technology (IT) quoting the ,,useful thing” definition of the Commerce and Industry Department of Great Britain, as a perspective to “purchase, store and disseminate sound information, images and text or numeric information through a calculation combination and telecommunications based on micro-electronics”.

The same author ascertains that without the three major components of information technology (computers, microelectronics and telecommunications), actual and future development cannot be possible.

Implicitly, information technology is an important change factor in the management system in architecture.

The penetration speed of innovation on the market is given by the sale of technology (technological package). This applicative extension (practical) of innovative marketing has the purpose of being prudent before the competitiveness of the market. These novelty elements have been/ remain/ will be discrete themes/topics of strategic management through innovative strategies. They do not exclude traditional/mixed strategies, matching the current context with permanent perspective accents.

Conclusions

- The socio-cultural environment prefigures the architectural space, the human component of integration the human in nature.
- The architectural space causes the vital environment of our planetary existence.
- The architecture economy is expressed through products, services and experiences.
- The architectural market is facing a continuous change caused by needs and motivations
- The Change Management in architectural organization is produced by the interdependence of favorable factors against the resistive factors.
- The establishment of management strategies for change causes investigations, identifications, resistance, solutions to overcome the obstacles and strategic optimizations.

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RESEARCH REGARDING ETHICS IN EUROPEAN ORGANIZATIONS IN A TIME OF CRISIS

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Abstract

Purpose *– The purpose of the paper is to present the perspective of the European entrepreneurs with respect to the ethical behavior within their organizations, in the context of globalization.*
Methodology/approach *- A quantitative research using boring and the questionnaire as the research's instrument.*
Findings *– Ethical issues are not taken into account as they should be within the investigated organizations, basically because there is no education in this direction. Then it has been found that the main source of information with respect to the organization's values is represented by the organization's regulations, while the first place is taken by the value of assuming responsibility for the consequences of their decisions and actions.*
Research limitations/implications *– The number of entrepreneurs that have been investigated is 74, which does not allow an extrapolation of the results with a certain probability and a limited error.*
Practical implications *– As an organizational priority, ethics will not only influence the decision making process, but also the organizational culture. In order to achieve this goal, there has to be a process of alignment that will integrate business ethics in the mission, vision, strategy and objectives of the organization.*
Originality/value *– Most of the studies in the field of ethics are being done from its philosophical perspective, thus studying the business aspects of ethics is really important, considering that a great opportunity of today's organizations is represented by the potential of ethical values in defining their future.*
Keywords: *business ethics, entrepreneurship, globalization.*

Introduction

This paper comes to complete a previous article that has been published within the proceedings of the 3rd International Management Conference – A new dilemma: between East and West (Cordos, R.C., 2012), with respect to different aspects that have been included in the same research.

It refers to the level in which the organizations take into account the ethical aspects, the values that they have, the source of information. Ethics has become one of the priorities of an organization. In the 21st century, ethics is not a luxury, nor an option. Within the society there can be noticed selfish and irresponsible actions that make some poor and other rich [Brimmer, 2007].

Until now, the business ethics specialists had to deal with the statement that business ethics represents the perfect oxymoron. Still there are companies that have an ethical, profitable program. These companies, as many others, have showed an entire history in the field of an exemplary ethical climate, as well as profitable operations [Blaga, 2011, PhD thesis].

The empirical studies regarding the relationship between profitability and ethics at the organization's level have showed mixed results. There is nowhere to be found a negative correlation between the ethical behavior of a company and profit, on the contrary, the companies that have an ethical behavior act better on the market.

As an organizational priority, ethics will not only influence the decision making process, but also the organizational culture [Kidder, 2001,p.31]. In order to achieve this goal, there has to be a process of alignment that will integrate business ethics in the mission, vision, strategy and objectives of the organization. The purpose of an organizational ethical culture is the best thing of all possible [Cordos, 2012, p.49]

The hypothesis of the research

Starting from the issue that has to be studied, a series of hypothesis can be elaborated [Bacali et al., 2010, p. 279-280].
H01: Most of the investigated persons believe that the organizations within their countries take a great deal into account the ethical aspects.
H02: Clients' satisfaction is the main value for an organization.
H03. The main source of information with respect to the organization's values is represented by the organization's regulations.
H04: The main value within the organization is at present the concern for its profitability.
H05: The main value that the investigated persons would like to have within the organization in 4-5 years is the fair evaluation of the individual performances.
H06: The main situation considered to be real within the organization is that the attention given to correctness and ethical behavior is stronger that the concern for cost reduction and/or income increase.
H07: The most important element for the organization's prestige is financial transparency within the investigated sample.
H08: The majority of the investigated persons believe that ethics definitely influences the financial performances of the organization.

The instrument of the research

The method that has been used within this research was the boring, and the instrument was the questionnaire.

For the questionnaire, different types of questions have been used [Bacali et al., 2002, p. 31-32]: open questions (addressed to the active process of the subject's memory, verifying and testing what is stable, consolidated in the behavior and knowledge of the subject) and closed questions (dichotomic, multidichotomic and scale responses).

For the elaboration of the questionnaire, the following basic principles have been respected:

- the question should be as short as possible, meanwhile clear and concise;
- the question should be elaborated in such a way that it is avoided a predisposition of the subjects to offer a certain answer;
- the ability of the subjects to answer certain questions has to be taken into account; and
- the question should not be threatening or unpleasant.

The sampling

Due to the statistical, organizational, financial and informational restrictions the dimension of the sample was 74 organizational subjects from 12 different European countries. A non-aleatory sampling has been used, based on accessibility, which means that there were investigated those members of the community that were able to be approached in a more facile way, thus we cannot

talk about a representative sample, the conclusions referring only to the investigated sample, without extrapolating them.

The results of the research

The first question refers to the measure in which the organizations take into account ethical issues, a question that came from the premises that ‚Most of the investigated persons believe that the organizations within their countries take a great deal into account the ethical aspects'. The results show for the investigated sample that most of the subjects – 37% consider that ethical aspects are taken into account at an average level, which does not confirm the initial hypothesis. Just 22% of the investigated persons, meaning 16 out of 74 subjects believe that ethics is taken into account in a great way, while 2% do not know.

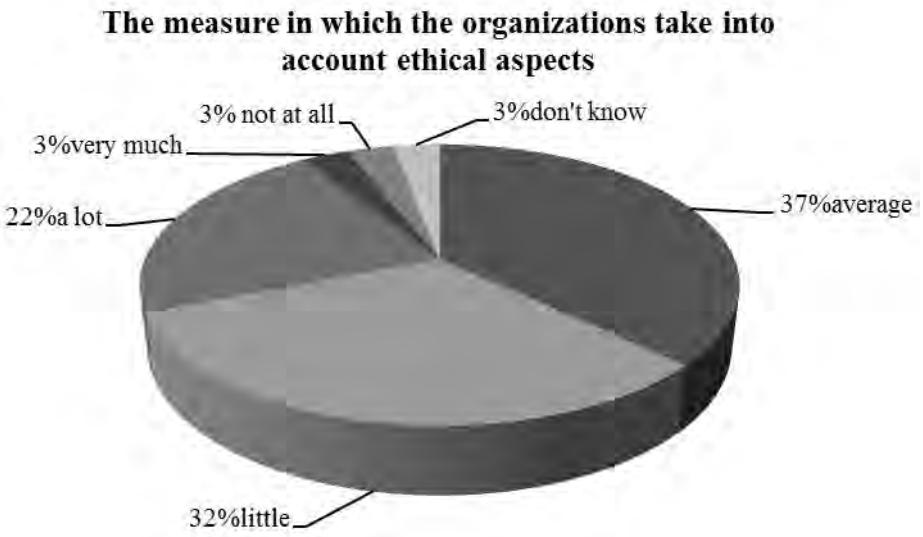

Fig. 1. The measure in which the organizations take into account ethical aspects

The subjects who do not believe that ethics is important within their organization argue that there is a moral crisis of the society, money is more important than ethics of there is no education in this direction.

For the following question, the respondents have been asked to choose a maximum of ten keywords that are relevant for their organization. The hypothesis is not confirmed by the given answers, presented as follows next to the modal values: ethics (46), quality (46) involvement (36), competence (36), pleasant working environment (36), responsibility (36), correctness (34), professionalism (28), continuous learning (28), trust (27), communication (26), clients' satisfaction (24), motivation (24), efficiency (22), organization (21), team spirit (20), innovation/creativity (20), work (19), discipline (18) vision (16), autonomy (15), perseverance (12), tradition (11), security (11), respect (10), community (10) and collectivism (9).

Further on the sources of information with respect to the organization's values have been determined, starting from the hypothesis that 'the main source of information on the organization's values is represented by its regulations'. The hypothesis is confirmed by the given answers.

Sources of information on the organization's values

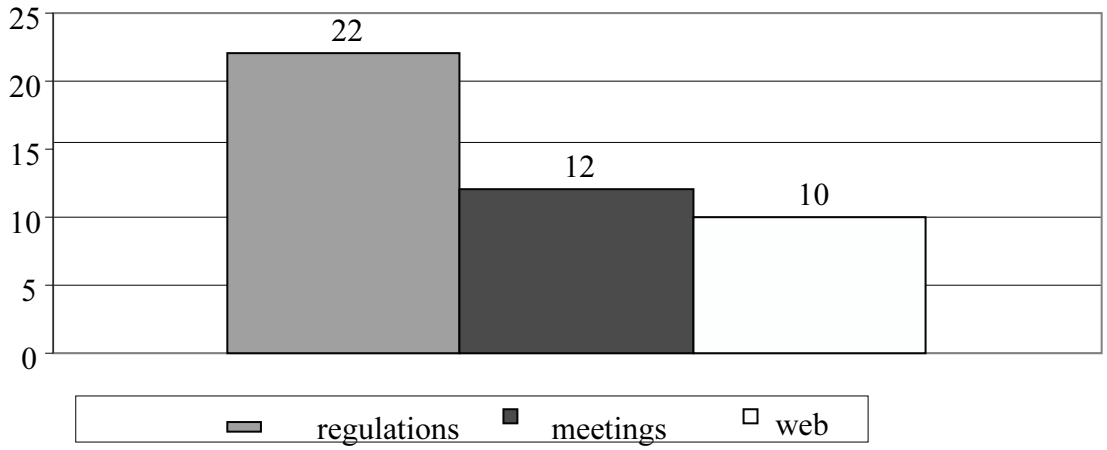

Fig. 2. The main information sources for the values of the European organizations

Being asked which would be the first five values to be considered as used within their organization at present, the respondents offered to following answers:

1. Assuming responsibility for the consequences of our own decisions and actions;
2. The organization's support for continuous improvement of the knowledge and abilities of the personnel;
3. The correct evaluation of the individual performances;
4. Ethical behavior and integrity (at the employee's level and the organization's as a whole); and
5. The employees' good mood is essential for the working environment and the organization's performances.

If the time horizon would change to 4-5 years, the desired situation would be:

1. The orientation towards continuous innovation, improvement of the procedures and organizational change;
2. Ethical behavior and integrity (at the employee's level and the organization's as a whole);
3. Assuming responsibility for the consequences of our own decisions and actions;
4. Security/safety (personal, of the job and so on); and
5. The organization's social responsibility.

The results do not confirm the hypothesis.

Another question aimed the identification of the situations considered to be real within the organization, starting from the hypothesis that 'The main situation considered to be real within the organization is that the attention given to correctness and ethical behavior is stronger that the concern for cost reduction and/or income increase'

With a weighted average of 4.16 (on a scale from 1 to 5), the main situation considered to be real within the organization is that 'the organization's values are promoted by the top management'. Then, with a weighted average of 3.64 is the fact that 'when the employees divert from the organization's values, they suffer consequences'.

With 3.51, the employees know the way in which the organization's values are included in the job's performances, while 'if an action has legal support, but is seen as non-ethical, it is not taken' obtained a weighted average of 3.32.

The hypothesis is not confirmed by the obtained answers because 'the attention given to correctness and ethical behavior is stronger that the concern for cost reduction and/or income increase' has only an average of 3.29. On the last place we find: 'What the officials state in public is sometimes in contradiction with the internal messages or the real situation' with a weighted average of 2.86.

The following question in the questionnaire refers to the importance of some elements on the organization's prestige. The ethical approach of the marketing activities represents, in the subject's opinion, the main element that influences the organization's prestige, with a weighted average of 4.06 (on a scale from 1 to 5). The result does not confirm the starting hypothesis according to which financial transparency influences the most the organization's prestige (with a weighted average of just 3.93). Here are the results:

- ethical approach of the marketing activities (4.06);
- ethical attitude towards the employees (3.97);
- ethical values (3.94);
- financial transparency (3.93);
- the general characteristics of the organization's management (3.86);
- a good dialogue with the shareholders (3.84);
- the relationship with those involved in the distribution and acquisition channels (3.81);
- the organization's affiliation to different international organizations in the field (3.78);
- the relationship with the local, national and international organizations (3.73);
- the impact of the organization's activity on the environment's protection (3.70); and
- communitarian initiatives (3.50).

Being asked if ethics influences the organization's performances, 30 subjects agree, representing 40%, 24 say probably (32%), 10 subjects say 'probably no' (14%), while 10 subjects (14%) do not know. 'The majority of the investigated persons believe that ethics definitely influences the financial performances of the organization' has been the hypothesis for this question, which is not confirmed by the results obtained, since only 40% of those investigated believe that. The responses are graphically presented as follows.

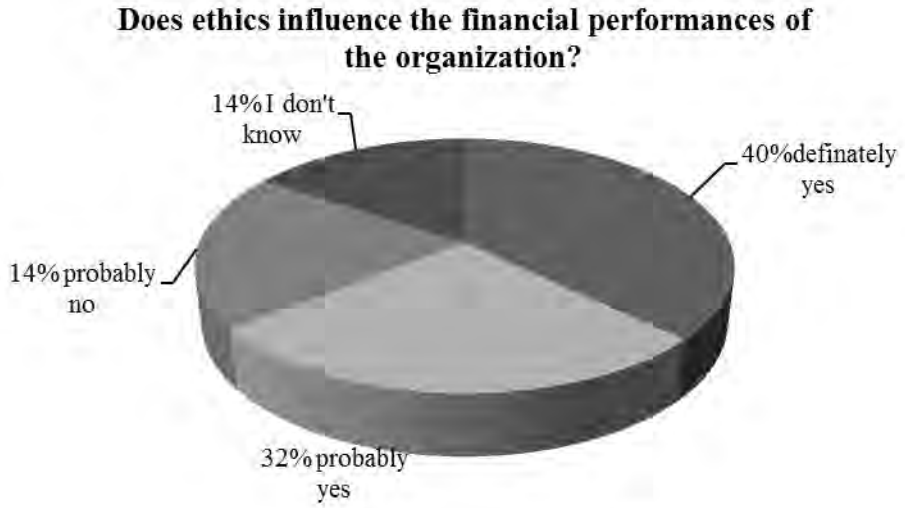

Fig. 3. The influence of ethics on the financial performances of the investigated European organizations

The factors that influence the future performance of the organization, in the opinion of the subjects in the sample are, in the decreasing order of the weighted average obtained after summarizing the answers (on a scale from 1 to 5):

- the ability to communicate: 4.21;
- Internet communication: 4.18;

- adaptability to change: 4.13;
- ability to innovate: 3.89;
- human values: 3.86;
- financial performances: 3.83;
- ethical behavior: 3.64;
- social approaches in the environment field: 3.59;
- organizational transparency: 3.56; and
- the personal reputation of the CEO: 3.40.

Discussion and conclusions

Ethical issues are not taken into account as they should be within the investigated organizations, basically because there is no education in this direction. Then it has been found that the main source of information with respect to the organization's values is represented by the organization's regulations, while the first place is taken by the value of assuming responsibility for the consequences of their decisions and actions. Most of the investigated subjects believe that ethics influences the financial performances of the organization, while other factors are the ability to communicate, the adaptability to change or the ability to innovate. Business ethics remains an important issue in the XXIst century's organizations and it needs to receive the role that it deserves.

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Perspectives on economy in a crisis context

RURAL ENTREPRENEURSHIP - THE PATHWAY FROM SUBSISENCE TO SUSTAINABILITY OF RURAL AREAS IN ROMANIA

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Abstract

Purpose *– Demonstrating that rural entrepreneurship is a solution for developing rural areas in Romania.*
Methodology/approach *- By highlight the situation of business environment in Romania for the period 2009-2014 we intend to use three indicators: number of companies, number of employees and turnover, and these indicators were analyzed on several levels: national, on development regions and on residential area.*
Findings *– Entrepreneurship in rural areas rely more on community, has stronger links with family and a major impact on the rural community.*
Research limitations/implications *– In theory, rural entrepreneurship is not different from entrepreneurship in urban areas. A rural entrepreneur is a person who usually lives in rural areas and contributes to wealth creation in that area. Its specificity resides in the fact the economic policies of entrepreneur and the social objectives of rural development are more intertwined than in urban areas.*
Practical implications *– Encouraging the development of rural entrepreneurship can help increase productivity in rural areas and improve the living standard of rural residents.*
Originality/value *– Conclusions about encouragement of rural entrepreneurship, as a solution for subsistence to sustainability of rural areas in Romania.*
Key words: *rural entrepreneurship, rural area, economic development.*

Introduction

Entrepreneurship is the key factor necessary for the development of Romanian economy. Both welfare and most jobs are created by small businesses started by people with entrepreneurial spirit. Therefore, rural entrepreneurship should receive an adequate support due to the positive impact it has on the employment, income and demographic indicators. In theory, rural entrepreneurship is not different from entrepreneurship in urban areas. A rural entrepreneur is a person who usually lives in rural areas and contributes to wealth creation in that area. Its specificity resides in the fact the economic policies of entrepreneur and the social objectives of rural development are more intertwined than in urban areas. It is also why entrepreneurship in rural areas rely more on community, has stronger links with family and a major impact on the rural community.

Data analysis shows that about 9.7 million people, i.e. 43.51% of the total population, live currently in Romania in rural areas. Romania was delineated in its modern history as a country with a predominantly rural population, so that 78.6% of the population lived in rural areas in 1930; the situation has changed during the period 1980- 2000 when the percentage decreased to 45%. Even if workforce migration has occurred over time, we consider that the rural population of Romania will continue to be numerous and significant in the coming decades. From economic and social perspective the attention is drawn to rural areas by the existing low living standards compared to those in urban areas. In future, however, the rural development must be seen and

understood in terms of sustainability and lastingness. Rural development is in the attention of Romanian government nowadays since it is obvious a cohesive society can only be achieved if the disparities between regions and walks of life can be reduced. The government tries to achieve this by the mean of development regions, but it has become clear that the mere grouping of some counties has not lead to the reduction of economic and social differences in the Romanian society. In Romania, the residential area is the most important factor of social segregation. The mere fact of living in rural areas creates difficulties in achieving individual goals, creating an inequity of opportunities for rural residents. We believe that the development of Romanian rural areas should be seen not only in strict relationship with the agricultural sector, but from the perspective of the entire existing productive system, resorting to the management of natural resources from a broad and coherent perspective. Encouraging the development of rural entrepreneurship can help increase productivity in rural areas and improve the living standard of rural residents. Capitalization on the existing opportunities in rural areas can increase the profit margin of economic activities developed there. The inequity of opportunities when initiating a business in rural areas is confirmed by several studies in recent years and one of the most important drawbacks is the lack of entrepreneurial skills, on three components: knowledge, abilities and attitudes. Therefore, we believe that an important factor of social development in Romania is the entrepreneurial initiative. Rural entrepreneurship can be considered a distinct topic of entrepreneurship in general, at least for six reasons related to the specificities of rural areas, i.e. six distinct barriers in the way of entrepreneurship initiative that can exist in rural areas. First of all, there are fewer opportunities in rural areas to find employment compared to the odds existing in urban locations.

Secondly, the government programs that address rural areas often suffer from an inconsistent approach in encouraging small businesses.

Thirdly, the expertise that exists at the rural areas' local government level is not sufficient to harness the existing potential.

Fourth, in the countryside, the development of human capital is much lower compared to urban areas.

Fifthly, the infrastructure existing in rural areas is at a development stage lower than the one in urban environment thus it prevents the development of businesses and does not lead to lower transaction costs.

Lastly, in so many cases, the government approaches to rural development have proved ineffective because they ignored the importance of involving local communities and did not pursue the encouragement of entrepreneurship in rural areas. Success of rural entrepreneurship is measurable by the achievement of four objectives: increase of the number of small businesses or small enterprises; growth of employment in rural areas; strengthening and expanding the existing businesses; attracting investment – indicators which support essentially the improvement of the rural population living standard.

To highlight the situation of business environment in Romania for the period 2009-2014 we used three indicators: number of companies, number of employees and turnover, and these indicators were analyzed on several levels: national, on development regions and on residential area.

Table 1. Dynamics of new companies created in the period 2009-2013, after residential area

Year	Number of Firms in rural area	Number of Firms in urban area	Number of Firms at national level
2009	27801	98565	126366
2010	30925	97930	128855
2011	35441	104642	140083
2012	24565	84611	109176
2013	33967	101899	135866

Source: www.o.n.r.c.ro

From a percentage point of view, it can be noted that the urban area holds 75% of the total number of companies reported to 51.3% of total population, while the rural area owns 25%, given that 48.7% of the population lives in rural areas. This discrepancy is explained primarily by the difference of entrepreneurial initiative between the rural residents and the urban ones, a difference also highlighted in terms of the education level of the founder / manager of a newly established company in this timeframe.

Table 2 Distribution of active enterprises newly created by the founder / manager's educational level in % during 2009-2013

Educational Level	2009	2010	2011	2012	2013
Primary	1.9	0.9	0.8	0.6	0.4
Vocational	14	13.7	12.3	9.6	10.9
Secondary	30.9	32.1	29.7	26.5	27.8
High school and University	53.2	53.3	57.2	63.3	60.9

Source: www.insse.ro.

The data analysis on this time interval shows that the level of education of those who have founded companies has grown steadily, most of them having secondary and higher education; it shows concern for this issue and realization that it provides them an advantage in facing the competition. The research done within Rural - Entrepreneur Project also points out a growing desire to participate in training courses, which means that people's interest in improving their entrepreneurial skills has increased although they are aware of the effort required for the completion of a program of managerial education.

For understanding the dynamics of economic activity it is important to analyze the distribution by region of development:

Table 3 Number of firms by regions of development

Region of development	2009	2010	2011	2012	2013	2014
Bucuresti-Ilfov	128347	117679	108764	114816	118819	126554
Center	66018	59253	54304	56069	57245	59124
North-East	59051	53165	48591	50298	51395	53290
North-West	75885	67871	62381	65752	68205	72444
South-Muntenia	58214	53686	49587	51563	52890	54764
South-East	64033	58225	53221	55156	56292	57888
South-West Oltenia	38967	35956	33258	34849	35360	36516
West	51181	45970	41904	43684	44876	46860
Total	541696	491805	452010	472187	485082	507440

Source: www.o.n.r.c.ro

Data analysis shows that the number of companies located around Bucharest has recorded increase, while the number of companies from Eastern and Central regions decrease as share of all firms and those in southern Romania has registered either stagnation or a slight increase.

A suggestive image on the business environment in Romania is given by the turnover of companies.

Table no. 4 Dynamics of turnover per year and residential area – millions lei

Year	Turnover of companies in rural areas	Turnover of companies in urban areas	Turnover of companies at national level
2009	107.150	745.274	852.424
2010	109.505	790.735	900.240
2011	110.083	891.544	1.001.627
2012	111.204	946.066	1.057.270
2013	112.086	937.453	1.049.539
2014	112.998	989.861	1.102.959

Source: www.insse.ro

The turnover achieved in urban areas is 9.6 times higher than that generated in rural areas, considering that the population ratio is 1.2 times. At the same time, the turnover of firms in rural area has only increased by 10.54% during this period, given that urban turnover has grown by 13.28%.

The dynamics of Romanian business environment is suggestively expressed as well by the number of employees. In terms of distribution by residential areas, it can be observed that were employed 2.1 times more people in urban areas as opposed to rural areas in 2009 and this report was 1.87 in 2014. In the analyzed period, the loss of personnel was of 9.6% for the companies in rural areas compared to 9.3% registered in urban areas.

Table 5

Year	Number of employees in rural area	Number of employees in urban area	Number of employees at national level
2009	1.632.067	3.142.196	4.774.263
2010	1.478.052	2.897.992	4.376.044
2011	1.488.585	2.860.154	4.348.739
2012	1.538.593	2.904.272	4.442.865
2013	1.522.432	2.921.122	4.443.554
2014	1.567.147	2.940.582	4.507.729

Source: www.insse.ro

Given that the share of working population does not differ by residency area (46%), the explanation of this very significant gap between the number of employees in urban and rural areas is given mainly by the fact that companies have their headquarters in cities and employment in rural areas is mainly associated with the agricultural sector. Regarding the effectiveness of rural employment, we can say that it produces 6% of Romania's GDP and gives jobs to 34.7% of the active population of Romania.

Businesses are associated with risk and fear is usually what prevents people from taking risks: fear of uncertainty, fear of failure, fear of rejection, fear of conflict or fear of losing control of an existing situation that is satisfactory. But many people, by refusing to risk the safety of today, miss the chance to capitalize on their talents, skills and opportunities when these could be exploited profitably. Regarding rural entrepreneurship, perhaps one of the biggest obstacles is the aversion toward risk of rural people. Studies prove that people living nearby the big cities do business at ages of 17-19 years, and as the distance from the cities is greater, the age at which they initiate the first deal is delayed. The E.U. data shows that the average age of an entrepreneur is about 35 years. Also, available data proves that men start business sooner than women and are aged between 30-35 years and the trend is kept in for the graduates of private colleges, compared with those who graduate from state universities. In most cases, the first activity is not necessarily a type of legal business but rather an informal deal that brings spending money. Even if it is not a

business itself, at the beginning, there is time to transform that activity into an actual business. For many of the entrepreneurs, whose activity was at first just a source of extra cash, it was transformed into a legally formalized business, which later was extended. Usually, the first attempt to do something on their own has marked significantly the activity of those who have become entrepreneurs. Bill George (2010), a professor at Harvard Business School, says people fail in their businesses because they are not able to consistently follow the beliefs, values and principles that guide their life. The research conducted among entrepreneurs and potential entrepreneurs in rural areas have shown that success in business is correlated with certain personality traits of the individual, the capital necessary to start a business, the opportunities of a region or economic circumstances existing at a certain time and many other elements, as follows:

- ✓ Human qualities: it is believed that in order to succeed in business are necessary qualities like communication skills, persuasiveness, self-confidence, ambition, honesty, risk taking capacity, hard work ability, skills for performing certain activities;
- ✓ Entrepreneurship is increased by the environment in which the potential entrepreneur lives: the entrepreneurial environment in the family, the local competitive environment and general economic context are also extremely important factors;
- ✓ Business financing: the success of a business is strongly conditioned by the existence of financial resources obtained at low cost, especially in the initial phase.
- ✓ Competence: this is given first and foremost by the possession of expertise, especially in the economic, accounting and legal fields. In fact, an entrepreneur must know to do all and rely on previous experience gained in the position of employee in order to be able to ensure the success of a business, especially at the beginning;
- ✓ Organization and management of the business: the people employed and processes that need to be implemented are an essential part of the business. The management team is very often the decisive factor for the firm in terms of the choice of investment and then diversification of the fields of activity;
- ✓ Customer relationship and vision on the product: customers and the product represent the fundamental pillars of a business and therefore the contractor must have an integrated vision of these two elements.

Encouragement of rural entrepreneurship can be done by using strategies to target other objectives besides reducing the risk: a good modality would be attracting people with entrepreneurial spirit, who does not belong to rural areas, to set up business in the local communities and this can be carried out by using marketing and advertising techniques targeted to entrepreneurs, based on local contacts that they already have. More precisely, we are talking about people who were born in rural areas and now live in other places but maintain family ties in the community; they are prime targets for such actions. For this segment it is much easier to recognize the business opportunities and quality of life (lower cost of living, beautiful sceneries) that a rural community can offer coupled with the fact they can also have social or family reasons for which they would return in the community. The most common obstacles raised at the beginning of a business are: mentality, lack of education and specialized knowledge, unsuitable employees and associates, changing and cumbersome legislation, bureaucracy and high taxes imposed by the State. People in communities with economic problems, especially those from rural areas, tend to highlight problems and shortcomings faced with the intention of convincing the authorities to grant them more support. We appreciate that such an approach only keeps people in the community from seeing the opportunities they have that can be turn into business advantages afterwards. Even in the poorest rural communities there is an "inventory" or human, social, physical and financial assets that can be used to attract the interest of entrepreneurs in search of business opportunities. There are quite common the situations when those trying to start a business or wanting to expand a small business they already have are regarded with suspicion or are not appreciated in their community. Most of them drop out or move elsewhere. In these cases local community leaders consider that the attitude towards those who get involved and are opened to entrepreneurial initiatives should be one of significant support, so that the community may even manage to attract other companies to move their business out in the countryside. Rural entrepreneurs can be helped to connect to resources and markets outside their own communities and is thus possible to develop successful business. With appropriate support, rural entrepreneurs can be encouraged to attract capital for investments by selling

products and to have interactions and exchanges with entrepreneurs from different regions or even other countries, by using information technology applied to electronic commerce or implementation of marketing strategies. It seems the most significant barriers are the lack of a tradition in entrepreneurship and the rural population's low level of education. In fact, entrepreneurship means transforming ideas into activities and the ongoing quest to overcome the difficulties encountered. The rural population is used to working in an environment that has not encouraged initiative and implicitly risk taking. For several generations, commuting into the city where there were jobs for which a person had to have more or less qualification but could gain a steady income was the way of life of rural inhabitants. In very few cases there was a tradition of entrepreneurship that was able to maintain over time the ability to develop partnerships and relationships built on trust between business partners. The trend which dominates the Romanian countryside is that families encourage their children to go to cities usually for studies but also to establish there after graduating, hoping that in this way they have a chance at a better life. Therefore, in most rural areas, experts in agriculture and well qualified workforce are lacking, the entrepreneurs in these areas being forced to hire low-skilled workers.

Lower levels of education affect the development of entrepreneurship in rural areas increasingly more, partially due to ignorance of foreign languages or lack of minimum economic and communication knowledge, but these are not insurmountable disadvantages. Most admit that, when they accepted the idea of initiating a business, they realized they had major shortcomings both in mastering the fundamental concepts of management and in doing things previously unknown, such as relations with authorities or customers. To meet these challenges the most convenient solution would be training on the job, learning from their own experience and that of others, as well as the self-improvement by using a computer and the Internet. Regarding the lower level of education in rural areas, the significance of this barrier may diminish over time, as the educational programs of the education system will adapt to a greater extent to the specific conditions of this environment. In the same context, the lack of successful business models can be a significant barrier to the development of small rural businesses because with few exceptions, where a strong reluctance against those who took risks and succeeded prevails or against those who try something else. Solutions to these problems were the projects financed from European funds under the program P.O.S.D.R.U. 2007-2013. Thus, 435 projects worth EUR 218 906 756 were financed through the Priority Axis 5 / DMI 5.2 - Promoting long-term sustainability of rural areas in terms of human resource development and employment and through the Priority Axis 3 / D.M.I. 3.1 - Promoting entrepreneurial culture were financed 140 projects worth EUR 152 722 436. These projects were mainly aimed at increasing entrepreneurial culture and expertise in order to improve skills, knowledge and managerial behavior of current and future entrepreneurs in rural areas, as well as the establishment of new businesses that have received funding. Most rural wanna-be entrepreneurs have identified the need for training in business, the more so since their company operates in a more competitive environment. Residents near Bucharest and the big cities declare most often their intention to attend entrepreneurial training courses. Most of them (75%) say they have not had the opportunity to participate in management training programs and only slightly refuse to participate in such training courses. But the analysis of these projects impact in financial year 2007-2013 shows that this evaluation however has not started from the true real systemic needs to determine the fundamental problems existing in rural areas and prioritize resolving them. Also, there were no consultations with the potential recipients of these funding to determine whether the projects respond correctly to the needs they have. The lack of vision for each priority area created gaps in determining how to achieve the final objectives. Given the lack of real needs' analysis, neither the macro and microeconomic context, nor the social and political aspects were taken into account when evaluating the problems that manifest in rural areas.

Conclusions

In these conditions we can appreciate that, at least in the near future, rural entrepreneurship will not manifest at a greater scale than in the past 25 years in Romania, but it is quite likely for the rural entrepreneurship to become an engine for the growth of living standards in rural areas if the consistency of public programs especially drafted to eliminate obstacles that cannot be overcome

only by entrepreneurial initiative will increase. In such an economic context specific to Romania, public authorities must generate a strategy to encourage rural entrepreneurship integrated into the overall effort to further modernize the country. Occasional programs addressed to rural areas, even if they are specifically oriented towards rural entrepreneurship, cannot generate significant results. Rural entrepreneurship development only with tax incentives, which can be welcomed on short-term by their beneficiaries, may prove costly on longer term and may even cause distortions in the allocation and efficient use of resources in general. Development of rural entrepreneurship must be achieved by creating both a system to support entrepreneurs and some entrepreneurial communities, coordinated with changing the culture of rural areas and the economic and social education people living there so that they could recognize the potential of entrepreneurship.

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THE CAUSES OF REDUCED INNOVATION IN ROMANIA: EXTRACTIVE INSTITUTIONS

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Abstract

Purpose *– To study extractive institutions in the context of the lack of performance in the domain of innovation in Romania.*
Methodology/approach *– Data analysis from specialized literature on inclusive and extractive institutions; case study on extractive institutions in Romania.*
Findings *– Innovation, economic development and prosperity are the work of economic and political institutes inclusive, while, conversely, extractive institutes lead to stagnation and poverty. Romania is a country with a history marked by extractive political and economic institutions.*
Research limitations/implications *– The research is limited in finding the type of extractive of institutions without formulating specific proposals for improving the Romanian system of innovation.*
Practical implications *– To improve the performances of the Romanian system, generally, to put an end to stagnation and poverty, first and foremost, some rules of the political and economic game—meaning institutes—need to be changed.*
Originality/value *– This is the first scientific paper that presents a case study on extractive institutes in Romania.*
Key words: *innovation, inclusive institutions, extractive institutions.*

Introduction

The evolution of any technical system takes the shape of an “S” and comprises of four stage (figure 1). Successive improvements of the system, until its eventual optimization, have a limited potential which lead it, along the “S” curve, until its maturity and decay. The decay of the system doesn't mean it is the end of the evolution in that domain as jumps appear in the new generation of systems, which are more advanced. These jumps (figure 2) are the result of innovation, a phenomenon which only appears in certain conditions. The entire evolution process in a domain is represented by how tangent it is to the “S” curve of the successive generations of the system; the “S” curve is called the envelope curve (the dotted line in figure 3).

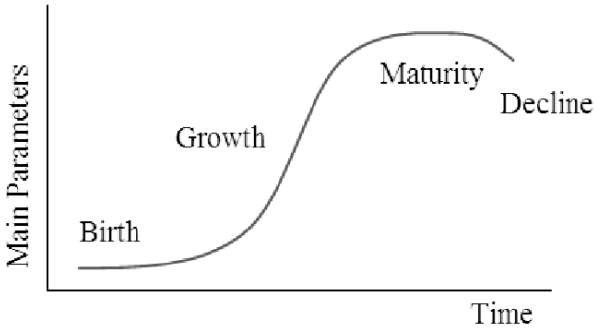


Figure 1: Technical system evolution stages

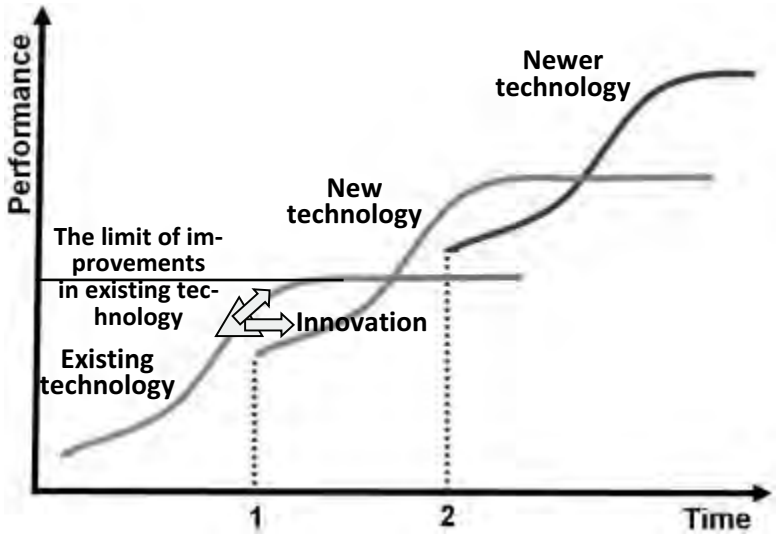


Figure 2: The leap to new, more advanced generations of systems is the result of innovation

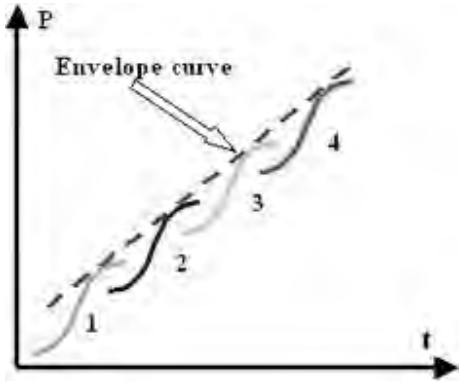


Figure 3: The whole process of evolution in a field is the envelope curve(Triz-journal.com, 2002)

Since Romania joined the EU in 2007, it, along with Bulgaria and Latvia, has constantly been part of the group of modest innovators. Other countries have been part of this "club" over the years, countries such as Lithuania, Poland, Hungary, Malta, Slovakia, etc. (figure 4), but these have since been able to overcome this condition. In 2015, the situation for Romania worsened, falling to last place in the European Union Innovation Scoreboard (figures 5 and 6).

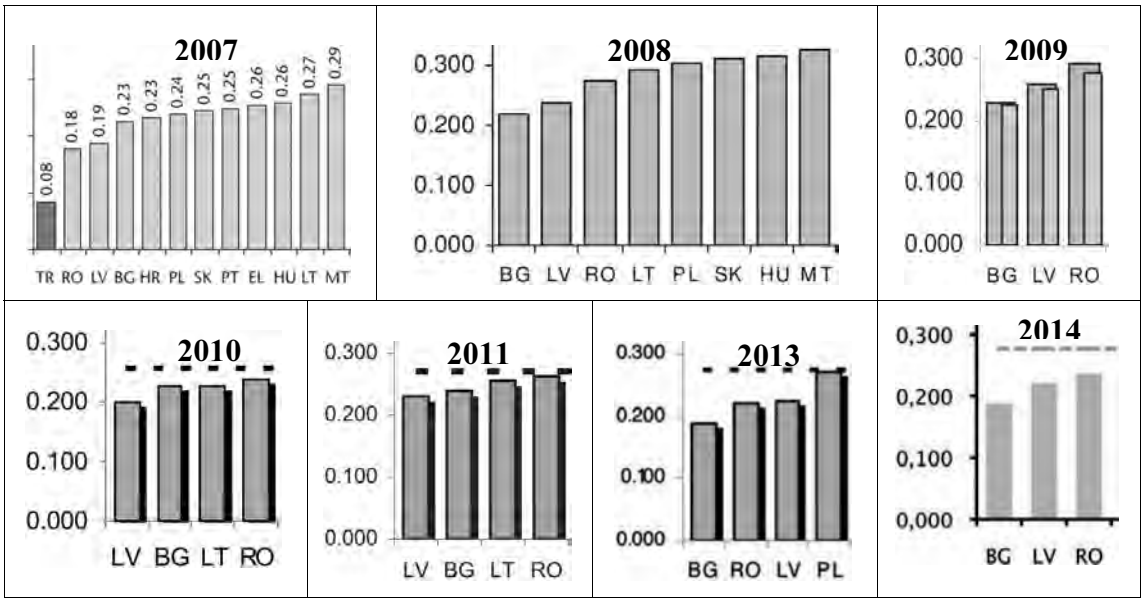


Figure 4: EU modest innovators "Club" (European Union Innovation Scoreboard)

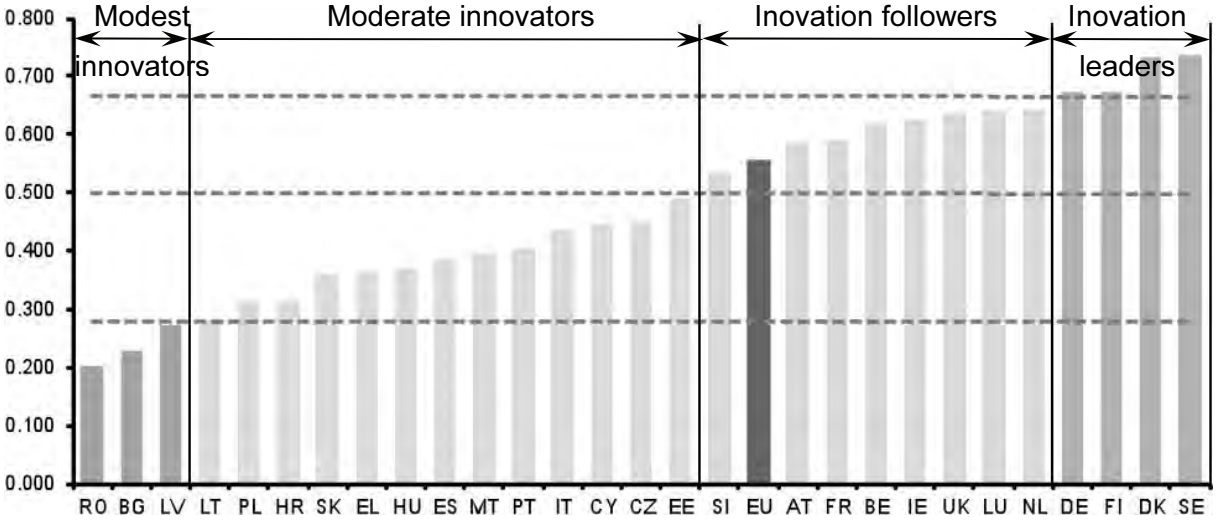


Figure 5: EU Member states' innovation performance (European Union Innovation Scoreboard, 2015)

Figure 6: EU Member states' innovation performance(ec.europa.eu, 2015)

Causes for the poor level of innovation: extractive institutes

In the book entitled "Why Nations Fail: The Origins of Power, Prosperity, and Poverty", Acemoglu and Robinson, two of the biggest experts in the world of development, show how it is not geographical location, culture or ignorance, but institutions and politics that are the reason why some nations are rich while others are poor (Fukuyama apud, Amazon.com, 2012). This strong connection between political and economic institutions is central and essential in a large study of great vitality on one of the crucial questions on economy (Becker, Nobel Laureate in Economics apud Amazon.com, 2012).

The central thesis of the book is that innovation, economic development and prosperity are the work of inclusive political and economic institutions, while, in contrast, extractive institutions lead to stagnation and poverty. Unfortunately, throughout history, inclusive institutions are the exception rather than the norm (Acemoglu & Robinson, 2012a).

Long-term economical growth is mainly determined by productivity growth which takes place if innovations and ideas are rewarded, creative destruction eliminates uncompetitive businesses and unhealthy business models, and authorities do not allow the installation of monopolies in economy. This system is the result of inclusive political and economic institutions and, practically, any rich country is in the top, left hand corner of the diagram in Table 1.

Table 1: Institutions types and path to nations success (Probst, 2013a; 2013b)

	Inclusive political institutions	Extractive political institutions
Inclusive economic institutions	Successful nations	? Modernisation theory
Extractive economic institutions		Unsuccessful nations

Inclusive political institutions ensure equality of individuals and a large distributions of power in society, criteria which are only fulfilled by democratic states. Inclusive economic institutions:

- allow and encourage mass participation to economic activities
- stimulate education, achieve skills and use them best
- guarantee private property and an impartial and functional juridical system
- provide public services that ensure a right institutional framework for business.
- put in first place entrepreneurial activities, innovation and creative destruction
- ensure efficient allocation of resources.

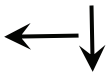
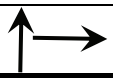
As the first country that had reached the top, left hand corner of the diagram in Table 1, it is to no surprise that the great innovations at the beginning of the Industrial Revolution took place in England, which currently has the most inclusive political and economic institutions in the world. Switching to inclusive political institutions took place gradually, being followed, but not necessarily, and only in the case of successful countries, by gradual development of inclusive economic institutions of which path is indicated by the continual arrows in diagram of Table 1 (Acemoglu & Robinson, 2012; Probst, 2013).

Guaranteeing private property is essential because if a businessman expects that all that is earned will be expropriated, stolen or robbed by taxes, there will be no stimulation to invest or innovate. Hence, innovation becomes possible due to inclusive economic institutions that support private property, generate equality of chances, encourage and allow market access to new businesses that innovate. Extractive political institutions have opposite characteristics to the inclusive ones as the political power is all in the hands of a few individuals and not distributed across society. Likewise, extractive economic institutions have opposite proprieties to inclusive ones, being designed to extract the income and wealth of many to transfer them to just a few. Institutions ultimately represent the choice of society, thus, everybody should be interested in creating the type of institutions that bring prosperity. This does not happen because:

- a small group can make huge fortunes with control of power, through expropriating the goods of others and by establishing monopolies.
- Innovation that generates technological change and economic growth is accompanied by what Schumpeter called creative destruction. Therefore, due to creative destruction, the process of economic growth and inclusive institutions that are based on it, generate both losers and winners in the political and economy scene (Acemoglu & Robinson, 2012a).

Wealthy countries are wealthy because, at a certain moment in the past three hundred years, they managed to develop inclusive institutions. These institutions have survived thanks to a virtuous circle (Table 2, the top, left hand corner of the diagram). Even though at the beginning they were inclusive only in a limited sense—fragile at times—they generated dynamics that created a positive feedback process, enhancing its inclusive character.

Table 2: Institutions types combinations and their effects(Acemoglu&Robinson, 2012b)

		Economic Institutions	
		Inclusive	Extractive
Political Institutions	Inclusive		
	Extractive		

When both political and economic institutions are extractive (the bottom, right hand corner, Table 2) we are dealing with a negative feedback, extractive political institutions model extractive economic institutions, which, in turn, guarantee that a small group can have huge wealth through the processes presented above. It is a vicious circle which determines the continuation of extractive institutions, retaining the power for the elite and persisting in underdevelopment, because innovation and creative destruction are not stimulated. In certain sectors, however, the state can generate fast economic growth transferring resources and people, as it happened in the case of the Soviet Union from 1928 to 1970, but the process is inherently limited. These vicious circles are strong but not impossible to brake, and Acemoglu & Robinson give empirical evidence in this sense (Acemoglu & Robinson, 2012a, 2012b).

The proponents of Modernization Theory often invoke the example of China, which, presumably, will follow the way indicated by the dashed arrows in Table 1. Many authoritarian regimes have registered episodes of rapid economic growth. Similar to Soviet Union before 1970, China has registered rate of enormous economic growth in recent decades, as millions of people have migrated from the poorly productive, agricultural sector, towards industry. Acemoglu and Robinson argue that innovation and sustainable growth are the prerogative of countries governed by inclusive economic and political institutions. In China sustainable growth faces obstacles specific to extractive economic and political institutions. If it does not change in a significant way its economic and political institutions (this being a very plausible hypothesis), by maintaining its current operating model, China will increase for another one or two decades, after which growth will stop (Probst, 2013b). When political institutions are extractive and the economic ones have inclusive aspects (the bottom, left hand corner, Table 2) there is always the danger for the economic institutions to become extractive (the arrow pointing to the right) and for growth to stop. This happens when those that control the political power will conclude that, instead of supporting economic progress, it is better for them to eliminate competition, to increase their extracted share or even to rob others. Distribution of power and its exercised capacity will ultimately undermine the very fundamentals of economic prosperity, unless (indicated by the arrow pointing up) the extractive political institutions become inclusive (Acemoglu & Robinson, 2012a, 2012b).

Case study: Extractive institutions in Romania

Extractive institutions in Romanian provinces before the peace of Adrianopol (1829)

During the emergence of inclusive institutions in England and of the Industrial Revolution, Romanian historical provinces were under the influence and domination of three empires – Austrian, Ottoman and Russian. These empires had totalitarian regimes until their collapse at the end of the First World War.

The three empires were governed by extractive institutions, and being afraid of creative destruction they often rejected innovation, opposing industrial development and railways (Figure 7), the Ottoman empire even opposed to print (Acemoglu & Robinson, 2012a).

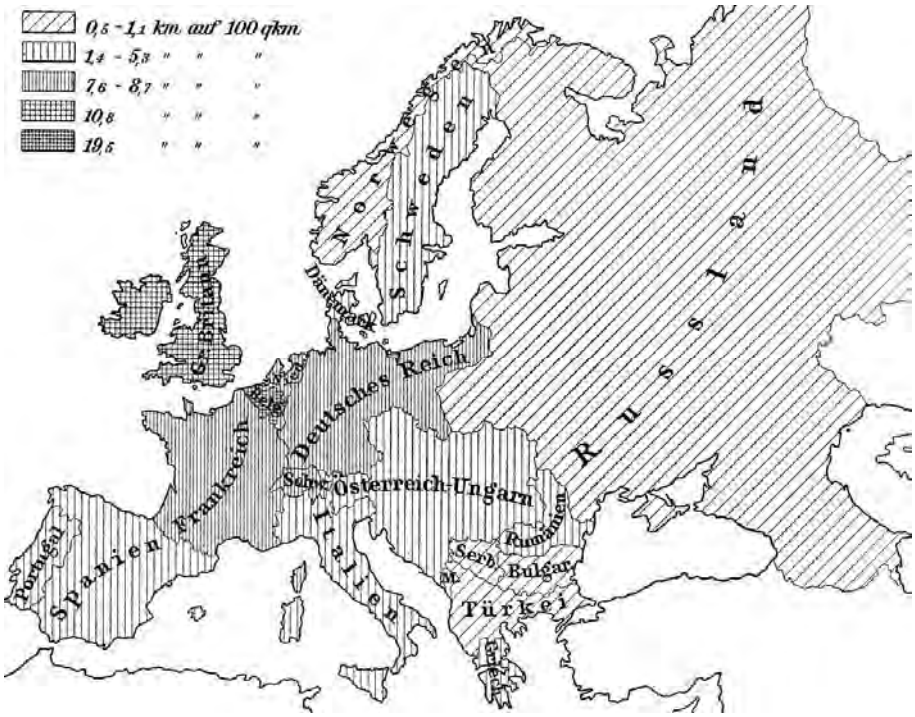


Figure 7: Density of the railway net in Europe 1896 (wikipedia.org)

Transylvania was part of the Austrian Empire. In the center of the Harrisburg economic institutions was serfdom, more and more pronounced as going toward the Eastern Empire (in Hungary the number of corvee was 104/year, in Transylvania, it was 198/year). This illustrates the modification of economic institutions (Figure 8) as the movement from Western to Eastern Europe took place (Acemoglu & Robinson, 2012a).

Figure 8: Serfdom in Europe it 1800 (Acemoglu & Robinson, 2012a)

Wallachia and Moldova were under the political and economic domination of the Ottoman Empire. Although they did not have the status of pashalic (province of the empire) their situations were harder than the ones in Transylvania. When traveling in 1824–1826 in Transylvania, Hungary, Austria and Italy, Dinicu Golescu felt a true cultural shock when he understood the catastrophic backwardness of his country. The local administration was preoccupied only to extort taxpayers revenue for the state and for officers, from the leaders to the smallest of servants. Raising the taxes was done using means of coercion specific to Barbarian times. On the other hand, seeing the functionality of post offices in Viena with all the facilities offered to its clients, he dreamt of a decent treatment for the minor applicants in his country: “so those who come awaiting repliers need tremble no longer in doors and hallways, or come twenty times for a single piece of business” (Golescu, 1826, apud Constantiniu, 2011). The quote highlights the extraction and waste of another precious resource—time—a harmful practice, unfortunately perpetuated until today.

In 1812, Bessarabia was annexed by the Russian Empire, of which extractive economic institutions were organized in such a way to enrich the tsar and nobility. Just as other extractive economic systems, the tsarist one was based on a control and coercion system of labor that took a very damaging form for the Russian serfdom (Acemoglu & Robinson, 2012a).

Extractive institutions in Romanian provinces and in Romania between the peace of Adrianopol and the Second World War

The travel notes of Dinicu Golescu reveal a first fault found between the Moldovan-Muntean gap, it is primitive, poor and an easy prey to barbaric administration and Europe, which began over the Carpathians, a Europe of civilization, order, which is preoccupied with the welfare and dignity of its citizens. The second fault is the one between the political class and the population, and he explains the tax wringing up to misery and starvation to which the tax payers were subject to. The Adrianopol Treaty (1829) sanctioned the removal of Ottoman monopoly on the trade of Danubian Principalities and opened the way for their entry in the European economic circuit. While prior to 1829, Romanian Principalities were the breadbasket of Ottoman Empire, after this date they became the breadbasket of Europe, grain export being the main source of income for the country.

The union of Moldova and Wallachia in a single state, named Romania in 1859, under the reign of Cuza, made way for the adoption of new electoral laws, which increased considerably the number of voters, the secularization of monastery property laws and for agrarian reform laws. Beyond its limit, the agrarian reform has contributed to the progress of the Romanian society, making it more stabilized against capitalism. However, the agricultural compact law, elaborated by the locum which assured the interim after Cuza's abdication, was favorable to the landowners and obliged peasants with no land to work in harsh conditions in the land of the noble. As the Romanian space was integrated to the European economic circuit, increase in grain production for exportation led to a worsening regime of duties for the peasant population lacking land ownership.

In the second half of the XIX century almost everything in the Romanian society was hostile to the bourgeois economic assertion, from the customs and traditions, which were very strong in rural world, to the continuous medieval perception of time, respectively wasting time instead of efficiently using it, according to the capitalist principle “time is money”. For the liberal and conservatory political parties, acquiring power was a goal in itself, set before achieving the political program. A clientele hungry for advantages was waiting “to get to the government” to increase their revenues by exploiting the position acquired in the state hierarchy (mayor, prefect, etc). In a country in which the political culture and civic spirit were strongly encumbered by the legacy of oriental practices, where bribes and favors were the coordinates of public life, confrontation between the parties for access to power was moving from the zone of serving the national interest to serving personal interest, a true calamity, perpetuated until today.

At the end of the First World War, in 1918, the Big Romania is created by the union of Bessarabia and Transylvania with Romania. The agrarian reform in 1921, one of the most radical one in

Eastern Europe after the First World War, having as the main consequence the disappearance of the landlord class, removed the inequitable distribution of land but led to fragmentation of property. Neither did the prior agrarian reform, nor did the present one solve the problem with peasantry, resulted from the division of small rural property by inheritance. The solution lied in the absorption of surplus rural workforce by the industry.

Looking at the census of 1930 data, the Romanian Encyclopedia drew the conclusion in 1939 that “Romania can be defined from a professional point of view by: an overwhelmingly agricultural population, with a primitive family exploitation system, a modest degree of industrialization, insufficient nonetheless (that is with all the momentum industry that has taken place in the past 3-4 years), and a rather important administrative staff. This situations justifies the low income of the peasant population, the high cost of industrial produces, slow rhythm of circulation and commerce in general - allowing for the accumulation of benefits in the hand of a limited minority - and, finally, the modest standard of living for the clerks.”

Introducing the universal, equal, direct and secret vote, enhancing the legislative power in relation to that of the King and proclaiming civil liberties, the constitution of 1923 could have been the foundation of an authentic, democratic power. Unfortunately, the old and harmful tradition of form without substance strikes again. As soon as a party is in power, the constitution becomes inoperable, the money-grabbing attitude of the electoral clientele has priority over any law, including the fundamental one. A Lack of progression is noted by Grigore Gafencu, the Minister of Foreign Affairs during the Royal dictatorship: “The peasantry mass belongs to the Orient, through poverty and ignorance, while the administrative apparatus, including the officers and magistrates, belong to the Orient, because of scrumptious laziness, coupled with a complete inability for extension (innovation n.n.) and a moral and intellectual change.” (Constantiniu, 2011).

Extractive institutions in Communist Romania

After the defeat in the Crimean War (1853-1856) Russia was removed from the mouth of the Danube in order not to jeopardize the exportation of Romanian cereal towards England. After the end of the Second World War the situation was totally different. According to the Churchill-Stalin agreement from Yalta (1945), Greece, being on an important commercial route for the British Empire, was left in the British's sphere of influence, Romania was occupied by the Soviet army. What was logical from a geographical point of view became tragedy for Romania.

The communist regimes established in Central and Eastern Europe were copies of the Soviet model, manifested with some particularities, depending on the country. Romanian communism was the closest to the original Soviet model, sometimes Romanian communist were even “more Soviets than the Soviets themselves” (Boia, 2016).

In Romania, the nationalization of “the main means of production” was declared on June 11 1948, and collectivization of agriculture was launched in 1949, ending in 1962 when, private property was completely liquidated, complete victory of socialism was proclaimed in towns and villages. Property belonging to everybody, in other words, nobody’s, theft was nowhere more simple and tempting than in communism. Those who were administrating properties, but also simple workers would take their own shares, resulting in an extraction of goods at impressive proportions. In order to force the system to work, communism introduced everywhere a system of forced labor, characterized by long shifts, excessively low wages and low productivity (within the same time, a Western worker would produce, on average, ten times more than a communist one). Additionally, unpaid labor—true slavery—was widely used: firsts were political prisoners and second was the army. However, even pupils and students were used from time to time (Boia, 2011; 2016). In the 1950s the entire political, cultural and economic elite of Romania was practically eliminated from public life, its members were arrested and subjected to forced labor, many of them dying in prisons (Agerpres.ro, 2013).

The authoritarian regime and incentives provided by the state triggered in the extractive communist institutions rapid economic growth. As these institutions could not force people to

think and have valuable ideas when subjecting them to forced labor, imprisonment or their extermination, the communist system faced a lack of innovation, and growth ceased. Growth in the extractive communist institutions, unlike the growth produced by inclusive institutions, is not sustainable because it is based on existent technologies and not on innovations that cause jumps to new generations of technology (Figure 2) and creative destruction of the old ones (Acemoglu & Robinson, 2012a).

Extractive institutions in post-communist Romania

A radiography of extractive institutions in post-communist Romania has been made by Croitoru, (2012), who described the mechanisms by which extraction occurs.

1. When the collapse of communism took place in 1989, in the economic and political domain there were no elites in the true meaning of the word, instead there was a symbiosis of bureaucracy and what became the new business elite, a symbiosis of which major purpose was to extract annuity. This opposed reforms, having as its goal a smaller and more efficient state and, consequently, diminishing extracting annuities.
2. The symbiosis that occurred after 1990 between rule makers and the new business elites captured economy, reflecting the government's failure in establishing capitalism. The delay of some adopted laws led to a deficit of true entrepreneurs and to an excess of “cardboard” entrepreneurs. Some of these entrepreneurs are part of the political clientele. They do not become rich by risking their own money—as it should be—but from budgetary “allocations”, which favors them over others. With some exceptions, Romanian entrepreneurs are left with features that were identified by Gusti in the interwar period: “they are looking to the public budget waiting for something to fall.”
3. When the authentic economic and political elites are missing, the objective of increasing income per resident comes into conflict with the objective of maximizing the extraction of annuities. The manipulation of the poor population by annuity seekers in delaying adjustments/reforms has led many times to recession or economic downturn. This having the effect of reducing the resources used to buy votes, annuity seekers were obliged to temporally accept a series of reforms demanded by the IMF, World Bank and, recently, European Union, needed for Romania to progress and the extraction of annuity to be reduced. However, the way progress took place was more “stop-and-go”, the model being able to be repeated any time. Had the policies been correctly applied and the budget deficit within the agreed limits, external funding would have been available in a greater extent, and the volume of extracted annuities would have been smaller.
4. In Romania, some economic entities anticipate that in the case of failure, they would saved by the state. Because from these salvation some extract annuities, the practice was made permanent after 1990. On the other hand, the national social security budget is subsidized by the state budget, and, locally, some authorities still rely on the state budget in order to pay their debts. In its turn, the state burdened by its own unsustainable and ineffective generosity had to be saved not only by the IMF in 1992 and 2009, but also by the private sector. Even when helped by the IMF, the public budget was forced to indirectly extract resources from the budget of other institutions by delaying payment of suppliers to local authorities and of the health system
5. The syndrome of weak budgeting restrictions weakens financial discipline of the private sector and is at the base of corruption, of extraction of annuities and of perpetuating poverty. Those that extract annuities from perpetuating this syndrome have used populism, lack of economic education and imposing false public agendas in order to prevent reforms that would lead to a straightening of budgetary restrictions.
6. In Romania, the idea of social solidarity is not very well understood, and it does not encourage efforts made to search for jobs, erodes the investment spirit and hides waste. The tax system and social benefits, including those related to unemployment and early or illness retirement, must be profoundly reformed in order to reduce the number of social assisted persons and raise work attractiveness.
7. For the extraction of annuities over 500 taxes and dozens of agents were created (some were later abolished). Annuities are being extracted even from the administrative boards where the state places people on political criteria, etc.

8. In the public sector huge bonuses unrelated to competence were granted. The reform of this sector must restore the link between remuneration and competence and remove what is left from the symbiosis between the state bureaucracy and a part of the business elite, which appeared at the beginning of the 90's with the aim of extracting annuities. (Croitoru, 2012).

Annuities seekers carry a fierce battle to maintain the extractive institutions and, sometimes, through their partners in the parliament, they pursue the change of the operational framework of the National Anti-corruption Directorate (DNA) and of the National Integrity Agency (ANI).

There are “nearly 30 projects to modify the Criminal Code and Criminal Procedure Code, many of them containing controversial proposals, meant to hinder the work of prosecutors and judges… Apparently, the parties do not sustain those bills, but do not reject the proposal either, maintaining them in stand-by for the right moment” (Digi24.ro, 2016). Also, the requests for elevating parliamentary immunity investigated to be by the DNA are systematically rejected. The leader of the largest political party, after being heard by DNA prosecutors, have said that Romanians “must decide whether instead of being supplied with water, they prefer a denunciation, whether instead of school, they prefer a criminal file, and whether instead of nice bread, they prefer handcuffs” (Mitran, 2016). In other words we are witnessing a blackmail: “if you do not let us steal, we will not honor our electoral commitments”.

Discussion and conclusions

Countries get out of poverty only when they have adequate economic institutions, of which utmost importance is private property and competitions. The probability of countries developing these type of institutions is higher when they have an open pluralist political system, in which there is a competition for political offices, a vast electoral pool and openness to new political leaders (Becker, apud, Amazon.com). The stimulants for innovation, investments and education are crucial, and institution should provide a framework for these stimulants (Kramer, 2016).

Romania is a country with its history marked by extractive institutions, a fact noted by Robinson, also (Rădulescu, 2014). Since 1990, Romania is in perpetual transition, many rules remaining “unclear, inconsistent and biased” (Croitoru, 2012). They favor the extraction of annuities and delay the emergence of a mature capitalism, and thus of the middle class. In order to improve the performance of the Romanian system of innovation, generally, to end the stagnation and poverty, first of all some rules of the political and economic game, meaning the institutions, must be changed.

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THE PRESSURE OF ECONOMIC CRISES UPON THE NECESSITY OF REDEFINING THE LABOUR PRODUCTIVITY INDICATOR

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Abstract

Purpose - Update of the labour productivity indicator, as stringent necessity in conditions of economic crisis, to streamline management decisions and improve financial results.
Methodology/Approach - We performed a static analysis of the economic process, the research being performed by microeconomic analysis, qualitative, domestic, economic financially short-term, operating with data collected during a financial year, ie 1 year.
Findings - The need for constant monitoring of the staff activity efficiency, reflected by the indicator of labour productivity, for location to a higher level in relation to the competition especially during the economic crisis.
Research limitations/Implications - implementation of the research results will be limited to the design of the software.
Practical Implications leaders of organizations -The study provides the required information concerning the labour productivity indicator in a new, more complete and useful form, with a high-impact in analysis and making favourable decisions.
Originality / value - we redefined the annual labor productivity indicator corresponding to the current economic reality by introducing the concept of INTANGIBLE PERSONNEL. As there are no other papers or studies found on the subject, the paper contributes to optimize the activity through reorganization and resizing the workforce. We determined the real labour productivity rate compared to the amount resulting from the actual type. It can be a starting point in others future studies and developments.
Key words: Labour productivity, human resources, organizational culture.

Introduction

The paper emphasizes the need to update the annual labour productivity indicator the indicator of monthly and hourly labour productivity indicator in relation to the current economic realities imposed by the economic crisis and proposes a solution in this respect. The economic crisis has forced companies to analyse very carefully the available budgets. Revision of the expression type, respectively reporting the indicator is required because of the major influence that it holds in the assessment of the economic efficiency of a company, hence, in making the correct decision that influences the financial results.

Even in normal economic conditions, adopting a style of a reliable management style is hampered by the existence of inadequate information support, incomplete or maladjusted to the complexity of the current economy complexity, namely of its evolutionary ways. More so, in times of economic crisis, urgent action must be taken to correct this situation. Stakeholders are interested in the indicators that provide a fair and complete image on the status of the entity at different times, to facilitate a comparative analysis.

1. Literature review

In his work, “Post-Capitalist Society”, Peter F. Drucker said:

„The basic economic resource—the means of production, to use the economist’s term—is no longer the capital, nor the natural resources (the economist’s “land”), nor “labour.” *It is and will be knowledge*.”

This paper reviews the theoretical and empirical literature, evaluating the labour productivity to enhance management decisions. For information about the state of research on annual labour productivity, labour productivity per employee called and we followed next steps. After decide on a topic, we identified databases and other relevant information in the field of our research. We analysed the wage and working hours that had a variety of information available at the United States Department of Labour, for both employees and employers on the subject of work hours. Labour codes define specific criteria that mirror the International Labour Organisation’s core labour standards (Mevan Jayasinghe,2016). Sustained growth in labour productivity enables an economy to produce additional goods and services without an increase in labour resources (Lucy P. Eldridge and Jennifer Price (2016)). The effect of corporate diversification on labour productivity in much firms and countries and the inefficient use of labour (Todd Mitton,2012), changes in labour productivity within sectors influenced by the dominant role for aggregate productivity growth (Kuusk, Staer and Varblane (2015)). It was important the job growth, productivity rates and the impact of restructuring or higher productivity with fewer employees (Reifman,1995)). We synthesized the literature and we identified the problem area. The review of empirical research shows that to this day, the requirements defined are often only partially met. Mostly, research focuses on effects, but very little to the importance of capacity management to easily and correctly understand working time and annual labour productivity. We focused on the causes that generate the effect.

In this regard, will require a new approach , more accurately, to the annual indicator of labour productivity through a new variable introduced Intangible Personnel.

2. Annual labour productivity (annual labour productivity per employee)

Used currently, the annual labour productivity is expressed by the relation between the turnover, or total revenues and the average number of the personnel. Taking into accont two entities A and B, both having the same turnover CA, respectively the same average number of employed personnel P_A.

We note: W_a^A – annual labour productivity entity A
W_a^B – annual labour productivity entity B

Annual labour productivity according to the turnover is expressed as it follows:
$W_a^A = \frac{CA_A}{P_A^A}$, for entity A, respectively

$W_a^B = \frac{CA_B}{P_A^B}$, for entity B, where we noted:

CA_A, CA_B turnover for entity A, respectively the one corresponding to entity B

P_A^A, P_A^B average number of the employed personnel for entity A, respectively average number of the employed personnel for entity B. If $CA_A = CA_B$, respectively P_A^A = P_A^B, we can see that the value of the annual labour productivity in both cases is the same, but it is performed during the normal work schedule, as well as additional hours, night hours, weekend or holidays. The different organization type generates different costs, involving salary increase as per the occurrence. The result is a different work efficiency.

2.1. Intangible personnel

Should within a company be performed only labour in normal conditions of 8 hours legal duration of work per day, we have:

1 employee works 8 $\frac{hours}{day}$, or

One day the work time is 8 $\frac{hours}{employee}$

Year 2016 - Average of days per month 254/12=21,16667 days;

Per month they work 21,16667 ~~days~~ * 8 $\frac{hours/~~days~~}{employee}$ = 169,33336 $\frac{hours}{employee}$;

Per year they work 12 ~~month~~ * 169,33336 $\frac{hours/~~month~~}{employee}$ = 2.032 $\frac{hours}{employee}$.

For example, should in the accounting balance be a number of 20.320 hours of labour per year under normal labour conditions with a duration of 8 hours per day, this is equivalent to the duration of the performed work time by

$\frac{20.320~~hours~~}{2.032\frac{~~hours~~}{employee}}$ = 10 employees.

We define the concept of total average number of extended personnel of the company as being the total number of personnel required as a result of calculations. There are hours worked in normal conditions, overtime, night, weekend hours, holiday hours, hours of illness, free days, unpaid leave days/hours of legal holidays. We cannot summarize these hours directly considering they are represented by different units of measurement. To calculate the actual number of hours worked, we will turn each unit of measurement, ie overtime, night, weekend hours, hours worked during public holidays by the same measurement unit, during the legal employment period. This is possible by applying the percentages that applies in these situations to calculate the cost of labour, namely:

If for overtime hours, for example, there is applied an additional increase of minimum p%, as specified by the "Labour Code", than for $X_{overtime}$ additional hours we get:

$O^{overtime}_{\text{worked in legal working time}}$ = $X_{overtime}$ * (1+$\frac{p}{100}$), where we noted by

$O^{overtime}_{\text{worked in legal working time}}$ work hours during additional hours turned into work hours worked during the legal work time considering the generated costs, and

$X_{overtime}$ number of overtime hours

If for the hours worked in nightime conditions, for example, it is appied an additional increase of minimum p%, as specified by the "Labour code", than for X_{night} night hours we add the p% increase:

$O^{night}_{\text{worked in legal working time}}$ = X_{night} * $\frac{p}{100}$, where we noted by

$O^{night}_{\text{worked in legal working time}}$ work hours worked within the night hours turned into hours worked during the legal work time considering the generated costs, and

X_{night} number of hours worked in nightime conditions

If for work hours worked during the weekend we apply and additional increase of p%, as specified by the "Labour Code", than for $X_{weekend}$ hours made during the weekend we have:

$O^{weekend}_{\text{worked in legal working time}} = X_{weekend} * (1+\frac{p}{100})$, where we noted by

$O^{weekend}_{\text{worked in legal working time}}$ hours worked during the weekend turned into hours work during the legal work time considering the generated costs, and

$X_{weekend}$ number of hours worked during the weekend

If for work hours worked during the legal holidays we apply and additional increase of p%, as specified by the "Labour Code", than for $X_{sarbatori}$ hours made during the legal holidays, we have:

$O^{legal\,holidays}_{\text{worked in legal working time}} = X_{\text{legal holidays}} * (1+\frac{p}{100})$, where we noted by

$O^{legal\,holidays}_{\text{worked in legal working time}}$ work hours made during the legal holidays tunred into hours worked during the legal work time considering the generated costs, and

$X_{\text{legal holidays}}$ number of hours worked during the legal hollidays

We define $NOML_e^q$ the extended number of work hours appropriately worked to a work time of q hours per day.

$NOML_e^q = O_{\text{worked in legal working time/q}} + O^{overtime}_{\text{worked in legal working time/q}} + O^{night}_{\text{worked in legal working time/q}} + O^{weekend}_{\text{worked in legal working time/q}} + O^{legal\,holidays}_{\text{worked in legal working time/q}}$, with the mention that in case of performing the activity in unusual or special conditions, corresponding to a work time of 8 hours per day, $O^{overtime}_{\text{worked in legal working time/q}} = 0$.

In $NOML_e^q$ we quantified both hours worked during normal work q hours a day and night overtime, weekend and public holidays where there was performed work turned in legal work time of q hours a day. We defined the extensive number of work hours worked within the legal work time q hours a day, as the sum of all hours worked by the personnel of the company considering that for the calculation of hours worked during the legal work time and the application of corresponding percentage increases according to the law:

$$NOML_e^q = t^L + \sum_{i=1}^{k} t_i^S * \left(1+\frac{p_i}{100}\right) + \sum_{i=1}^{l} t_i^N * \left(\frac{p_i}{100}\right) + \sum_{i=1}^{m} t_i^W * \left(1+\frac{p_i}{100}\right) + \sum_{i=1}^{n} t_i^{Sa} * \left(\frac{p_i}{100}\right)$$

unde
t^L represent the work hours worked during the normal work time;
t_i^S represents the overtime worked in relation to a salary percentage increase equal to p_i ;
k represents the type of aovertime whereupon there is applied a salary increase percentage;
t_i^N represents the night overtime worked in relation to a percentage of salary increase of p_i ;
l represents the type of night hours worked whereupon it is applied a salary increase percentage;
t_i^W represents the number of hours worked during the weekend related to a percentage of salary increase equal to p_i ;
m represents the type of hours worked during the weekend whereupon there is applied a salary increase percentage;
t_i^{Sa} represents the number of hours worked during the legal holidays related to a percentage increase equal to p_i ;
n represents the number of hours worked during the legal holidays whereupon there is applied a salary increase percentage;

For example the average of the total extended personnel number resulting from the calculation in relation to a legal work time of 8 hours per day becomes:

$P_t^8 = \frac{NOML_s^8}{2032} \frac{\cancel{hours}}{\frac{\cancel{hours}}{employee}} = \frac{NOML_s^8}{2032}$ employees

The calculation formula of the total number of extended personnel:

$P_t^e = \sum_{i=1}^{n} P_t^i$

where

P_t^e represents the average number of total extended personnel resulting from the calculation and having divisions with different work hours per day;

P_t^i represents the average number of the total extended personnel resulting from the calculation in case of a legal work hour of I hours;

It is possible to calculate the number of intangible personnel as it follows:

$P_I^q = P_t^q - P_A^q$, where

P_I^q represents the average number of the intangible personnel with a work time duration of q hours per day;

P_t^q represents the average number of the total extended personnel resulting from calculation in case of a legal work time of q hours;

P_A^q represents the average number of employed personnel, with a worktime duration of q hours per day.

Another way of expressing the number of intangible employees is:

$P_I = P_t - P_A$

where

P_I represents the average number of intangible personnel of the company

P_t represents the average number of total extended personnel of the company resulting from the calculation

P_A represents the medium number of the company's employees

We define the notion of intangible personnel as the number of personnel equal with the difference between the medium number of the company's total extended personnel rezulting by calculus and the medium number of employed personnel. One element of the intangible personnel is equivalent to an employee. We note by P_I^q, the medium number of the intangible personnel's elements corresponding to a work time frame of q hours. In conclusion, we divide the personnel in:

- physical existing personnel, represented by employees;
- theoretical existing personnel, resulted through calculations.

2.2. Extended annual work productivity

The formula of the extended annual work productivity, noted W_a^e, becomes:

$W_a^e = \frac{CA}{P_t}$, or expressed according to the medium number of the intangible personnel, is:

$W_a^e = \frac{CA}{P_A + P_I}$

A raise of the intangible personnel determines a decrease of work productivity. Reorganization of the company's activity implies a raise of the employed personnel only when it has the effect of fast decreasing the number of intangible personnel.

Extended annual work productivity becomes a function whose variation depends of the intangible personnel. Improvement of the company's performances where we consider the turnover CA as a constant, and the employed personnel P_A another constant, it is made by analyzing the function:

$f(x) = \frac{CA}{P_A + x}$, where x represents the medium number of the intangible personnel

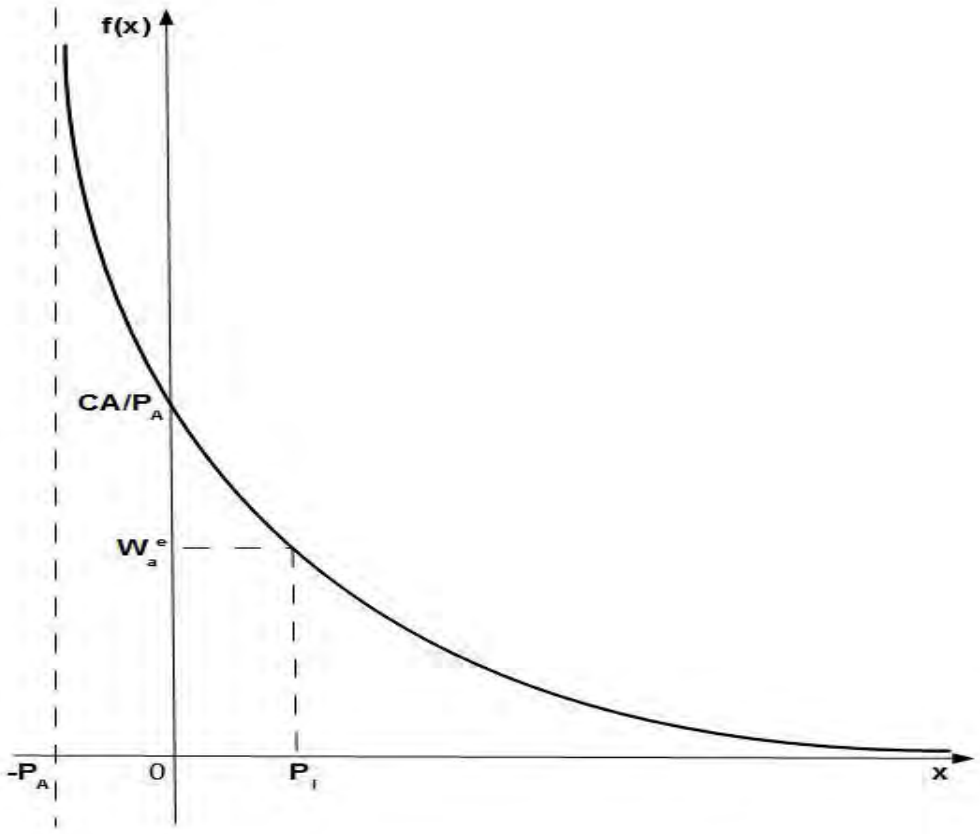

Figure 1 – Graphic representation of the annual extended labour productivity

For x=0 function f(x) has the maximum value. We observe that this maximum value is in fact the value expressed through the actual formula of the work productivity's definition, which is $W_a = \frac{CA}{P_A}$. It results from Figure 1 that the real value of the annual work productivity is situated on the curve that leaves from the coordonates point $(0;\frac{CA}{P_A})$ and will have a decreasing value along with the increase of the medium number's value of the intangible personnel P_I .

2.3. Real annual work productivity rate

We define the REAL ANNUAL WORK PRODUCTIVITY RATE which we note R_a^W as being the percentage value of extended annual work productivity, from the annual work productivity's value defined in the actual form. We expressed the real value of the annual work productivity by means of the formula for extended annual work productivity W_a^e .

The formula of the real percentage of annual work productivity becomes:

$R_a^W = \frac{W_a^e}{W_a} \cdot 100$ % , thus

$R_a^W\ (P_I) = \frac{\frac{CA}{P_A + P_I}}{\frac{CA}{P_A}} \cdot 100$ %, or $R_a^W\ (P_I) = \frac{P_A}{P_A + P_I} \cdot 100$ %

The real percentage of work productivity is independent of the turnover, the total incomes or the added value, depending only on the medium number of the employed personnel and the medium number of the intangible personnel.

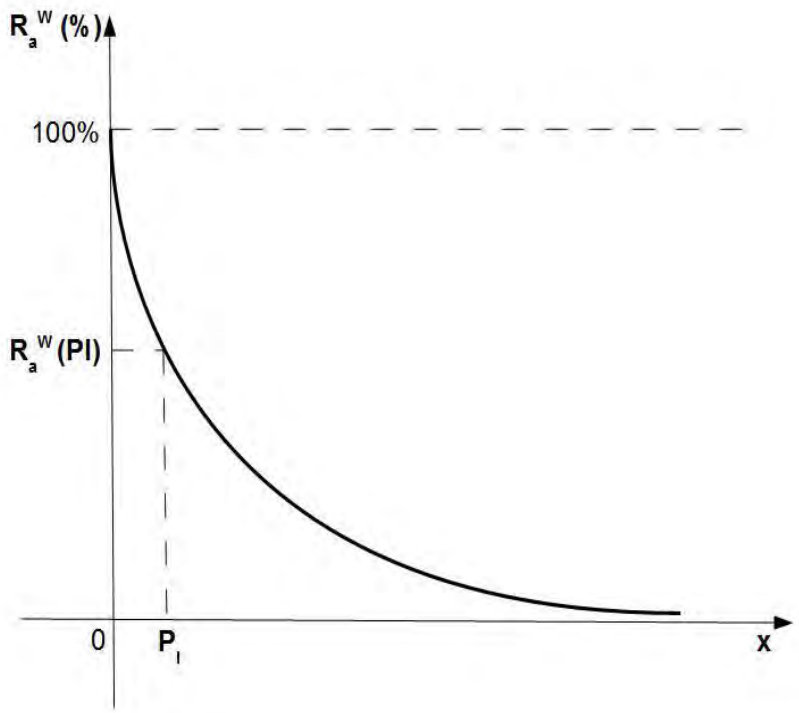

Figure 2 – Real percentage of the annual labour productivity from the maximum declared value in its current state

3. Discussion and conclusions

Within any company, the costs for the personnel are considerable, influencing the financial results. The streamline of the personnel's work can be done through a good work organization, respectively the permanent monitoring of the modification of results obtained after different decisions of activity improvement. Regarding that work productivity represents a measure of the personnel's efficiency in performing activities, from the point of view of a company's management, it is important to look after the cost levels involved.

By introducing the notion of intangible personnel, the capacity of apprehension of decision factors is increased, regarding the impact of the payroll in streamlining the company's activity, providing the necessary informations in order to take correct decisions regarding the reorganization of the activity, respectively the resizing of personnel for the purpose of continuously result improvement. The intangible personnel offers the posibility to find an optimal version between its number and the one of employed personnel regarding the decrease of expenses for obtaining the same results. We consider the intangible personnel an important variable, necessary within the econonic- financial indicators. The medium number of intangible personnel has accentuated the fact that the actual way of calculation of annual work productivity expressed its maximum value and not its real value. To accentuate this error, we defined the real annual work productivity and the real percentage of annual work productivity in relation to the existed reported value.

3.1. Notes

It is requiredto develop an organizational culture based on the streamline of the management decision accentuated by a correct substantiation and as complete as possible. By emphasizing the quality of information, we suggested an update of the actual form of the annual work productivity indicator, often used in our country, as in other countries of the European Union, respectively the United States of America.

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FACTORS INFLUENCING THE ATTRACTIVENESS OF THE UNIVERSITY

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Abstract

Purpose *– This paper aims on to analyse the influence factors on the university's attractiveness, focusing on specific curricular and extracurricular issues.*
Methodology/approach *– The research is based on the data collected through the questionnaire method from 728 respondents from five Romanian universities. The data is analysed through the SPSS statistical program by means of the factorial analysis.*
Findings *– It has been founded and demonstrated that beside the curricular aspects, such as study offer, quality of teaching, also extracurricular issues, such as sports activities, career orientation activities or recreational activities influence the university's attractiveness.*
Research limitations/implications *– This research can be extended to a various sample, taking into consideration more responses in a larger period of time. A comparison between specific universities could be also an opportunity to study, in order to increase the accuracy of the results.*
Practical implications *– The practical implications consist in the undertaken study case and in the method of analysing the collected data, by means of the factorial analysis.*
Originality/value *– The originality consists of the notoriety and importance of the analysed subject, namely the influence factors on the university's attractiveness, which is studied by means of the factorial analysis, approach that meets some gaps in the specialty literature.*
Key words: *factorial analysis, influence, university's attractiveness*

Introduction

In the context of globalization, educational competitiveness and in a time of crisis, the higher education institutions emphasize on meeting the growing expectations and needs of students, and thus increase the quality of education and universities' attractiveness. (Sopon, Ilies, Petean, 2013)

The management of crisis has felt its presence when it comes to companies' economic financial health and growth, but also concerning the higher education institutions, regarding the quality of teaching, students' interest and satisfaction or universities' facilities. In the context of globalization and change, the competiveness in the field of university institutions has amplified. In order to face the actual challenges, threats and competiveness, the university's attractiveness has increased in importance.

According to some studies in the university field, the universities' attractiveness and university choice of students are influenced by the university's study offer, good facilities and equipment, ranking, university location (Hachmeister, Hennings, 2007), quality of courses, leisure activities, teaching methods or lack of tuition fee (Krawietz, Heine, 2007), emphasizing the need of studying the influence of specific factors on the university's attractiveness.

The students' satisfaction is influenced by the surroundings and facilities. The surroundings take into account the cultural, research, laboratory, educational and sports area. Other factors relate to

research and scientific journals, processes, and technology education, faculty members and staff, students, alumni and financial side. (Fereydoon, 2010)

The concept of university marketing is increasingly disseminated because of the increased competition between universities. Through the university marketing the universities' attractiveness and the students' satisfaction can be increased. (Meffert, Müller-Böling, 2007)

The noticeable trend in the university field is related to the correlation between the universities' attractiveness and specific elements of quality management in higher education, such as quality of teaching. Thus, increasing the quality of teaching, improving the curricular and extracurricular offer could be ways to attract potential students, increase students' satisfaction and improve university management performance. (Dumitrașcu, Șerban, 2013)

Other international studies attest to the fact that the involvement in extracurricular activities provides a unique environment for developing a sense of involvement of students in universities by increasing the sense of community, enhancing self-confidence and developing active learning. According to an American study, student engagement has a major influence on the experiences of students in higher education, contributing to a foundation of skills needed to live a successful, rewarding life after university. Students acquire these skills by engaging in educational activities, which helps them to new competencies' development, personal development and lifelong learning. (Evans, Anderson, 2012)

The specialty literature indicates that students have the opportunity to connect with their institution when it offers opportunities for recreation and leisure. Opportunities for leisure activities on campus were identified as a catalyst for the development of specific components related to student engagement, including social interaction and team spirit development, thus enhancing the sense of belonging to the academic environment. The involvement in extracurricular activities gives students the opportunity to learn how to engage in their environment actively and positively. (Evans, Anderson, 2012)

To improve students' satisfaction and thus to increase the universities' attractiveness, universities should focus on strengthening the students' commitment through: academic challenges, active and engaged learning process, students' integration in academic environment and enrichment of university experiences. (Evans, Anderson,2012)

According to another study, extracurricular activities of leisure, tourism, sports determine the development of social relations, broaden cultural horizons, have a positive effect on health, power of work, improve each individual's knowledge, contributes to greater spiritual satisfaction and to the creation of social relationships between people. (Iarca, Lupu, 2011)

Among international bibliographic research a great concern is observed for the university performance of students, their satisfaction, for analyzing factors influencing the study motivation of students, their university choice, but also for the influence of extracurricular activities on motivation and study achievements of students and university marketing studies. (Dumitrașcu, Șerban, 2013).

Research methodology

Through the undertaken research 728 students from five Romanian universities were questioned, "Lucian Blaga" University of Sibiu, Politehnica University Timișoara, Babeș Bolyai University of Cluj-Napoca, Bucharest University of Economic Studies and Politehnica University Bucharest. The data was collected through the questionnaire method. The influence between diverse factors and universities' attractiveness has been analysed using the SPSS statistical program, by means of multivariate analysis, using the factorial analysis. This analysis takes into consideration the responses related to the influence factors that students take into consideration when it comes to universities' attractiveness. Through the factorial analysis a size reduction of the initial variables can be achieved by incorporating specific variable sets in their initial defined factors. Variables

with a systematically interdependency, with common elements can be grouped in specific factors. (Catoiu, 2009).

Factorial analysis regarding the influence factors on the university's attractiveness

This factorial analysis treats the influence of diverse factors on the universities' attractiveness. In order to justify the need of the factorial analysis, the descriptive analysis, the Bartlett's test of sphericity, the Kaiser-Meyer-Olkin test and the correlation matrix are needed, at a certain number of degrees of freedom and a certain level of significance. The Kaiser-Meyer-Olkin index (KMO) measures how adequate the sample is for the application of the factorial analysis. The Bartlett's test is another indication of the level of correlation between variables. A correlation matrix is represented by an arrangement of numbers representing the correlation coefficients between the variables.

After following the descriptive analysis using SPSS it is noted that the value obtained in the Kaiser-Meyer-Olkin test is significantly above 0.50, all correlation coefficients have a high value and the significance level obtained in the Bartlett sphericity test is 0. This justifies the need for the factorial analysis application.

After applying the principal component analysis, it is noted that initially, before applying the method of rotation, 60.4% of the total variance is explained by two factors, the first factor being of the highest importance, this explaining 47.7% of total.

Through the Scree Plot diagram the factors' spread is noticed. Following the application of the rotation method of the factors originally extracted, in order to simplify the grouping of variables and to choose the highest values for the correlation coefficients of the rotation matrix, correlations between the variables and factors were determined, and thus, the variables' dispersion on the following factors has been determined:

Factor 1- Extracurricular issues:

- Seminars, workshops, events in the field of career orientation;
- Leisure time opportunities;
- Cultural activities' offer;
- Sports' offer;
- Language courses' offer.

Factor 2- Curricular issues:

- Study offer;
- Balance between theory and practice;
- Possibility of an exchanging experience abroad;
- Quality of teaching;
- International and national recognition of the university;
- University's reputation.

The first factor refers to extracurricular aspects and explains 47.7% of the total variance. It treats correlations between seminars, workshops, career events, leisure opportunities, cultural activities' offer, sports activities', language courses' offer and university's attractiveness, which is strongly influenced by the extracurricular activities' offer within the university.

The second factor explains the influence of the curricular issues on the university's attractiveness, namely the existence of certain correlations between study offer, balance between theory and practice, possibility of an exchanging experience abroad, quality of teaching, national and international recognition of the university, university's reputation and attractiveness.

This factorial analysis demonstrates the influence of the curricular and extracurricular activities on the university's attractiveness. The students' choice of study location depends on the leisure

activities' offer in the field of recreation, career guidance, sports, but also on the quality of teaching, study offer, reputation and recognition of the university and others.

Conclusions and recommendations

Specific correlations between diverse factors and university's attractiveness have been demonstrated by means of the factorial analysis. In general, the importance of the university' attractiveness has been highlighted, aspect that can increase the university management performance, students' satisfaction, can attract potential students and can gain a competitive advantage in a time of crisis, in a context of change and in a high competitive environment in the higher education sector.

It has been statistically demonstrated that factors such as curricular aspects and extracurricular aspects influence the university's attractiveness. Students consider that curricular factors, such as university's reputation, quality of teaching or study offer have a high influence on the attractiveness of a university. Extracurricular factors have also a high importance when it comes to university image. Specific factors such as seminars, workshops, events in the field of career orientation, sports activities have been highlighted.

Besides the influence of certain factors such as quality of teaching, study offer, university's facilities, university location, the leisure activities seem to have an important role when it comes to students' satisfaction and universities' attractiveness. Unfortunately, many students do not find the time required to participate in extracurricular activities. It is recommended to improve the university curricula, in order to increase the involvement of students, offering them opportunities, improving physical and mental health, involving students and thus improving academic performance. These can be achieved through an appropriate extracurricular activities' structure. (Evans, Anderson, 2012)

Determining the factors that influence the university's attractiveness has a high influence on improving the quality of higher education, students' satisfaction, students' integration in the academic environment and university management performance.

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ENTREPRENEURIAL AWARENESS OF FUTURE BUSINESS ENGINEERS – A PILOT STUDY

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Abstract

Purpose *– the entrepreneurial education with its multidimensional nature determines the Higher Education institutions and other stakeholders to pay carefully attention to the core values indispensable for creating business which enable the sustainable development of the society.*
Methodology/approach *- the pilot study undertaken by the authors was focused on investigating the undergraduate students self-perceptions related to the entrepreneurship values and skills which help them to turns ideas into action, becoming thus future business engineers' entrepreneurs.*
Findings *– the research results emphasize the gap between the evolution of business engineer profession and the students' awareness related to entrepreneurship benefits.*
Research limitations/implications *– the study was limited to the students perceptions and do not take into consideration other stakeholders opinions concerning the entrepreneurial endeavours.*
Practical implications *– the authors paid attention on how adopting and leveraging worthy education endeavours in entrepreneurship are stimulating benefits for the future business engineers by becoming innovative entrepreneurs.*
Originality/value *– the study attempts to investigate the concerns of business engineering education related to the current labor market trends and the related effect on entrepreneurial education of future engineers.*
Key words: *entrepreneurship, engineering education, social responsibility.*

Introduction

"The 2011 EU Communication on the modernization agenda for Higher Education" marks out the responsibility of education to fulfill its role in society as driver of economic development, by overcoming the labor market bottlenecks and by creating stronger links to business communities and civil society (European Commission, 2011).

As European Commission highlighted in "Rethinking Education: Investing in skills for better socio-economic outcomes", the need to deliver innovation and entrepreneurship competences to recent graduates is fulfilled by making the cooperation between universities and businesses normal features, since the productivity, competitiveness, and innovations are enhanced by the entrepreneurial and civic skills of students (European Commission, 2012).

The paper aims to investigate the growing needs of preparing the future generations of business engineers to create and sustain social value through the aid of entrepreneurial behaviour, as a key reaction to the evolution of social and environmental concerns.

The study begins with a secondary research on the competitive literature on entrepreneurship to capture the inner connections between economic and social pressures. The authors have

undertaken a quantitatively research aims at assessing the awareness of entrepreneurial mind-set of business engineering students with respect to: attitudes, skills and knowledge.

Research problem

"The 2015 Joint Report - new priorities for European cooperation in education and training 2020" underlines the needs to recalibrate the education systems to enhance social cohesions by promoting equity, active citizenship and intercultural competence within European borders, (European Commission, 2015).

The entrepreneurship, seen as the transversal competence that transcends the boundaries of multiple domains, has to be embraced by the education system by going beyond the examples of good practices and by augmenting the knowledge base on university-business cooperation. This cooperation mechanism may ensure the effective patterns to get the acquisition of innovative knowledge in order to raise the employability level of the learners.

According to new developments, the entrepreneurial behavior generates important benefits for the society in terms of value creation for economy, culture or society. It helps citizens to expand their ability and thinking, to actively participate in the society, to manage their professional and personal lives and also to step up the value creation processes (FFE-YE, 2012).

Worthy to mention, the study ″Entrepreneurship in the European Union and beyond″, investigating the factors affecting the willingness to become entrepreneurs, brought to light that 62% of EU respondents marked the personal independence or self-fulfillment as key driver, seconded by the freedom to choose the place and time to work (30%), and better income prospects (16%). Almost a half of respondents (47%) agreed that the school education helped them to understand the role of entrepreneurs on society by developing a sense of initiative and a sort of entrepreneurial attitude viewed as an aspiration to become self-employed (European Commission Eurobarometer, 2012).

According to "Country Report 2016", Romania is encountering significant labor market difficulties because of the decreasing trend of the employment rate of the recent graduates (e.g. from 81.4% in 2011 to 74.2% in 2014) and of the slow process of adaptation of university curricula and teaching practices to labor-market. This context designates a major concern related to the relevance of higher education to the labor market, suggesting that universities are still insufficiently responsive, and cooperation with business and social partners is still limited. The effects may be seen through the insufficiently developed soft skills such as entrepreneurship and digital skills of the young tertiary graduates (European Commission, 2016).

The report on the Romanian perceptions regarding the entrepreneurial involvement pointed out that almost more than a half (58%) believes that self-employment is desirable, whereas 30% of respondents are considering it as a very desirable option and 28% are viewing entrepreneurial involvement as being fairly desirable. In contrast to this, at the EU level, one-third of people (32%) viewed self-employment as desirable and only 11% of respondents thought that it is very desirable (European Commission Eurobarometer, 2012).

The Small Business Act (SBA) for Europe has defined the desirable framework conditions for enterprises since Europe is facing difficulties arisen for the low productivity and slowly growth than the United States. For instance, in the US, surviving firms on average increase their employment by 60% by their seventh year, while employment gains among surviving firms in Europe are in the order of 10% to 20% (European Commission, 2008).

To overcome the failures undermining the operating conditions for SMEs, especially in area like finance, research and innovation, the SBA for Europe underlines the power of the society's recognition of entrepreneurs as a key driver for economic development. This entrepreneurial awareness are nourishing the people tendency to start a new business, to take risks and to start value creating initiatives, and thereby should be supported by the policy makers, media also by

the whole environment in which entrepreneurship is rewarded (European Commission, 2008; 2011).

Under these circumstances, the education area, especially the business engineering education gains valuable insights because it has to overcome the challenges arisen from the interdisciplinary character, going beyond the technical knowledge and preparing students for the future business market requirements.

Thereby, the study undertaken among 58 undergraduate students in business engineering at a technical university in Romania was focused on investigating the students' perceptions about the key variables which shape their entrepreneurial awareness: risks propensity, self-efficacy, and need for achievement, structural behavior, and creativity, analyzing capacity, motivation, networking and adaptability (European Parliament and the Council, 2006). In this light, table 1 designates the core variables responsible for creating and developing a truly entrepreneurial awareness of business engineering students, as future entrepreneurs.

Table 1. The conceptual framework of variables accountable for entrepreneurial awareness

Variables	Descriptors
Risk propensity	Taking up challenges and initiating processes that create value
Self-efficacy	Staying focused, believing in own idea and waiting to take it forward
Need for achievement	Concern for personal achievement rather than the rewards for success
Structural behavior	Acting and working in a structured manner, preserving when facing with setbacks and obstacles
Creativity	Adopting views from different perspectives, connecting ideas, exploring innovative approaches
Analyzing capacity	Analyzing problems and separating main and side issues
Motivation	Being patient and keeping trying to achieve long-term aims, being resilient under pressure, adversity and temporary failure
Networking	Creating, maintaining, and developing contacts with others, solving conflicts and facing up competition positively
Adaptability	Being actively involved in a action-reaction process: observation, interpretation, anticipation and response.

According to the latest researches, the drivers responsible for building a robust entrepreneurial awareness are contributing to the entrepreneurship competence understood as a set of attitudes, skills, and knowledge. The attitudes are motivators for performance such as risk propensity, self-efficiency and need for achievement, and skills are understood as cognitive or practical capability of people to use the know-how and apply knowledge to complete tasks and solve problems. The scholars embraced the structural behavior, creativity, critical thinking, perseverance, networking, and adaptability as the relevant cognitive skills for the modern entrepreneurial capacity (Bacigalupo et al., 2016; European Parliament and the Council, 2008).

The study has been therefore designed toward the twofold objectives: 1) to identify and assess the students' self-perceptions about the core entrepreneurship drivers and 2) to assess the students understandings about the role and requirements of the business engineering.

To further accomplish the research objectives, the methodology was seconded by establishing the research variables, the scales of measurements and the scaling techniques. As a summary, table 2 shows the structure of the research, including the scaling techniques used to yield the highest level of information feasible.

Table 2. The research framework for measuring the entrepreneurial awareness

Research objectives	Research variables	Operational variables	Measurement scales	Scaling techniques
O1. Identifying and assessing the students self-perceptions about the core entrepreneurship drivers	Attitudes	Risk propensity	Interval scale	Non-comparative scaling technique based on Likert scale
		Self-efficacy		
		Need for achievement		
	Skills	Structural behavior	Interval scale	
		Creativity		
		Analyzing capacity		
		Motivation		
		Networking		
		Adaptability		
O2. Assessing the students understandings about the role and requirements of the business engineering	Knowledge	Understanding the role and requirements of business engineering	Interval scale	
Demographic characteristics of the respondents	Gender	Feminine, masculine	Nominal scale	Frequency distribution
	Study year	3rd and 4th year		
	Grade level	≤ 7; 7-8; 9-10		

The entrepreneurial awareness was measured by asking respondents to quantify their opinion regarding the core entrepreneurship drivers in terms of attitudes, skills, and knowledge about the business engineering, with the aid of the Likert scale. The description of statements needed for measuring the research variables is displayed in table 3.

Table 3. The measurement grid related to drivers of entrepreneurial awareness

Operational variables	code	Description of statements
Risk propensity	R1	I like to take risks in various actions
	R2	If I identify an opportunity I take action to fruitfully exploit it
Self-efficacy	S1	I am self-awareness and I have feeling of empowerment to identify solutions for stressing issues
	S2	I belief in my own ability to perform certain tasks, successfully
Need for achievement	NA1	When I belief in an idea I pursue to fulfill it even if I get troubles
	NA2	I am interested in performing well without taking into considerations the attitudinal feedback from my colleagues
Structural behavior	SB1	I have the ability to persevered whenever faced with setbacks and obstacles
	SB2	I always act in a structured manner establishing realistic plans
Creativity	C1	Whenever I faced I try out new possibilities to resolve problems
	C2	I like to observe the environment and to connect new ideas
Analyzing capacity	A1	When I analyze a situation I can decipher easily the own advantages and disadvantages
	A2	I feel comfortable while I identifying the core message from an information package
	A3	When I analyze a situation I pay carefully attention to details
Motivation	M1	I like to encourage and coach my colleagues in their endeavors
	M2	I have the ability to motivate and persuade my colleagues to act and behave as I wish
Networking	N1	I strive to meet key persons for my life, on a permanent bases
	N2	I strive to augment the number of people I know
Adaptability	AD1	I am a flexible person adjusting my reaction according to the context
	AD2	I easily anticipate the future behaviors of my colleagues
Understanding the role and requirements of business engineering	K1	The courses helped me to better understand the role of business engineering profession
	K2	I belief that educational process helped to develop the sense of initiative (acquiring appropriate positive attitudes)

Results and findings

The study undertaken was questionnaire based and has an adequate pattern starting with questions for identifying the self-perception with respect to entrepreneurial awareness, and finishing with questions for respondents' demographic characteristics. The questionnaire was distributed to 125 students enrolled in the third and fourth year of the study program and only the 58 business engineering students have filled the questionnaires.

The sample structure in terms of the gender of the respondents was rather unbalanced (74% feminine and 26% masculine), the pattern was consisted of 48% students enrolled in the third year of studies and 52 % enrolled in the fourth year of studies. As far as the previous grade level, 60% of the students were excellent graded (between 9 and 10 mark), 29% of them were well graded (between 8 and 9 mark), and 11% of students were graded as satisfactory (less than 8 mark).

The students were asked to judge and mark their opinions regarding the statements contributing to the assessment of key variables which shape the entrepreneurial awareness: risks propensity, self-efficacy, and need for achievement, structural behavior, creativity, analyzing capacity, motivation, networking and adaptability. The respondents assigned 1 point for unimportant statement to 5 points for those extremely important, and the results of data analysis are presented in table 4 and 5.

Table 4. The weighted scores for statements measuring the attitudes

Variables code	1 points	2 points	3 points	4 points	5 points	Weighted score
R1	1	1	11	28	17	4.02
R2	0	1	13	29	16	4.09
S1	0	5	2	30	21	4.16
S2	0	0	3	22	33	4.52
NA1	0	1	5	27	25	4.31
NA2	0	1	4	13	40	4.59

Table 5. The weighted scores for statements measuring the skills and knowledge

Variables code	1 points	2 points	3 points	4 points	5 points	Weighted score
SB1	2	0	3	24	29	4.34
SB2	2	3	8	28	16	3.86
C1	0	6	8	32	12	3.86
C2	0	1	8	22	27	4.29
A1	0	1	8	26	23	4.22
A2	1	5	7	27	18	3.97
A3	0	4	7	24	23	4.14
M1	4	5	9	21	19	3.79
M2	3	10	26	11	8	3.19
N1	0	4	11	25	18	3.98
N2	2	2	14	24	16	3.86
AD1	0	7	9	24	18	3.91
AD2	2	8	13	19	16	3.67
K1	2	12	11	28	5	3.38
K2	4	5	9	29	11	3.66

As table 4 suggests, the students from business engineering seem to be comfortable with uncertainty, to take initiatives to achieve their goals (R1=4.02; R2=4.09), being aware of their

ability to perform certain tasks, successfully (S1=4.16, S2=4.52). Their opinion related to the entrepreneurial effort is grounded on a high need for achievement (NA2=4.59).

The assessment of students' entrepreneurial skills, table 5, reveals a robust awareness about their capacity to be resilient under pressure and temporary setbacks (SB1=4.34), seconded by a moderate capacity to seizes the new solutions to economic, cultural or social problems (C1=3.86) and a moderate belief in their capacity to split the problems in core and subsidiary informational packages (A2=3.97).

Not surprisingly because of their youthfulness, the business engineering students averagely weigh their ability to motivate and persuade colleagues to act as they wish (M2=3.19), having moderate confidence in their capacity to inspire and to enthuse relevant stakeholders (M1=3.79).

The respondents moderately quantify their networking capacity (N1=3.98) and seem not to be very confident in their capacity to adjust the reaction, being a flexible person and anticipating future reactions of the relevant stakeholders (AD1=3.91).

Last but not least, the students understanding about the role and requirements of business engineering seems to be fairly moderate since they tend to be indifferent about the usefulness of educational process for acquiring appropriate entrepreneurial attitudes and skills (K2=3.66).

The results of data analysis are supporting the substantial role of responsibility thinking and awareness emerged from gaining a larger understanding of how issues related to society allow future business engineers to act as entrepreneurs and develop innovative solutions and mobilize available resources.

The key consequences of the paper emerge from the major role of business engineering education in preparing business engineers for the forthcoming marketplace requirements in a way that can improve the people quality of life.

Therefore, the entrepreneurial thinking is helping students, the future business engineers, to boarder understand the context of business market issues from a cross-disciplinary view that transcend technical disciplines, fields and theories.

Conclusions

The results of the study attempt to identify and analyze the students' self-perception about the key entrepreneurship values and skills acquired and developed during their academic activities, within the context of the Higher Education provider in the field of business engineering and management in our country.

The business engineering education has acquired a particular importance thanks to its mission of preparing students with technical knowledge and also of educating them with the right mix of attitudes and skills needed to act in an entrepreneurial way. With a high relevance for the current patterns of living, working, learning, and consuming, the business engineering education has to establish and develop better links between the students' expectations and perceptions and the forthcoming market requirements related to entrepreneurial mind-set and behaviors.

The main responsibilities are directly liked to HE institutions and business which have to work together to drive economic development to enrich teaching and improve entrepreneurial learning experiences for students and teachers so as to cultivate students' mind-sets to set up innovation businesses, and equipping them with relevant entrepreneurial skills.

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EDUCATIONAL APPROACHES (INFRAGAMING CONCEPT BASED) OF THE CIVIL EMERGENCIES MANAGEMENT CAUSED BY INCIDENTS RELATED TO CRITICAL INFRASTRUCTURES

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Abstract

Purpose *– The recent events occurred at the international level bring into focus of specialists the social dimension of management, and also, the responsibility to solve out the increasing diversified crisis, which go beyond the military field. Through the proposed topic, correlated with the central theme of the conference, we would like to bring into focus the awareness of the real need for operationalizing the proactive paradigm instead of the reactive one, strictly associated nowadays to crises management generated by civil emergencies.*

Methodology/approach *- Our approach brings to specialists' attention the educational factor as a basis for projecting scientific methods of intervention in this domain. The best practices in this field are also discussed and analyzed by highlighting the achieving advantages through implementation and use of "Serious Games". We also emphasize some aspects at the perception level of the analyzed domain, coming up from application of a dedicated survey.*

Findings *– There is a necessity in the educational domain the approaching fact related to this vast topic, not only in specialized institutions linked to security, defense and public order field, but also in the civilian organizations into distinctive areas of competence. Nevertheless, we bring into discussion the functional and theoretical value of the Infranomics concept, asserting in order to be developed and implemented into the educational programs.*

Research limitations/implications *– In an increasing turbulent international context (refugee crisis, terrorist attacks on civilian facilities, etc.), the problem is not to provide evidence of the existing interdependencies between these domains but rather, to identify the most significant of them, with the effective potential to provide solutions for minimizing the effects and the likelihood of their occurrence, in the case of emerging security incidents at the level of critical infrastructure.*

Practical implications *– It is highlighted the idea that the performance level of the interventions of specialized authorities, in case of the occurrence of socio-technical events in the area of critical systems (for functionality of the society), should be correlated with the education degree and awareness of population related to this sector.*

Originality/value *– The added real value of this article is derived from the fact that there are provided relevant arguments in order to synthesize some courses of action (e.g. infragaming) in the educational field, as a real support for civil emergency management caused by possible incidents specific to critical infrastructure. It is highlighted the idea that the performance level of the interventions of specialized authorities, in case of the occurrence of socio-technical events in the area of critical systems (for functionality of the society), should be correlated with the education degree and awareness of population related to this sector.*

Key words: *crises management, critical infrastructure, civil emergencies, education, serious games*

1. Basic Considerations

As basic consideration, in accordance with the proposed title for this article, we must emphasize that in many cases, critical infrastructure malfunctions lead to situations of civil emergencies. The high number of people affected by these incidents justifies the necessity of having a performant operational system (competent institutions, intervention procedures, functional relationships between institutions etc.) which can react in an efficient manner. The fact that a number of threats to critical infrastructure are found in the emergency management framework, led to the fundamental reasoning that protecting critical infrastructure contributes to the protection of the population, property and environment, as fundamental attributes of emergency management (Andriciuc, 2009). In the NATO defense planning domain there is a sub-domain which regulates civil emergencies and which has as main sectors: civil protection transportation, industrial resources, public health, food and water. Since its creation (1988), the Euro-Atlantic Disaster Response Coordination Centre took an active role in interventions specialized in terrorism acts with the use of chemicals, providing support for supplies in case of natural disasters and catastrophes and organizing simulated training exercises in order to increase response effectiveness to this kind of situations (https://ec.europa.eu/jrc/en/research-topic/disaster-risk-management). The subject is topical for the EU as well. The European Commission launched the European Programme for Critical Infrastructure Protection, through which manages this issue, underlining the fact that critical infrastructure destroyed or dam-aged by natural disasters, criminal actions and terrorism may have negative consequences for the security and welfare of EU citizens (https://ec.europa.eu/jrc/en/research-topic/critical-infrastructure-protection). In support of these efforts at the Joint Research Centre there is a concern for the development of laboratories and facilities for research. Through these facilities they hope to provide and improve the knowledge and the expertise necessary to increase the protection of critical infra-structure against all kind of threats.

Secondly, in terms of education, the development of theoretical studies, of publications and conferences are on an ascending path (to be noted EUCONCIP Final Conference, the theme *Critical Infrastructures and Emergency Management*). In the same time specialized seminars come to complement and add more value to the experimental research undertaken within universities, research and development institutions or independent researchers. Conceptually speaking, referring to the ideas recently developed with a high value potential, and in terms of contribution to initiate solutions to various difficult problems, the term infranomics constitutes a landmark for the research conducted by the team in preparing this article: "Infranomics is the body of disciplines supporting the analysis and decision-making regarding the metasystem (eg, the totality of the technical components, stakeholders, mindframe, legal constraints, etc. composing the set of infrastructures). Infranomics is the set of theories, assumptions, models, methods, and associated scientific and technical tools required for studying the conception, design, development, implementation, operation, administration, maintenance, service supply, and resilience of the metasystem." (Gheorghe and Masera, 2010: 421). Therefore, it takes an interdisciplinary approach by which to practically obtain a high interoperability level of complex infrastructure structures, called in fact systems of systems of civil emergency management. We highlight that the term previously defined has been presented in 2006 at the conference on *Disaster Risk Management*.

2. Case study on the subject related to necessary educational methodologies

From the study based on a questionnaire that aimed to investigate the students' knowledge level of basic issues specific to critical infrastructure (the forth series) who attended the dedicated postgraduate program run by Land Forces Academy, we mention a few essential ideas arising from the processing of the 45 questionnaires declared valid for analysis. The results in full of this study were already disseminated. Atlas.ti program was used for processing the subjects' responses related to open item Q10. This software includes a number of tools that facilitate qualitative analysis of large amounts of text and information structuring in a systematic and formal way specific to statistical approach. To facilitate the integration and interpretation of data, the researcher has a component that allows properties viewing of researched phenomena and their relationships. In the first stage of using this tool, all respondents' answers were entered into a

Word-type document that was introduced on the Atlas.ti program as the primary document. In the second phase for each answer was assigned a code and at the end of it 17 codes were generated. These were grouped into five families as fol-lows: education methods used in critical infrastructure protection, risks associated with critical infrastructure protection, operational management, resources and legislation for critical infrastructure protection.

The distribution of codes within each code family is given as follows. Thus, the code family called "Methods used in education in the field of critical infrastructure protection" has the largest number of codes: practical applications, examples, theoretical presentations, scenarios, case studies, free discussions in the classroom and role playing. Within code family called "Risks associated to critical infrastructure protection" is highlighted the following five codes: assessment, analysis, typology, prevention and management of risks associated with the critical infrastructure protection. Within code family called "Operational management" can be found the following three codes: human resources management, exercise management and best practices. For detailed outlining related to how this software works, the Figure no. 1 shows the decomposition way of the first code family which was mentioned above, where it can be explicitly seen the scenario component.

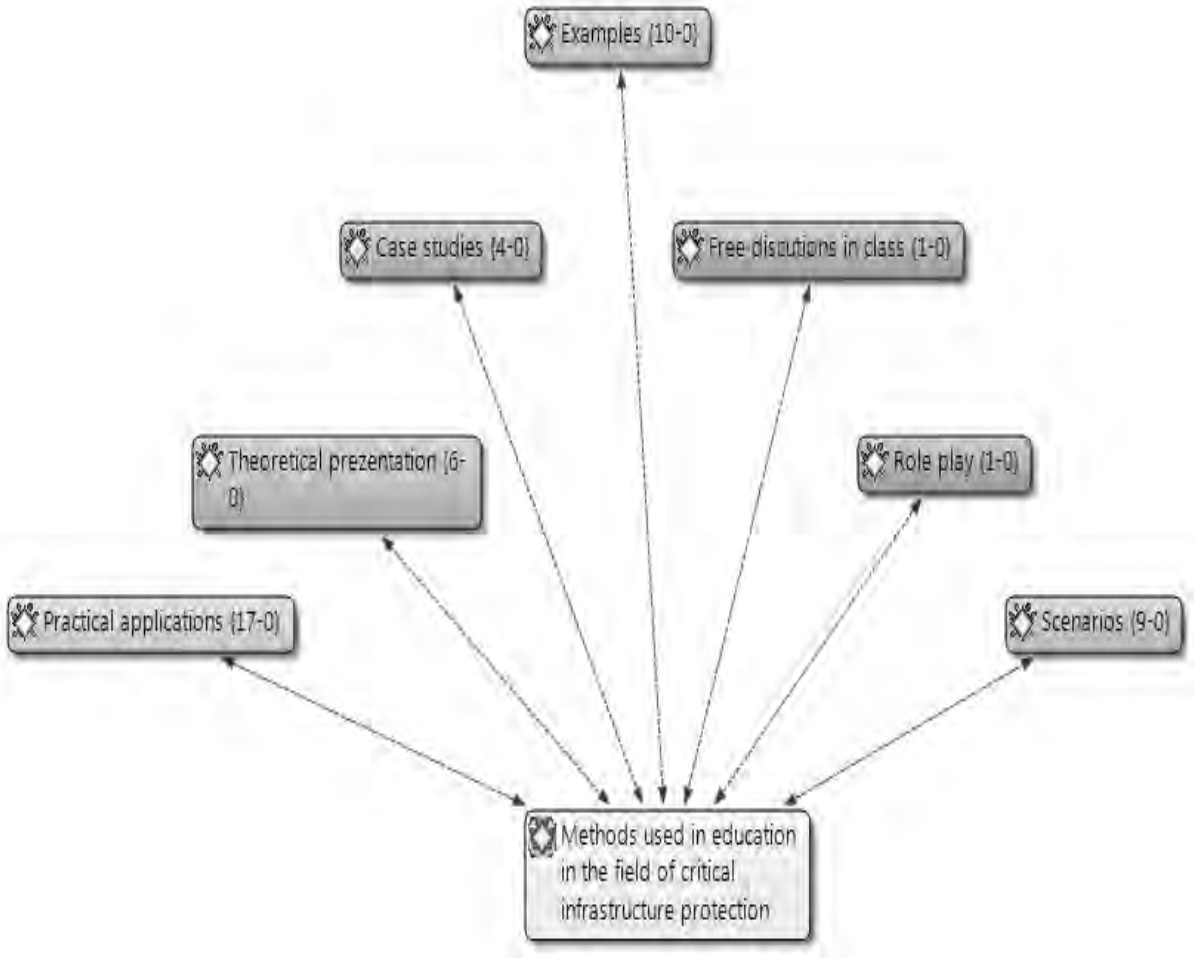

Figure no. 1. The most necessary educational methods useful in the field of critical infrastructure

Deepening analysis revealed co-occurrence of some identified codes. The highest re-sults (Table no. 1) were obtained by following codes: practical applications, best practices, risk assessment, examples, scenarios, legislation and the management exercising. Co-occurrence analysis highlighted a strong association between the following categories: best procedures-practical applications, best procedures-legislation, best procedures-examples, legislation-management exercising, and legislation-practical applications. In summary, it was identified the need for

practical applications, examples and scenarios regarding, in particular, to the management of associated risks (assessment, analysis, best practices in the field).

Table no.1. Co-occurrence variants' values of educational techniques applied within analyzed domain

	Best practices	Case studies	Examples	Exercise of management	Legislation	Practical applications	Risk analysis	Risk evaluation	Risk typology	Scenarios	Theoretical presentation	Totals:
Best practices	0	0	0,04	0,03	0	0,1	0	0	0	0	0	**0,17**
Case studies	0	0	0	0	0	0	0,11	0,14	0	0	0	**0,25**
Examples	0,04	0	0	0	0	0,17	0	0	0,14	0,19	0,07	**0,61**
Exercise of mana-gement	0,03	0	0	0	0,04	0,03	0	0	0	0	0	**0,1**
Legislation	0	0	0	0,04	0	0,04	0	0	0	0	0	**0,07**
Practical applications	0,1	0	0,17	0,03	0,04	0	0	0	0	0	0,1	**0,44**
Risk analysis	0	0,11	0	0	0	0	0	0,06	0	0,25	0	**0,42**
Risk evaluation	0	0,14	0	0	0	0	0,06	0	0	0	0	**0,2**
Risk typology	0	0	0,14	0	0	0	0	0	0	0,15	0	**0,3**
Scenarios	0	0	0,19	0	0	0	0,25	0	0,15	0	0	**0,59**
Theoretical presentation	0	0	0,07	0	0	0,1	0	0	0	0	0	**0,16**

Therefore, taking into account the development trend of knowledge based society, the sce-narios are a particular interest subject which has to be properly integrated into training programs and the best way, in our view, is given by the use of gaming-type applications.

3. Infragaming – as a component of infranomics and way of obtaining expertise in the field

We strongly believe in learning through fun and games. Growing knowledge and developing appropriate skills is critical to an effective capability for all those employed in the M&S (Modeling&Simulation). In this section, first of all, we have underlined the *Infranomics* concept. Then, based on the M&S field evolvement, its use in developing the specific training programs in many functioning areas, *Serious Game* concept and the linkage between M&S and critical infrastructure protection domain, lead us to define another important concept in our view – *infragaming*.

The notion of Infranomics was already introduced in the first chapter. As was mentioned, the origin of this notion, as a concept, comes from an ad-hoc meeting held in 2004 in Christchurch, New Zeeland, following a well-recognized meeting in Rotorua on "Resiliency of Critical Infrastructure". Nowadays, neither authorities, nor industrial or academic bodies could afford to ignore the level of risks accompanying the implementation of the new generation of infrastructures, surely based on services delivered through them. (Gheorghe and Masera, 2010: 421-427). Infrastructure affects everyone. This is the main reason that some of the infrastructures are categorized as critical.

In the framework depicted above, all of the important domains (energy, commerce, finance, communications, health, mobility, education, security, etc.) cannot be independently analysis. The texture of interconnected structures (each one of them being system-of-systems by itself) is developing and evolving into a meta-system.

A serious game or applied game is a game designed for a primary purpose other than pure entertainment. The "serious" adjective is generally pretended to refer to products used by industries like defense, education, scientific exploration, health care, emergency management, city planning, engineering, and politics. (https://en.wikipedia.org/wiki/Serious_game)

What is a game? According to Baranowski and coworkers (2008) a game is a physical or mental contest with a goal or objective, played according to a framework, or rules, that determines what a player can and cannot do inside a game world. Unlike, a video game is any game played on a digital device and encompasses a wide range of games played at arcades, over the Internet on personal computers, or on dedicated game consoles (e.g., Nintendo GameCube, Sony PlayStation, or Microsoft Xbox) or handheld units (e.g., Nintendo Game Boy, Sony PSP).

The game industry is linked to two powerful industries: Medias and entertainment and information technologies. The new vague or "serious games" in education, armament and governmental institutions tends to confirm this tendency. There are called serious games, not because other games are not, but because game is used in a pedagogical way for political, social, marketing, economical, environmental or humanitarian purposes. The game *Darfur is dying* made to understand better the conflict in Darfur, or *Food Force*, a game created by the UN in which users play to distribute food are few examples. Similarly, artists create games that are social or political critics. *McDonald the video game*, the satire of Mac Donald restaurants by the group of Italian activist artists Molle Industria or the games of Gonzalo Frasca *September 12* or *Madrid* prove the capacity of games to expose ideas. (Arvers, 2009)

Julian Alvarez (2007) revealed the fact that, the serious game is a, "computer application, which aims to combine aspects of both serious as, but not limited to, teaching, learning, communication, or further information with entertainment from the spring game. Such an association has intended to depart from mere entertainment." Subsequently, the definitions cited associated with the consultation of several examples of serious games, have allowed to Mouaheb H. and the collaborators (2012:5503) to highlight the following characteristics of this type of media: “an object teaching priorities (the serious game is a learning process); a means of entertainment in parallel (the serious game is a game); a technology of information and communication (the serious game is an application of video game technologies); it targets multiple learning objectives (to teach, train, educate, heal); it applies in almost every field (education, vocational training, health, defense, politics, advertising, business); it is intended for all age groups (children, adolescents, adults and older people)”.

It is important also for this topic the observation (mentioned in the special literature) that others authors who contribute with published papers in the domain of analyzing serious games introduced the concept of serious games as a well-acknowledged alternative method to discourse and delivering current engineering or management-related research findings to society (Mettle and Pinto, 2015).

Based on Zyda’ approach, in the figure no. 2, we emphasized the characteristics of Game and Serious game, their connection, and how they could be used in order to support the cycle data – expertise in the Critical infrastructure domain.

As the Infranomics and Serious Games already made the framework of this chapter, it’s time to introduce another concept related to Critical Infrastructure field – Infragaming. We strongly believe this notion of Infragaming should be developed and implemented in order to support the SMEs (Subject Matter Expert) in the field of critical infrastructure protection (CIP). In our view, Infragaming as a component of Infranomics allows to future SME in Critical Infrastructure Protection field to get experience and training in order to increase their skills by using a special

designed serious game and simulation in accordance with a specific tailored scenario. As a consequence, all personnel which are involved in the assessment of protection and Operator Security Plan production for any declared critical infrastructure have the opportunity and possibility to put in practice their knowledge in order to increase own experience and become an expert in the field.

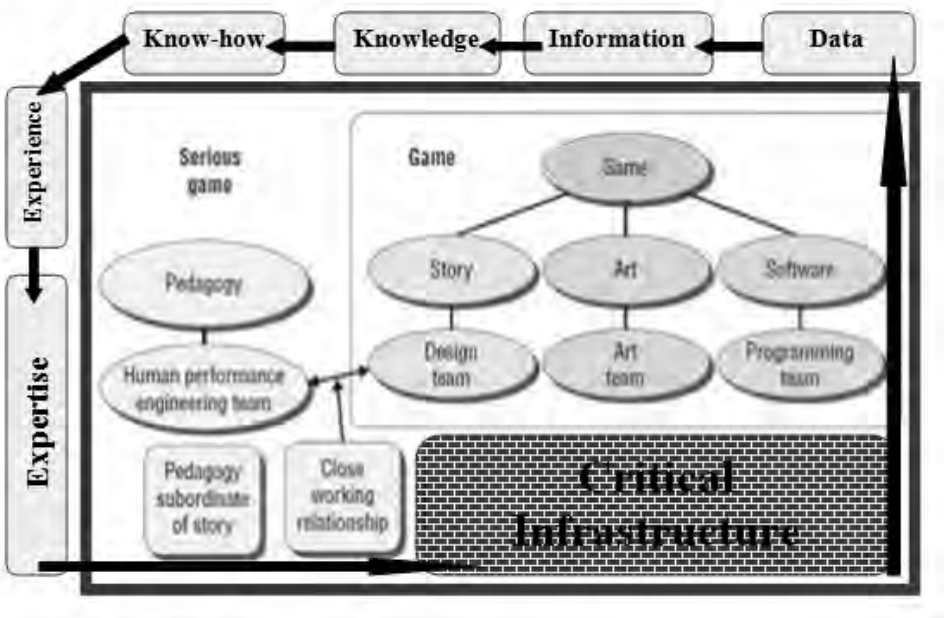

Figure no. 2. The relationship between Game-Serious game-Critical Infrastructures

Any developer of an infragame should take in consideration, as a minimum, following: the type of critical infrastructure; connections between designed critical infrastructure and other types; existing legislation in the field; ways of assessing the critical infrastructure; ways to protect the critical infrastructure; means to intervene as necessary; tools for assessing the impact when a critical infrastructure become vulnerable; possibilities to play in the infragame all the authorities interventions have to be involved and deal with consequences on the population when protection for a critical infrastructures is compromised; tools to build a Consequence Management Plan (CMP).

By using infragames connected with simulation (RVC – real, virtual, constructive), for a training event in the Critical Infrastructure Protection field is better to have besides an appropriate scenario the following SME personnel (as a minimum): planners, a person conducting the exercise (PCE); an exercise director (EXDIR); an observer/controller/trainer (O/C/T) team; an after action review (AAR) team. Those teams have to comply with tailored scenario and to follow their SOPs (standing operating procedures).

4. Conclusions

The trend of development of knowledge-based economy is irreversible, networking and accentuated computerization of public services is a reality which will bring major changes in the management of civil emergencies. The Organizational Culture in this field, mostly based on a stratified reductionism in which the operational sequence observation-orientation-decision-assessment or find-fix-finish-exploit-analyse type is no longer sufficient because the gap between complicated and complex attributes is growing in favor of the second one. Subsequently, it is justified, a relevant consideration of some modern ideas related to training in the area of critical infrastructure protection that include e-learning and m-education trends, widely accepted by current society, the concept proposed by authors (infragaming) taking into account such realities.

One can consider implementing the following educational development measures: the establishment of a national/regional training center for specialists; introduction of a discipline of study, Infranomics, as a subject at bachelor's degree level (engineering profile, especially); development of dedicated Masters Degree studies; technological education for civil emergencies at undergraduate level. For all these things Infragaming component can be just an addition, which facilitates the acquisition of knowledge and skills training in the field.

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ASPECTS RELATING TO THE EVOLUTION OF PRINTING INDUSTRY

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Abstract

Purpose *– This article shows the dynamics of development of the printing industry after the half of the XV century, century when in Western Europe fundamental transformations had taken place in terms of the printing industry development. The development of that period, coincided with the development of European languages, culture, education and promulgation of laws and shaping of mentalities that have considerably influenced the development of the printing press.*
Methodology/approach *– For this article we carried out research activities like references and considering the title and article we processed statistical data on the appearance and development of printing industry.*
Findings *– Determining the current level of upsurge of the printing industry as well as the changes suffered by this industry since his emergence to nowadays. New methods of work used in printing industry.*
Research limitations/implications *-a large part of the information's written in this article are acquired by us through active participation in a printing press and from many discussions with workers.*
Practical implications *– In this article we have identified the foundations of printing industry and we contributed with new ideas to the development of printing industry.*
Originality/value *– the information is checked by us from safe sources and contain the truth about the industry.*
Key words: *Printing industry, emergence, development.*

Introduction

The article focuses on the role of the printing press and its development as a desire for more communication and storage of information for a long time. Language development, evolution of the raw materials used by humans led to the appearance and development of printing since ancient times.

The pattern has emerged around the year 3,000 i.e.n. with first images copied. At that time, the copying process was done with the help of cylindrical seals used to print images on wax tablets.

The origins of this process are found in Mesopotamian civilization, and its results are the first forms of art that have managed to survive for over time.

In China and Egypt were used similar processes and tools, and in Europe and India, printing textile materials preceded the release profile on paper or papyrus.

From the appearance of the first forms of printing, digital printing until, at the end of the last century, the evolution of the pattern has gone through a series of steps that have adapted to the requirements of the times and technology.

In this chapter we will deal with the main stages of development of the printing press and the geographical areas in which they were expressed. The cultural mix has had a significant contribution to the construction of the current methods of printing.

Although attempts in the history of Oriental pattern are notable, the man who revolutionized the technique and printing to a new level of evolution, opening them the road to modernism was Johannes Gutenberg, blacksmith originally from german city of Mainz. Around the year 1439 Gutenberg develops the European technology of the printing press and its rapid spread triggered all over the continent in just a decade, and this was the beginning of the pattern in Europe.

His innovations were not limited to the printing press and the mobile pattern. Smith and goldsmith by trade, he used his abilities and developed an alloy known as metal for printing that ensure quality and enhanced durability of printed materials. Also, he created a new type of ink that ensures a better quality of the printed matter.

With the spread of computers has appeared the first printed use of truly destined for the table. HP LaserJet 8ppm solution was launched in 1984, the date after which began to appear similar models from other manufacturers.

A notable role that he had printer has been popularizing the concept of work and desktop publishing with the introduction of Apple Laser Writer for Macintoth and Aldous PageMaker in 1985.

3D printing (2003)-the most advanced printing technique discovered up to the present time. 3D printing technology represents the manufacturing of a solid object from a digital model, the physical object and get through the superimposition of successive layers of material. This type of printing is done with special devices, along with developments in technology have become increasingly more accessible to the general public.

3D printing technique has become very useful in areas such as jewelry, footwear, industrial design, architecture, engineering, construction, automotive, aerospace, medicine, dentistry, or education.

Discussion and conclusions

Even if the evolution of the technology and the Internet has led to a digitalization in the field of advertising, marketing printed materials remained on a strong position when it comes to drafting a strategy for marketing and communication.

The reason that the printed matter remain preferred by advertisers, even though the online environment provides efficient facilities in turn and it is easy to understand by any human. Man is a social being, which dosen't stands still in front of the computer, on display at the invasion of advertising that comes through the internet cable, but stands out in the world, goes on a trip by car, circulating through town, buys a newspaper, a magazine. No matter how efficient it would be online advertising, printed materials have their effect on the consumer when it is not at the computer. Companies rely on printed methods to keep in touch with their target audience when it leaves the virtual environment.

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BIBLIOGRAPHIC STUDY ON THE MANAGERS' ROLES IN THE PROCESS OF ORGANIZATIONAL CHANGE

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Abstract

Purpose – The purpose of article is to improve the process of change by developing, based on bibliographic study, a methodology of research on managers' roles in the successful implementation of organizational change process.
Methodology/approach – The methodological plan of the work was done in consultation of specialty literature, based on which they have identified three areas of research that have set the goal and stages of research and have led to a model for research on individual direction.
Findings – Following the bibliographic study it has found that the literature shows some limitations and even the lack of empirical studies regarding both the importance of the roles of managers in the process of organizational change and the link between them.
Research limitations/implications – The limitations of this research are summed up only to developing a research methodology based on bibliographic study that is based on a qualitative and quantitative surveys later.
Practical implications – Further application of this methodology serves as the basis to design a management model for overcoming resistance to change that contribute to the successful implementation of the change process.
Originality/value – The paper highlights the importance of the roles of managers, because they through the manifestation of roles influence human resource of the organization to see a change in a certain way, whether negative or positive.
Key words: changing, managers, role

Introduction

In this era, of the turbulence created by the financial and economic crisis, of globalization, of significant evolution of technology, of competition in a market that is in a constant motion, the permanent changes of legislation, both nationally and internationally, the organizations can only survive by adaptation and acceptance of the change (Brown & Eisenhardt, 1997; Burke, 2002; Burns, 2005a; Huy, 2002). In this context, the implementation of change within organizations has significant importance and, in the same time, put the managers of organizations face to face with the challenges often difficult. Extensive research in organizational change offered theoretical and practical perspectives into the dynamics of change and success in implementing (Armenakis & Bedeian, 1999; Oreg, Vakola, and Armenakis, 2011; Weick & Quinn, 1999), but, despite intensive research efforts, organizations in changing often are failing to implement a change or achieving desired outcomes (Burke, 2002; Burns, 2005b). The failure rate of organizational change, sometimes 80% or greater, suggests that further studies are really needed in the management of change by identifying and explaining the roles of managers during an organizational change (Burke, 2002; Burns, 2005c; Ford, Ford, & D'Amelio, 2008). Palmer (2004) argues that employees should be considered as cornerstones in the process of organizational change, because the resistance of employees is one of the biggest problems that shows organizations.

Thus, the research aims to anlizeze the roles that managers of companies in our country need to achieve successfully the implementation of organizational change.

Methodology

The research framework of this study is developed based on bibliographical research, aiming to the elaboration of research methodology on managers' roles in the successful implementation of organizational change process. So, after the bibliographical study we identified three research directions key needed to the study, namely:

1. Identifying the roles of managers on organizational change.
2. The research of the manifestation way of the roles of influence that managers have on the process of organizational change.
3. The manifestation effect of the roles of managers on organizational change.

The methodological plan of the work was done on the basis of the three areas previously established for that were set out the objectives and steps that have led to a research model for each direction of research in part as follows:

For the first research direction, namely "Identifying the roles of managers on organizational change" was proposed the following objective: The analyze of literature specialized on managers' roles in the organizational change process, and as steps these are shown in Figure 1.

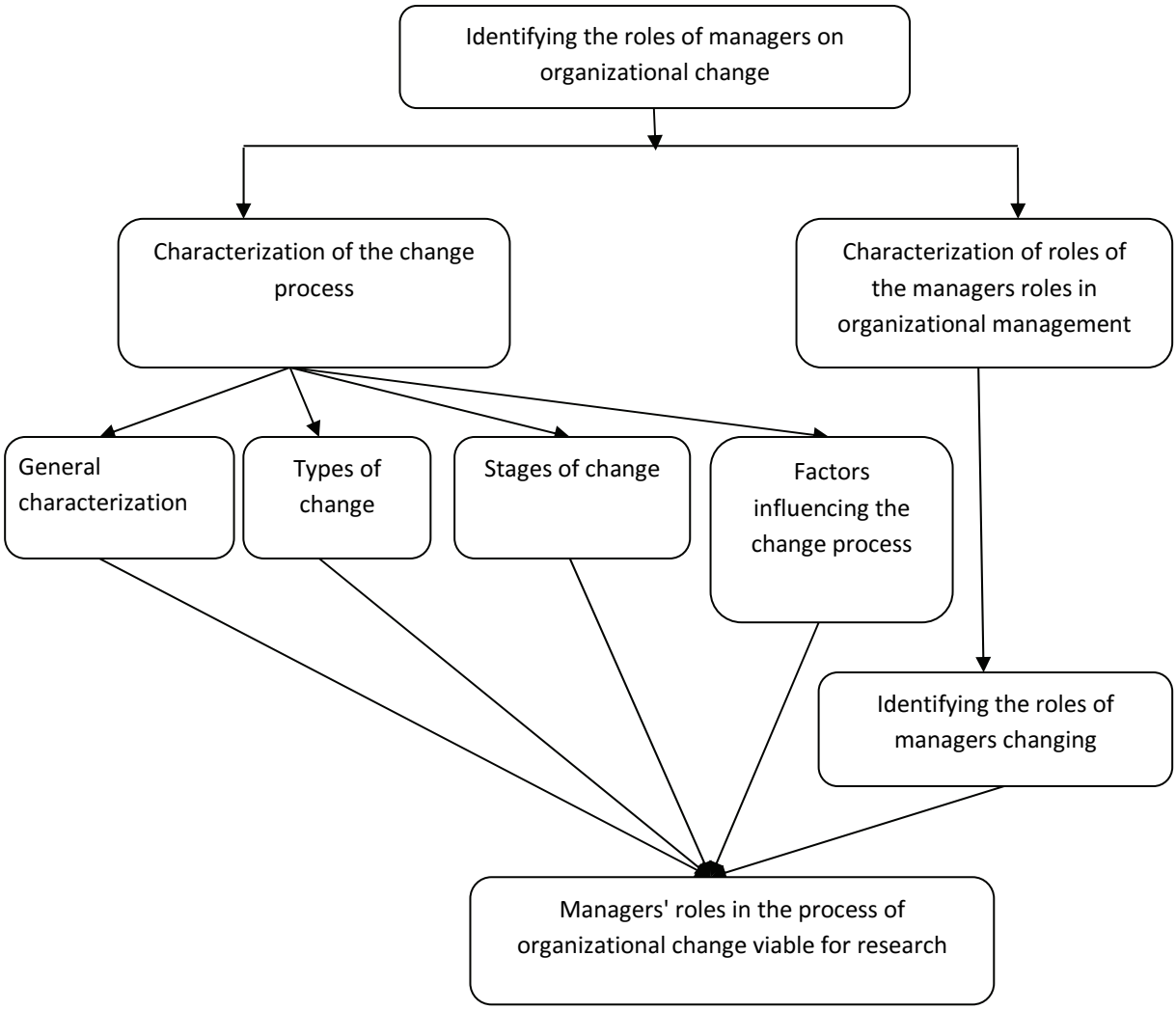

Figure 1. Stages to be taken for identifying roles of the managers (own model)

Within this direction by following the steps identified in Figure 1, was found the actual mechanism of operation of the change process, what is the role of every manager in the process according to each stage of the process and I identified those managerial roles relevant to research. The first stage of the change process, namely the opening stage, correspond to the role of researcher, initiator, lawyer, provider of viable resources to senior managers; for the second stage, namely the stage of change, correspond to the role of interpreter of change and the role of coach of execution staff viable for middle managers and frontline managers; and for the last stage, namely the closing stage, correspond to the evaluator role, viable for senior managers (Nica, 2008).

For the 2nd direction of research, entitled "The research of the way of manifestation of the influence roles of managers about organizational change process" was proposed the objective: Designing and implementing a methodology for investigating the roles of managers with implications for organizational change. Within this direction, based on the manager's viable roles identified above, there is provided a quantitative research based on sampling investigation and interview and questionnaire as a tool. To meet this objective we have identified in Figure 2 the following stages to be taken: formulating conceptual framework of research of roles of managers, the establishment of method to investigate, implementation and application of the questionnaire to identify the roles of managers who have an impact on organizational change.

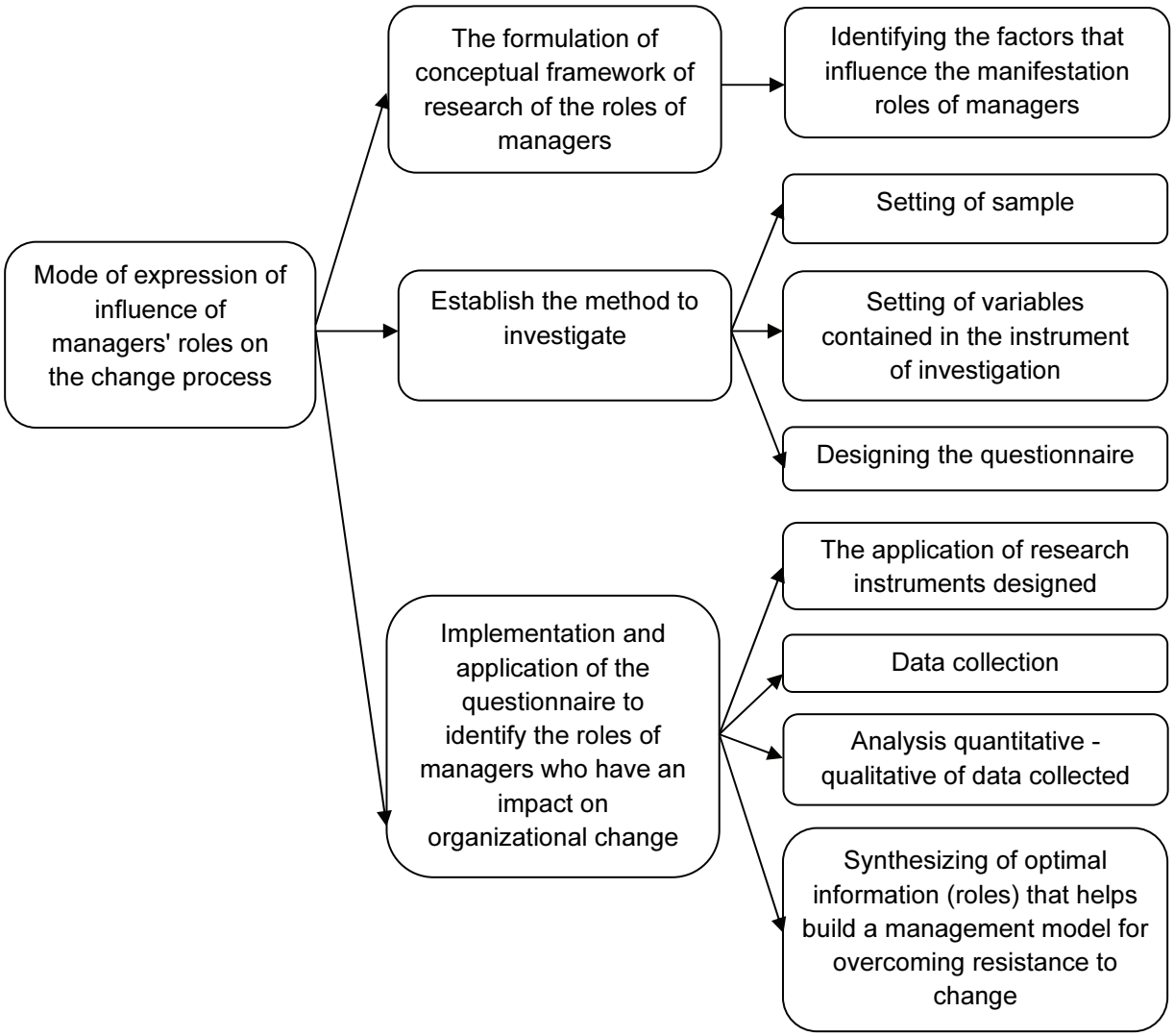

Figure 2. Stages to be taken for investigate the mode of expression that influence the managers' roles (own model)

For the 3rd direction of research, entitled "The manifestation effect of the managers about the process of organizational change" was proposed the objective: "Designing a management model to improve the process of change by reducing resistance to change. Within this direction the manifestation of the roles is given by success or failure of the change process and the mediator factor is resistance to change. In the specialty literature, resistance to change is identified as the reason for the failure of many change initiatives (Lawrence, 1954; Maurer, 1996; Waddell and Sohal, 1998). To meet this objective we have identified in Figure 3 the stages to be taken. So then after applying this methodology we will obtain a managerial model for overcoming resistance to change.

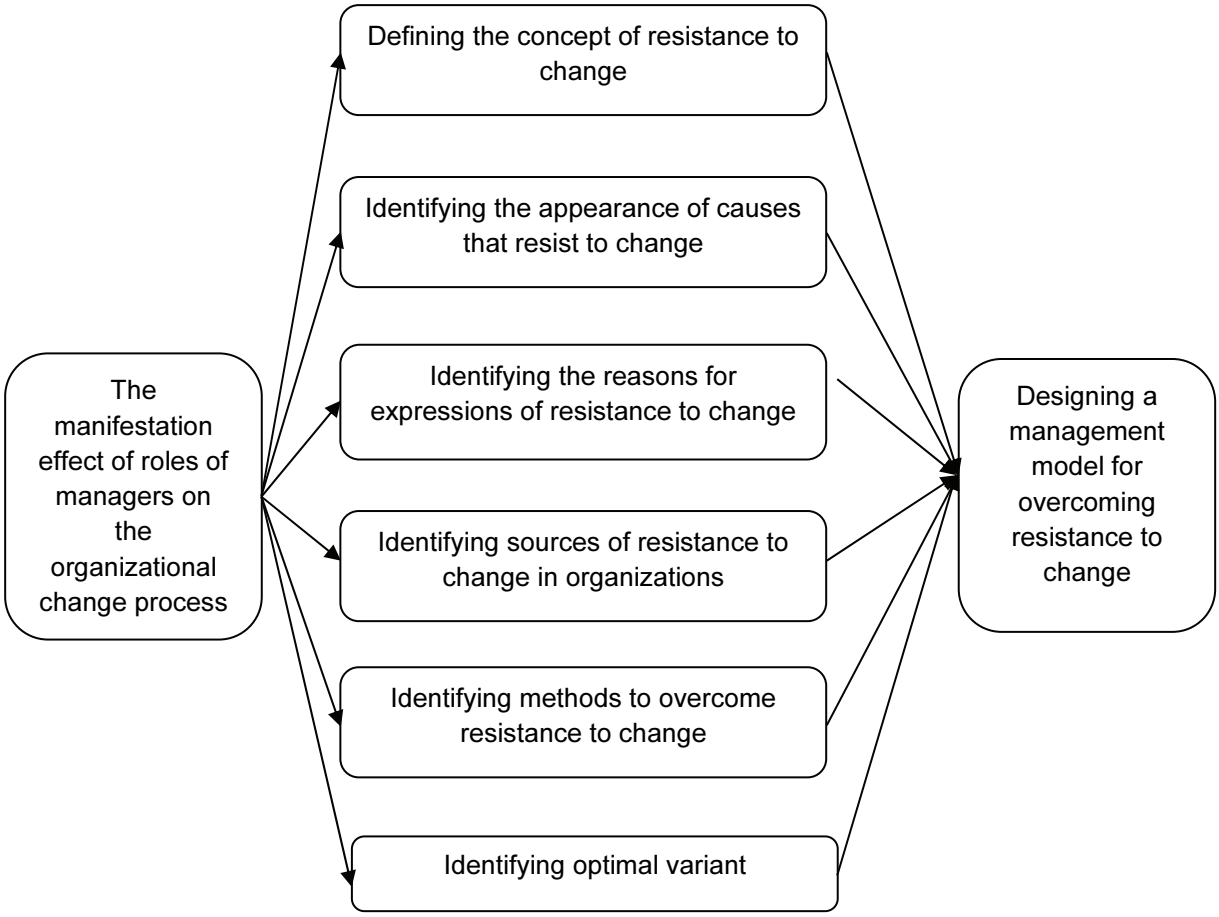

Figure 3. Stages to be taken to investigate the effect of manifestation of managers' roles (own model)

Findings

Over time, the process of organizational change was analyzed / studied from various perspectives, the most studies claim that organizational change depends on leadership but scientists have largely overlooked the important roles in this process of the managers (Carter, Min Z. et al 2014). Other studies have explored the positive consequences of change, such as the availability for change (Holt et al., 2007), the commitment to change (Chen and Wang, 2007) and positive aspects of resistance to change (Ford et al., 2008) and negative consequences such as increased levels of the employees stress (Korunka et al., 2003). Other researchers such as (Balogun & Johnson, 2004, 2005, Huy, 2002) argue that although managers who must lead and implement changes while trying to achieve efficiency in their working units, received less attention from researchers. In response to these calls we developed this methodological plan, that will be the basis of future research in developing a conceptual framework that examines the roles of

managers in balancing the conflict between efficiency and adapting to the changes in organizations. Managers play a growing leading role in the change programs and the efforts to balance the efficiency and adaptation deserves more attention (Balogun & Johnson, 2004, 2005, Farjoun, 2010; Floyd & Wooldridge, 1997).

Dewar and Dutton argue that, regardless of their intentions, managers are a powerful force if they exercise the power to make decisions. O'Reilly and Chatman (1996) stressed the importance of the management symbolic actions and have concluded that "managers can act as signal generators sending messages about what is important through their own behavior." The specialty literature, assign to the process of change, a number of factors that have an important connection with the roles of managers during organizational change process (Jones et al., 2004; Cascio, 1995; Neves Caetano 2009). Among these factors we can include: a) how employees respond to change, b) how to communicate an organizational change, c) the proper treatment of employees and planning adequately of change, d) the level of confidence of employees on process change and the credibility perceived of managers. So, managers in their efforts to implement the process of change with succes, must take into account the fact that all organizations are made up of people and people are very different (Walker et al., 2007), to understand what is the resistance to change, what are the sources that do occur in organizations, which are causes of resistance and the types of manifestation. Folger and Skarlicki (1999) defines a resistance to change a "behavior of employees who seek to challenge, undermine or oppose a resistive force, using on assumptions, speeches or personal relationships." Sources of resistance to change in organizations are discussed in literature by Pardo del Val and Martinez Fuentes (2003) who identified five groups of sources corresponding to the change process, suggesting that the first three groups are sources of resistance to change occurring in the strategy formulation stage and groups four and five are corresponding to the stage of implementation of change.

Conclusions and discussion

The purpose of this research is to clarify roles and understanding of the importance of managers to improve organizational change implementation process. Following the bibliographic study concluded that the literature shows some limitations in terms of importance on the managers' roles in the process of organizational change. Literature does not reflect the important roles of managers in the process of organizational change and do not give importance to resistance to change. The roles of managers in the organizational change process are essential to the success of change management. At the same time it must not overlook the fact that employees are key sources for implementation of change within organizations because they opposed the highest resistance in a change stage.

The limitations of this research are summarized solely in developing a research methodology based on bibliographic study that is based on a qualitative and quantitative surveys further. Another limitation is that the framework is not validated by strong empirical data. Thus, it is left for future research to provide empirical support for the proposed framework.

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MANAGERS AND ENGINEERS ECONOMISTS BETWEEN THE SOCIOLOGY OF ELITES AND THE SOCIAL ECONOMY OF VULNERABLE GROUPS

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Abstract

Approached as a universally valid necessity, equality has most often been perceived as a dominant value; meanwhile, people's reluctance towards the idea of elite has become more and more conspicuous. Empirically speaking, it is impossible to have a strictly egalitarian society. Therefore, in any society, there is a hierarchical opposition between elites and masses. In a context where inequality within societies witnesses an unprecedented accentuation, social economy appears as an innovative solution in diminishing discrepancies and conflicts between elites and masses. The unexpected directions followed by new paradigms, along their Black Swans, represent opportunities for managers and engineers economists in two respects. Two systems of thinking: i.e. fast (intuitive and emotional) and slow (more deliberative and logical) give them extraordinary abilities to move up among elites and develop enterprises in social economy.
Key words: *managers and economist engineers, the sociology of elites, social economy, vulnerable groups*

1. Introduction

The current use of the term elite highlights its two distinct meanings. Dictionaries of different languages, such as, for example, Le Petit Robert, one of the French language dictionaries, or The Universal Illustrated Dictionary of Romanian, define elite as the most distinguished, the most valuable part of a society. Therefore, the term refers both to persons considered to be the best or most outstanding in a particular group, and to persons who, in one respect or another, are headmost in a given group.

We may thus note that, in both cases, the word elite makes reference to a relatively small group of individuals. Somehow, these persons differentiate themselves from others, who do not belong to the elite and who, in relation to them, are regarded as the "mass". These two understandings of the word elite are in a relation of either juxtaposition or opposition to one another. Irrespective of this relation, excellence is always prominent. For skeptics, preeminence may be considered to coincide but rarely to excellence. Managers and engineers economists, when making decisions or evaluative judgments, prove a way of understanding things that is shaped by the psychological trends of recent decades; they may accept the idea of a relationship between social preeminence and some form of excellence, but also challenge the validity of a generally accepted criterion of excellence in a given environment.

In the case above, formation, culture and competence are placed in opposition to features such as: someone's ability to be perceived as nice; cunningness; duplicity; or conformism: actually all qualities that can effectively demonstrate one's superiority. If we continued to analyze the derivations of the term elite, for instance elitist or elitism, we would identify a series of terms with

negative connotations. It is not enough to point out at the widespread reluctance for the notion of elite, it must be correctly understood. In our society, the aspiration towards democracy and social equality has become a dominant value, which is also perceived as being an ethical one. At the same time, inequality must be justified.

Though ambiguous, the three principles associated with the widespread aspiration to equality are partially contradictory. The principle of merit is the first: "it regards equal treatment and a retribution for merit". The principle of distribution is the second, "it requires the reasonable satisfaction of needs that are considered acceptable in a given society during a specific period". The third principle, that of solidarity, "refers to the preservation of social bonds, which some excessive inequalities would endanger."

In search of principles and in an attempt to explain them, experts demonstrate different views on the notions of excellence and preeminence, reputation and authority, prestige and power, whose meanings overlap when not shown as directly opposite. For instance, the word elite has been associated with either "a simple category of social stratification", or with a „minority aware of its values and interests"; or, finally, with „a euphemistic synonym for the notion of dominant class".

The opposition between elite and "masses" arises from the idea that any society is hierarchical and that the existence of a strictly egalitarian society is empirically impossible. This means that, in any social group, some people have more power than others, irrespective of the basis of such power and the means of exercising it.

When managers and engineers economists start to focus on the diversified modern society, they are called to identify independent, though autonomous, sectors of activity, which provide access channels to excellence and preeminence. By the way of thinking they choose, i.e. either fast or slow, they will decide, in Black Swan (uncertainty) contexts, to make either the most rational or the most advantageous choices in the social economy sector. The sector of activity defines its own hierarchies of excellence and preeminence. However, managers and economist engineers contribute to the emergence of distinct elites, harboring, up to a certain point, the feeling of connivance that C. Wright Mills had pointed at, but their preoccupations and concerns (political, economic, cultural and others) are different. Hierarchies of different concerns are the expression of different interests.

Personal or group interests (social insertion companies, for example) that define managers and engineers economists play a particular role in the social economy of vulnerable groups. At the same time, peculiarities related to social economy and its specific ways of recruitment have their importance. In the case of each category of vulnerable groups (socially excluded persons, the unemployed, the disabled, Roma people, the group of former inmates, the group of drug users, single parents, the group of young people from orphanages, the group of children and young people in various vulnerable situations, the group of persons under any form of protection in Romania: refugees, persons with subsidiary protection), the effects of placements and those of positioning combine to create a specific "habitus", guiding the thoughts and actions of managers and engineers economists.

We expect to find more "technocrats" (managers and engineers economists) among the elites of the economic sector - and therefore from social economy as well, than elsewhere (political elites, cultural elites, judiciary elites and military elites). Thus we see that elites from different sectors tend to constitute lobbies that are often serving particular interests, but "fundamentally, they adopt a distinctive vision about life in society and its demands".

2. Will managers and engineers economists become able to position themselves among the strategic elites of social economy?

Several authors (among whom Putnam, 1976, p. 14) employed the phrase "strategic elites" to motivate talking about differentiated elites, who exercise their influence in different directions, at the highest level. Could managers and engineers economists be positioned among the strategic

elites, listed by the above-mentioned authors, as forming a group outside the "political class"? Strictly speaking, we find listed among elites "senior officials, managers of large public and private enterprises, leaders of mass organizations (unions or agricultural unions), the military of high rank, the most influential members of the liberal professions, high-level experts, well-known intellectuals, journalists, and also the high clergy". It seems that this listing covers the whole spectrum of elites. But, in our view, managers and economist engineers, as persons who can pass as representatives of an oppositional "counter-elite", can also be assimilated to the group of "strategic elites". They have the ability to make decisions or to influence processes of decision-making in social economy, sometimes even in a negative way, by their potential to oppose inequality, poverty, unemployment, the problems of vulnerable social groups, the conflicts between elites and "masses".

We chose this approach to our analysis in an attempt to see what would be the "heuristic of availability" in the case of managers and engineers economists. We took into consideration this method of study when we asked ourselves about the effective action of managers and engineers economists in situations when they want to estimate the frequency of a class, of a group, such as the "group of elites", or "the groups of vulnerable persons". Specialists (Kahneman, 2015, p. 206) show that, in defining the heuristic of availability (i.e. the evaluation of frequency), a bi-symmetrical approach occurs: either heuristics, a deliberate strategy to solve problems, or an automatic operation. Managers and engineers economists will know that a group offers many more possibilities than the other. Specialists (P. Cornea, 2006, p. 65) teach us that there are differences between "knowing" and "presuming". "As in the case of primary understanding, interpretation is an innate skill that can be improved, though it is never learned in school."

In order to know or to presume, managers and engineers economists make use of research in their attempt to obtain information concerning the group of elites and the group of vulnerable persons as social phenomena under investigation, as well as to check relationships and correlations between the aspects that manifest outside groups or among groups. As methods for such (observational) research, they can use questionnaires, interviews, observation, focus groups, etc. They will also approach the experimental research by pursuing to check, on the one hand, causal relations between groups of elites and vulnerable groups in society, and, on the other hand, causal relations between groups of elites and society at large, or between vulnerable groups and social economy. The purpose of approaching experimental research is to discover the laws governing the investigated phenomena, to test theories about solving the problems analyzed. This is usually achieved by employing the experiment as research method. Basically, it is about the intervention of managers and engineers economists in the development of the phenomena investigated, followed by measuring the effects of the interventions (e.g. founding social insertion enterprises).

Currently, it seems that "loss, trauma and suffering of vulnerable groups have become globally visible more than ever before in history, especially due to the intensification of globalization and the economic crisis that swept around the world " (Buzducea, D - coordinator, 2013 p.11), to which we would add the crass political helplessness in the face of such problems. Social enterprises are able to solve major economic and social issues that neither state agencies, limited by budget constraints, nor profit-based enterprises are able to straighten out.

According to experts (Coenen-Huther, 2007, p. 161) the identification of strategic elite members is made by three different approaches: the positional approach, the reputational approach and the decisional approach.

2.1 *Identifying managers and engineers economists as members of "strategic elites" by means of the positional approach*

This approach is the easiest to use, though it raises most objections, given the preconceived requirement of using only allegedly objective data. A certain degree of subjectivity is believed to exist in the case of managers and engineers economists, as they can occupy strategic positions when influencing decision-making processes in the development of social economy by creating

various social enterprises, by influencing laws in social economy or in the economy of vulnerable groups.

This approach is based on the assumption that managers and engineers economists occupy different positions in the formal structures of various organizations and institutions of social economy, which gives a good approximation of the degree of power they hold. This hypothesis is just under two different rationales: "the organizational or the institutional basis is considered the source of power held by the individual or the result of this power, the source being located externally." This approach has been criticized, this type of analysis being regarded as "limited to the formal aspect of things while systematically neglecting people (and their thinking capability)".

2.2 By means of the reputational approach

This analysis aims to prevent deficiencies in identifying persons, among managers and engineers economists, who hold an informal power based on their reputation. Basic human values theory was introduced by Shalom Schwartz (1992). According to this theory there are ten types of values: kindness, universalism, self-direction, stimulation, hedonism, achievement, power, security, conformity and tradition. They correspond to different types of motivation, and are closely related to the needs of human life, of individuals as biological organisms: the need for interaction, coordinated social inclusion; welfare and survival of groups.

Figure 1 shows the theoretical representation of the ten values, as drawn by the author of the basic value theory:

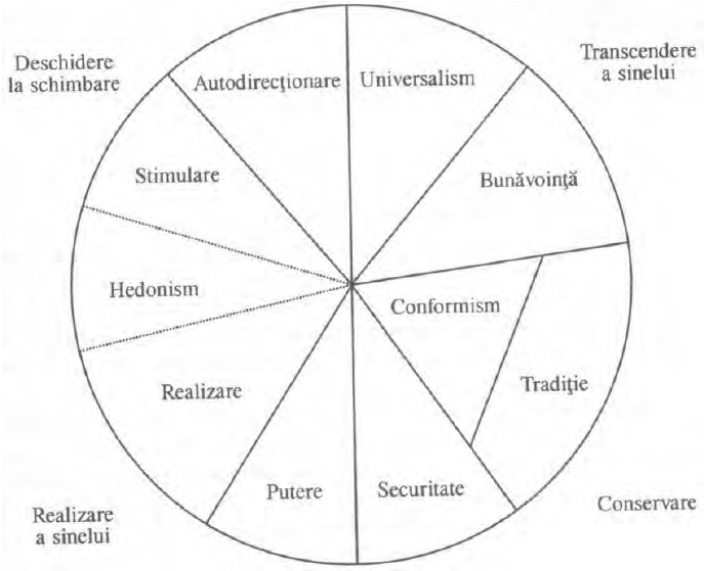

Fig.1. Theoretical representation of basic values according to Schwartz, 2003 p.270
Source: Rotariu, T., Voineagu, V., Inerție și schimbare, 2012, p. 325
„Deschidere la schimbare" = „Openness towards change"
„Realizare a sinelui" = „Self-fulfillment"
„Transcedere a sinelui" = „Self-transcendence"
„Conservare" = „Conservation"

The value plans integrated by Schwartz include, by opposition, values for self-fulfillment (power and achievement) values of self-transcendence (benevolence and self-directioning), while the other dimension opposes openness towards change (stimulation and self-direction) to conservation values (security, conformity and tradition). The concept of hedonism contains elements of both openness and self-fulfillment.

The reputational approach assumes that informants from the social environment (local and regional personalities), who have a good understanding of their environment, should be interviewed and asked about their opinions on various positions of power in the social field. At the same time, they are required to identify who, from among managers and engineers economists would hold, in their opinion, the highest degree of power in their city, region, etc., and complete a list that brings to the fore politicians, businessmen, traders, leaders of NGOs, as well as leaders of different associations. Persons participating to the survey adopted different criteria of evaluation and their choice was based on the reputation, the experience, the institutional or organizational position of the people selected. The next step consisted in selecting a series of persons from that list. People in the first sample were called to reduce the list to a quarter of the original. Finally, after several stages, a new ranking was obtained. A small number of persons, who make decisions or influence decisions, were identified. Those "decision factors" formed a network characterized by frequent and numerous interactions.

Those who occupy less important places on the list have more contacts with the mass of the population, but far fewer relationships among themselves. Where decisions are made, managers and entrepreneur engineers economists (businessmen) are also present, thus they might form a well organized group, able to exert influence and support their own interests in the social economy of vulnerable groups. They demonstrate the existence of a coherent economic elite, namely the social economy of vulnerable groups. According to Hunter, „there is a coherent economic elite"; this conclusion has become accepted across the entire nation, which shows that its author aligns to the visions of C. Wright Mills' (Coenen-Huther, 2007, p.162).

Specialists (Schwartz, 1992, quoted by Rotariu, T., Voineagu, V.- coordinators, Iliuţ P. Nistor, L. 2012, p. 326) clearly defined the content of the ten basic human values, which we present in table 1 below. These values should be known by the researcher who analyzes the reputation of managers and engineers economists from the groups mentioned above, in order to to decide what to ask and to whom to address the questions, since the double query involves a double risk of error in judgment. This approach is an inverse impediment as compared to the positional approach. In the previous case, of the positional approach, risk is much more reduced since the positional approach starts merely from studying documents: organization documents, regulations, statutes, minutes etc.

Table 1. Basic Human Values

Values	Values content
Benevolence	Care for the well being of the close ones (family, friends, etc.) as well as loyalty, honesty, responsibility towards them
Universalism	Concern for the welfare of people in general and for nature, the sense of social justice, equity, unity with nature, beauty and peace
Self-directioning	Independence of thought and action (creativity, freedom, independence)
Stimulation	Incitement, novelty, spirit of adventure, boldness
Hedonism	Search of pleasure, joy of life, self indulgence
Achievement	Search for success, ambition, influence
Power	Inclination towards a higher social status, towards prestige, authority and social influence and dominance
Security	Valuing safety and security, the stability of social contexts (orders, risk avoidance)
Conformism	Obedience of social rules, of others' norms and expectations(e.g. civility, obedience, discipline)
Tradition	Accepting and respecting the rules of tradition and its standards, the quality of being humble and modest

Source: Rotariu, T., Voineagu, V., Inerție și schimbare, 2012, p. 326

2.4 The decisional approach or the events-analysis approach

The decisional approach is the third approach applied to strategic elites that include managers and engineers economists in the social economy of vulnerable groups, aimed at eliminating sinuous paths that characterize both the positional and the reputational approach, in order to value both formal and informal influences. It is also called the analysis of events and its object is the appreciation of power (see Table 1 above) in its observable manifestations, in other words the ability to influence events by exercising influence on a decision to be taken.

Managers and engineers economists from the elite group are called to: influence unemployment, by creating sustainable jobs and employment on the labor market for as many citizens as possible; improve active and realistic inclusion policies, applicable to Romanian contexts, where we confront with the absence of a flexible legal framework for integrating people from disadvantaged groups on the labor market; reduce the risk of poverty in the case of persons with disabilities, by increasing their access to various services of general interest (including social services); ensure access to jobs suitable for the skills of persons with disabilities; ensure the right to work, in the case of persons with disabilities and the social inclusion of groups with special needs through forms of social economy.

The possibility to reconstruct processes of decision making (in the case of events listed above, based on heterogeneous written and oral data, in order to take account of the formal and informal aspects of processes) must be known. The International Classification of Disabilities, developed by World Health Organization is summarized in Table 2. This strategy of analysis may be practiced at the scale of limited groups.

Table 2. International Classification of Disabilities – Summary

Medical model	Social model
Disability – a problem of the individual	Disability – a socially-generated problem
Caused directly by illness or trauma	It is not an attribute of the individual
Requires medical treatment	It is connected to a complex of conditions generated by the social environment
Individual treatment offered by professionals	Connected to the complete integration of the individual in society
The purpose of disabilities management: - Curing or adaptation - Changing the individual behavior	The purpose of managing disabilities: -social action - responsibility of the entire society - changes in the environment -equal access for persons with disabilities to social life
Medical care – crucial role	Problems related to attitude and ideology
	Involves social change
→ Changing or reforming medical care policies	*→ Problems related to human rights*

Source: World Health Organization, 2004, p. 20 quoted in Buzducea, coordinator .- 2013, pp.87-88.

Specialists in the field (Robert Dahl in New Haven, Connecticut, 1961) argue that a "power elite", able to impose its views in all situations, does not actually exist. "Decision-making results from constant interactions between the mass of the population and the leaders". Managers and economist engineers - the leaders, in our case - try to understand what is acceptable in matters of vulnerable groups and are determined to act accordingly, in this way ensuring loyalties that strengthen their position in front of their opposition.

Such an analysis, based on studies that focused only on a small number of decisions, lead to the generalization of some specific cases in the matter of influence, which would not reflect a general structure of power. Criticism of this approach also comes from specialists, among whom Putnam (1976, p.17), who has shown that using meandering paths in selecting decisions "can be as severe as the choice of subjects in the case of the reputational approach." Another impediment in the implementation of the decisional approach is the fact that it applies only to situations that were already perceived as problematic and await the making of a decision. It is preferable to avoid the problems of vulnerable group, so as they would not become subject of debate. In the situation of vulnerable groups, there is potential for occult influence, which cannot be updated in any way by means of the decisional approach.

2.5 The combined approach and the analysis of networks

The deficiencies and limitations of the various approaches presented above determined various attempts to combine the positional and the reputational analysis for the implementation of a method called the "snowball" (Putnam, 1976, 14). Managers and engineers economists are identified as members of the strategic elite in social economy, since they are part of a hierarchical structure, in other words the point of departure is a "positional" one. In what follows, the analysis is based on the reputational approach, which finally provides the list of persons considered to be influential in social economy. The operation is then repeated with the persons from the list. According to specialists (Degenne and Forsé, 1994, pp. 170 -173; study: Marsden and Laumann, 1977), quoted in "The Sociology of Elites" by Coenen-Huther, J, 2007, p p. 164-165, "the techniques of network analysis" may be useful for estimating power and notoriety. They identified ten types of resources that can be implemented by managers and economist engineers. Based on tests that estimate the power of each, there is an interesting convergence between "the ability to influence, reputation and position of centrality in a network of relationships."

In the context of the ideas mentioned above, the question that arises as regards empirical research refers to the extent to which managers and engineers economists, who occupy a position of centrality in the social economy network, "are able to turn this centrality into power "(Lazega, 1998, p. 107).

Managers and engineers economists, situated in the position of centrality, can make use of specific scientific works (Laumann and PAPP), based on Parsons' structural-functional model (1976). The A-G-I-L framework has allowed for the development of a strategy of local institutions and organizations:

- "The A function of adaptation or the economic system, which includes firms and banks";
- "The G function, of developing aims, or the political subsystem ";
- "The I function or integration, or the social subsystem (stricto senso) of parties, unions and the associative sector";
- "The L function of maintaining the system of values, or the cultural system of churches, the school system and health institutions" (Coenen-Huther, 2007, p.165).

These features form a list of institutions and key-organizations whose leaders are subject to the questionnaire. "The personian reference framework" allows in this way the confrontation of representatives from various sectors of elites and "the development of sociometric matrices describing relations among local elites." Managers and engineers economists turn out to be "the most influential in local affairs" (Degenne and Forsé, 1994, p. 171). The analysis suggests the existence of "three functional sub-systems" that emphasize three categories of elites, specialized in "the studied collectivity": the traditional elite (active in the field of religion and education), the scientific elite and the economic elites. They have "a common center" that demonstrates what is the connection "between notoriety and influencing capacity", and is manifested among notable personalities.

2.6 The minority group of managers and engineers economists described as elite

Because the minority group of managers and engineers economists with high status in social economy can be described as elite and is able to exercise an appropriate influence in the social economy of vulnerable groups, it is important for it to be, to a certain extent, imitable. This issue is reflected in Nadel's theory as "the superiority of certain categories of the population, which can be tacitly recognized by the rest of the population, a situation that does not present the slightest importance in terms of the influence of one category and the receptivity of the other. Instead, the superiority of influential elites should be seen as tangible, at least partially. Therefore the characteristic features on which the preeminent situation of this elite is based should be appreciated as imitable and be considered worthy of being reproduced" (Nadel, 1956, 1990, p. 35). We can see that this generates two distinct types of influence that may be exercised: direct and indirect. Managers and engineers economists, who enjoy the respect of other people in social economy, exert a certain degree of influence, which means that that their advice is taken into account and their directives are followed. Such influence is also obvious in the decisions they make in the social economy of vulnerable groups. At the same time, they also exert an indirect influence through the behaviors and attitudes they manifest in the social economy of vulnerable groups, where they are observed and imitated, since a form of excellence is associated to them.

So, by inference, we can specify that the group of managers and engineers economists, as an elite group, by their way of thinking and acting, set rules for society as a whole and particularly for the social economy of vulnerable groups. This influence or power lies in the fact that their model is accepted and considered worth following in the social economy.

If the minority group is unable to facilitate the introduction of innovations in social economy or, if it makes the acceptance of such new trends more difficult, it cannot claim the status of elite. "Any instituted elite is able to favor or hinder social development" (Coenen-Huther, 2007, p.166).

Discussion and conclusions

According to experts (Coenen-Huther, 2007, p. 161) the identification of strategic elite members is made by three different approaches: the positional approach, the reputational approach and the decisional approach. The reputational approach assumes that informants from the social environment (local and regional personalities), who have a good understanding of their environment, should be interviewed and asked about their opinions on various positions of power in the social field. The decisional approach is the third approach applied to strategic elites that include managers and engineers economists in the social economy of vulnerable groups, aimed at eliminating sinuous paths that characterize both the positional and the reputational approach, in order to value both formal and informal influences. Managers and engineers economists, who enjoy the respect of other people in social economy, exert a certain degree of influence, which means that that their advice is taken into account and their directives are followed.

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BALANCE OF RED MEAT IN ROMANIA – ACHIEVEMENTS AND PERSPECTIVES

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Abstract

Purpose *– The purpose of research is to highlight the dynamics of the most important economic parameters of the red meat in Romania. The present research aims both industry achievements over the last four years and its prospects.*
Methodology *- We used statistical analysis methods, with retrospective and prospective studies, with multivariable secondary data.*
Findings *– Research highlights that in the medium and long term of red meat production situation in Romania will present an upward trend. Even if it does not reach the production level of the '90, the forecasts show that red meat livestock production in Romania will begin to occupy an increasingly important place in the national economy.*
Research limitations *– Research targets in largely economic perspectives of balance of red meat from Romania and it have estimated character, which makes the research to be limited to achieving these values, in conditions that were estimated.*
Practical implications *– The research findings, creates a consistent image specialized economic environment to apply the best action and make the best decisions to prop up red meat sector in Romania.*
Originality *– The originality of the research is relevant to the benchmarks. Analysis of the prospect of red meat sector is a novelty if seen through the estimated data on medium and long term.*
Key words: *meat, achievements, prospects*

Introduction

Romania was 20 years ago one of the largest producers of red meat in the world, through the contribution of world pork production. However imports of red meat often currently occupy the first places among imports of food products in Romania. At present, the situation has improved responsive, but the prospects for 2020 and 2030 are positive. (Steriu, V., Otiman, P. I., 2013).

Material and methods

We analyzed the dynamics of balance of meat to the following species which produce red meat: pork, beef, sheep and goats. The research aims both recent achievements (2013-2015), and medium-term prospects (2020) and long term (2030). We used statistical analysis methods, with retrospective and prospective studies of multivariable secondary data. Research carried out, it is part of a broader research and the results presented are partial results of this research.

Research results

In this research, we analyzed four parameters, respectively: total red meat in live animals, total red meat in carcasses, total red meat import in Romania and total red meat export from Romania. All parameters analyzed refers to all three categories of red meat studied: pork, beef and veal, sheep and goat.

- Total red meat in live animals

Regarding pork, it highlights the fact that every year this parameter has increased. Thus, if in 2012 Romania present value of 554.878 tons, this value increased so 2013 was 581.900 tons, in 2014 635.200 tons and last year, 2015 were 683.400 tons. Similarly, meat and beef and veal, the situation was as follows: 2012, 198.510 tons in 2013, 232.600 tonnes in 2014 269.200 tons and last year, 2015, 282.400 tons.

An exception to this situation did sheep and goat meat. In 2012 this production level of 107.300 tons was then increased in tons 2013 to 170.700 tons, and then to decline in 2014 to 145.200 tons. Last year's growth in 2015 failed to equate production in 2013 was only 158.100 tons. (Figure 1)

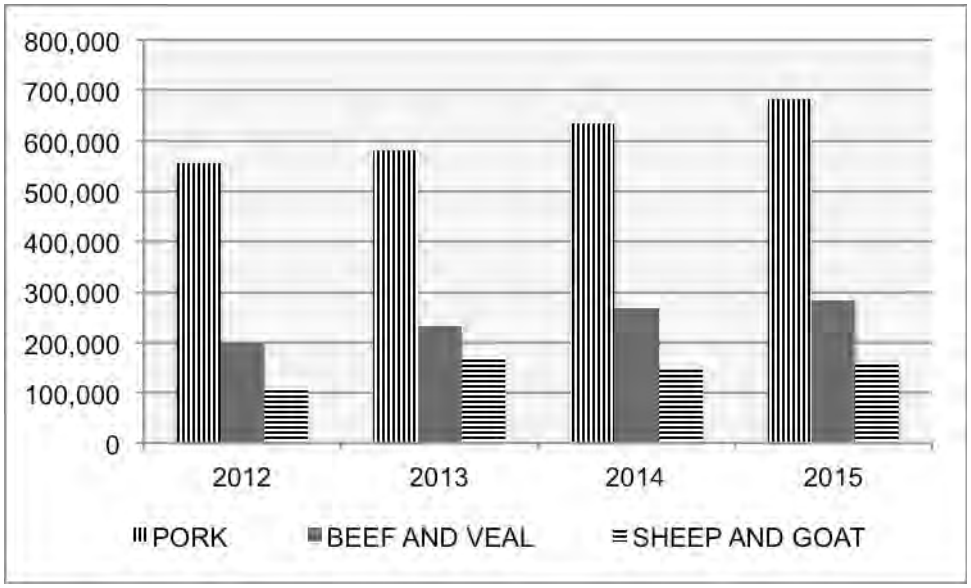

Figure 1. Achievements of red meat sector at total red meat in live animals parameter in Romania since 2012 to date (to)

Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

Regarding perspectives of in the medium and long term this parameter, it is estimated that pork will be 750.000 tons in 2020 and 880 000 tons in 2030 to beef and veal 335.400 tons in 2020 and 390.000 tons in 2030 and sheep and goat meat from 165.300 tons in 2020 and 170.000 tons in 2030.(Figure 2)

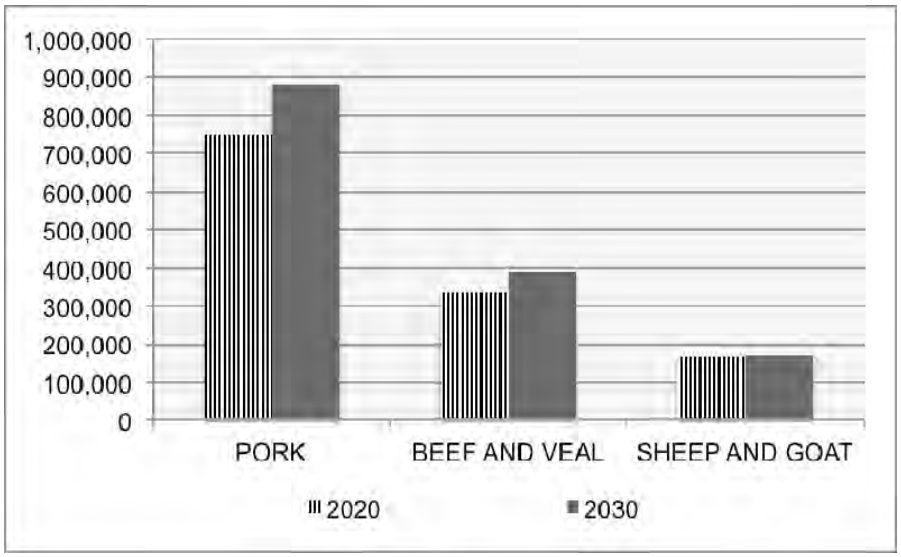

Figure 2. Perspectives of red meat sector at total red meat in live animals parameter in Romania (to)
Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

- Total red meat in carcasses

Thus, at pork, the level of this parameter was 416.233 tons in 2012, 436.425 tons in 2013, 476.400 tons in 2014 and last year, 2015, 512.550 tons. The prespectives of this production for 2020 and 2030 are 562.500 tons and 660.000 tons. Regarding beef and veal, the achievements of this exploitation also had an upward trend, relatively stable and steady, rising from 99.255 tons in 2012 in 2013 to 116.300 tons, 2014 to 134.600 tons, and in 2015 to 141.200 tons. Sheep meat and goat in carcass production was oscillating from this point of view. In 2012 the level of this production was 48.285 tons, 76.815 tons in 2013, then in 2014 dropped to 65.340 tons and then to increase to 71.595 tons in 2015. (Figure 3)

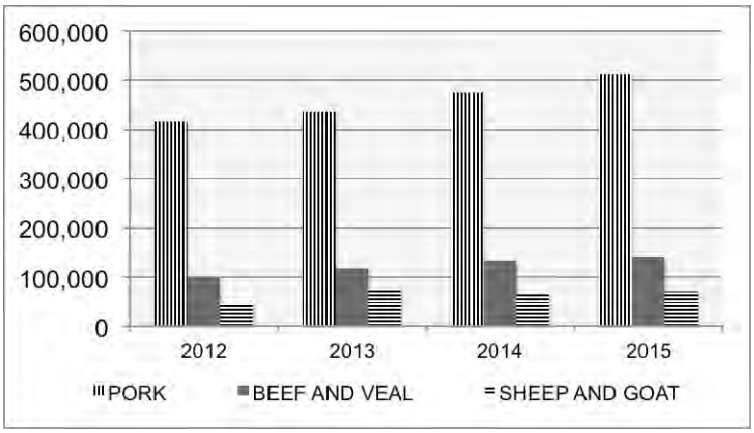

Figure 3. Achievements of red meat sector at total red meat in carcasses parameter in Romania since 2012 to date (to)
Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

Estimated perspectives production of red meat from Romania in 2020 are 562.500 tons for pork, 167.700 tons in beef and veal, and 74.385 tons to meat from sheep and goat. Regarding the long-term prospects, meat production in carcass is estimated to be 660.000 tons in 2030 to pork, 195.000 tons for beef and veal, and 76.500 tons of sheep and goat meat.

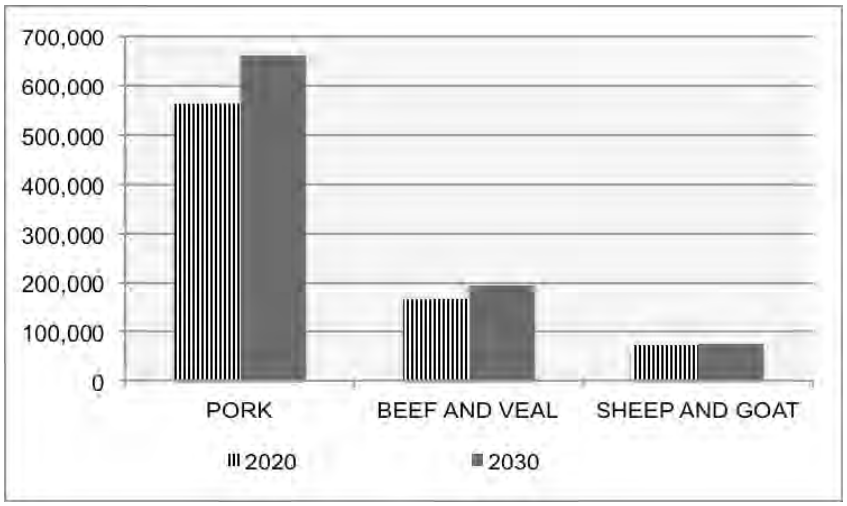

Figure 4 Perspectives of red meat sector at total red meat in carcasses parameter in Romania (to)

Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

- Total red meat import in Romania

Compared with the first two parameters analyzed, parameter import of red meat in Romania had a downward trend. Imports decreased every year except 2013, both beef and veal and for the sheep and goat. But imports of pork have decreased steadily: 186.868 tons in 2012, 182.431 tons in 2013, 142.920 tons in 2014 and 112.761 tons last year, in 2015. For beef and veal imports values were as follows: 12.023 tons in 2012, 13.213 tons in 2013, 8,000 tons in 2014 and 7,200 tons in 2015. Regarding sheep and goat imports has fallen drastically in the past two years (300 tons in 2014 and 400 tons in 2015), while in 2013 increased to 1,381 tons from 1,248 tons in 2012. (Figure 5)

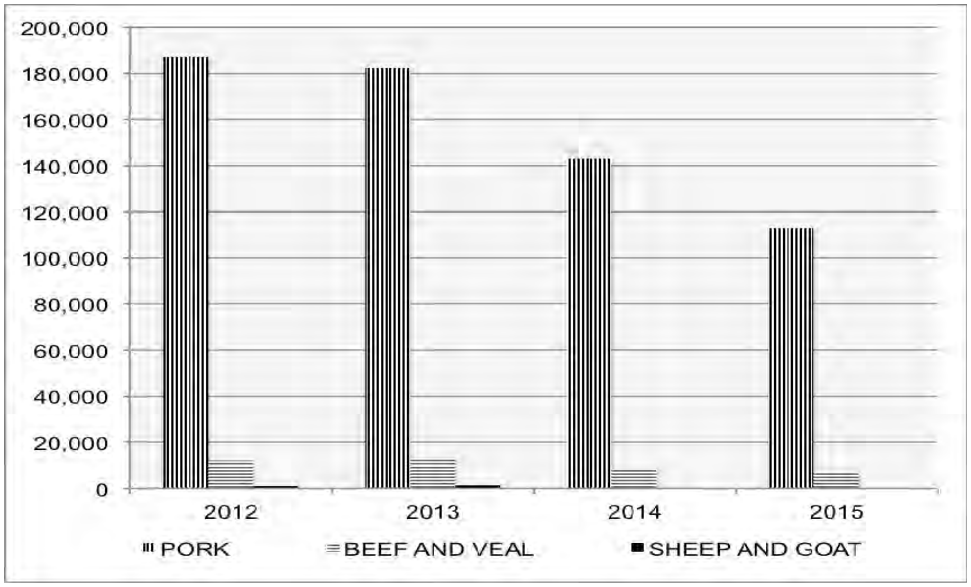

Figure 5 Achievements of red meat sector at total red meat import parameter in Romania since 2012 to date (to)

Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

Regarding estimates perspectives of imports of red meat for 2020 and 2030 are as follows: pork in 2020 – 110.000 tons in 2030 - 70,000 tons, beef and veal in 2020 – 5.700 tons, in 2030 - 4.900 tons and sheep and goat only 300 tons in 2020 and 200 tons in 2030. (Figure 6)

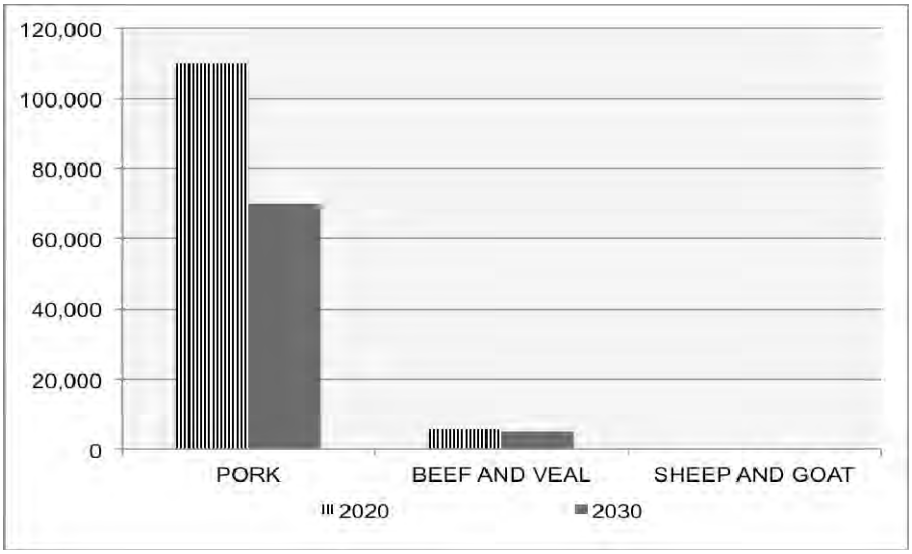

Figure 6. Perspectives of red meat sector at total red meat import parameter in Romania (to)
Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

- Total red meat export from Romania

At last retrospectively analyzed parameter values were so variable that it is difficult to establish a trend. However, prospective analysis shows a steady increase in exports to all categories of red meat. Thus, the retrospective statistical analysis of pork revealed that in 2012 were exported 18.435 tons, in 2013 fell to14.977 tons, in 2014 increased to 32.000 tons, and in 2015 continued to grow to 51.000 tons. Beef and veal in 2012 were exported 37.638 tons in 2013 exports fell to 29.972 tonnes, then to grow year 2014 to 39.950 tons and growth was continued in 2015 to 41,300 tons. Export of sheep and goat meat also recorded increases and decreases as follows: in 2012 was 25.428 tons, increased in 2013 to 31129 tons, then decrease in 2014 to 29.400 tons and year passed in 2015 increased again to 30.900 tons. (Figure 7)

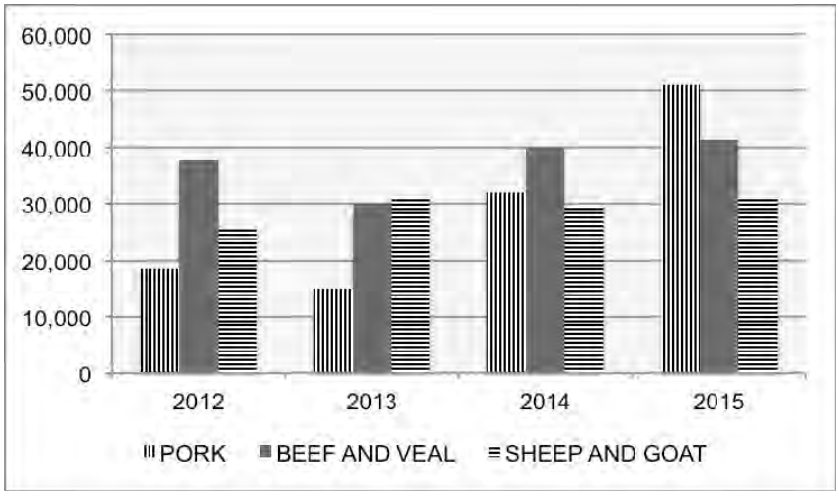

Figure 7. Achievements of red meat sector at total red meat export parameter in Romania since 2012 to date (to)
Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

Analysis of the data revealed prospect that all red meat exports will increase in the medium and long term. Pork total exports will reach 54.000 tons in 2020 and in 2030 65.000 tones. Also, the beef and veal exports will reach nicelul in 2020 to 45.200 tons and in 2030 to 52.300 tons. Similar increases will be achieved by sheep and goat meat, so in 2020 will be exported 33.400 tons and 36.900 tons in 2030. (Figure 8)

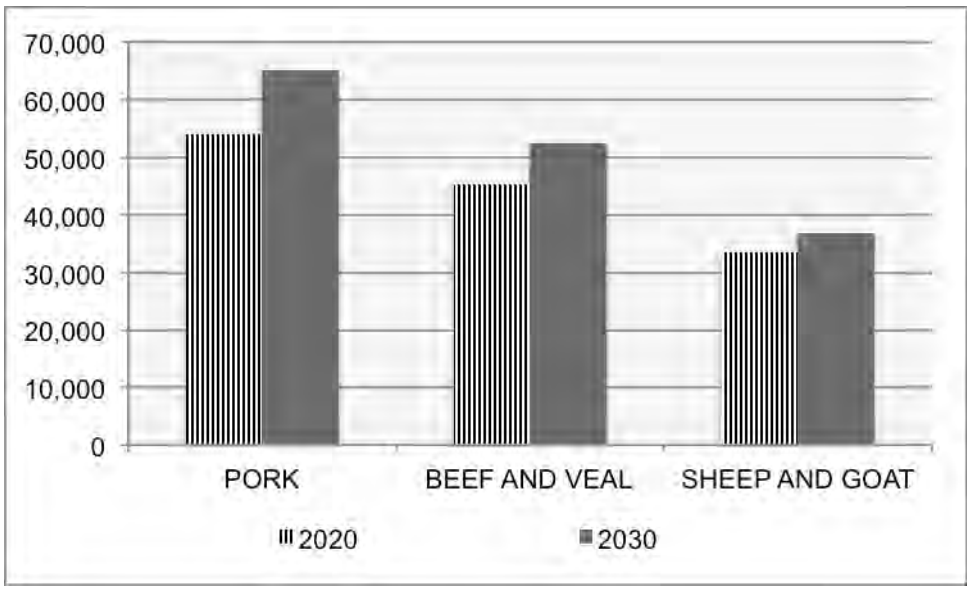

Figure 8. Perspectives of red meat sector at total red meat export parameter in Romania (to)
Source: Original analysis of secondary data from National Institute of Statistics and the Ministry of Agriculture and Rural Development, cited by Annual Report Business Resource Guide in Meat Industry – 2nd No.

Discussion and conclusions

Since Romania has been an important player world market of pork, the massive increase in imports due to decreased production of red meat, created a real crisis meat in Romania last years (Steriu, V., Otiman, P. I., 2013). Red meat crisis management in Romania has contributed and still contribute to the management during the crisis of our country.

Many of the changes the balance of red meat in Romania is due to external economic and political factors. As an example, in the case of pork, in February 2014, from installation to Russia's embargo imports of pork from the EU, have been created large stocks available from traditional suppliers to the Russian market. Thus, all these producers in Germany, Poland, Netherlands, Belgium and Hungary have intervened on the Romanian market where they find a way to exploit these stocks, which affected the balance of pork from Romania.

Research presented draw demarcation lines between what was, what is and will be red meat production in Romania. Specialists in the field of red meat will appreciate that the situation is changing, and this change will be positive.

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THE LEGACY MARKETING CONCEPT: WHAT IS IT AND HOW DOES IT WORK?

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Abstract

Purpose *– The present paper contributes to our past studies in which we proposed future research and development, for a procedure to store and use specific best practices, actions, strategies etc., from within the organization, to create appropriate plans for "strategic prevention" and business success in the present environment context.*
Methodology/approach *– Throughout literature research and Venn diagrams, we proposed a new concept, that of Legacy Marketing and created a conceptual framework for it.*
Findings *– By combining knowledge from related fields (marketing management and marketing tools/applications), on one had our paper presents the building blocks for the new marketing concept, that of Legacy Marketing and on the other hand its conceptual framework.*
Research limitations/implications *– The concept of Legacy Marketing and its conceptual framework creates new perspectives for the modern management age.*
Practical implications *– The concept of Legacy Marketing and its conceptual framework will help managers to acknowledge that in the ever changing business environment, lies an opportunity and that they can create new plans for the present context with information from profitable past events.*
Originality/value *– Our research contributes in a small way to the stepping stones of orientating the organization's managers towards the modern management age, by looking back at the core principles of their management philosophy.*
Key words: *Legacy Marketing, Venn diagram, Marketing Management*

Introduction

Organizations "inherit" from one year to another (depending on internal and external environment) amounts of information, practices, action processes, income statements, etc., that where enrolled as gains or losses for their overall activity. Some of them can be used as it is, while others need adjustments. Either way, from our point of view, they are valuable knowledge assets, which managers must use to cope with the ever changing business environment.

Starting from the point that a good example in which organizations felt a great shock and struggled for survival, as a result of a sudden business environment change, is depicted in the turbulence created within the business environment by the economic crisis. Davies (2005) describes the crisis as an unplanned (but not necessarily unexpected) event that calls for real time high level strategic decisions in circumstances where making the wrong decisions, or not responding quickly or proactively enough, could seriously harm the organization.

Due to the fact that the crisis can be described as an unplanned, but not necessary unexpected event, O'Brien and Dyson (2007), show that some organizations are rehearsing strategies, using strategic modeling, balance scorecards and robustness test, to validate them before implementing. Moreover, Dyson et al. (2007) state that an effective strategic development process has to be proactive and includes mechanisms to look ahead by anticipating possible futures and developing strategic options.

According to Wan and Yiu (2009), for many organizations this environment of turbulence and crisis may seem as a threat (adopting a conventional defensive behavior by focusing on financial performance) but for some this is the time to tap into opportunities and expand. In other words, in this turbulent environment some managers believe they have ample opportunities that may lead them either to aid or to gain a completely new competitive advantage. There are not clear answers to what are the right responses from organizations in this environment (Gunby, 2009), nevertheless organizations have been engaged in strategic development process to respond to this external shock.

A research conducted by Wilson and Eilertsen (2010), for a sample of 190 managers involved in strategic planning, shows that the actions undertook by organizations during the crisis were divided equally between pursuing opportunities for growth or investment (51%) and defensive actions (49%). According to a study conducted by Kunc and Bhandari (2011), on 53 managers (with responsibility for strategic development processes), during the crisis organizations pursued mainly two categories of change actions, namely analyzing performance measures and strategic success factors.

The actions of change in performance measures refer to the fact that not only financial measures become more important, but also non-financial measures. While, actions of change in strategic success factors refer to the organization's strategic behavior regarding innovation, market share and customer satisfaction.

In this line of reasoning, the present paper, represents an addition to our previous research in which we proposed for future research a new concept, which can be used by managers to generate appropriate reactions and responses for business environment changes. In other words the new concept and its framework is supposed to aid the Agile Marketing Audit (Izvercianu et al., 2015) in collecting data for creating a straightforward way of "strategic prevention" and "sustainable design" of long term business success. At the heart of defining the new marketing concept and creating its conceptual framework, we started from three conclusions gathered from literature research:

- most business environment changes or crises are not sudden events but follow a period of precognition and red flags;
- managers have a wide range of proactive processes and activities which can be implemented to identify and prevent potential business environment changes or crises;
- in most business environment changes or crises, lies an opportunity to grow.

Defining the Legacy Marketing Concept

As mentioned in the first part of the paper, the procedure to store and use the specific best practices (from within the organization) for "strategic prevention" and "sustainable design" of long term business success, refers to a new marketing concept, namely Legacy Marketing, which represents the addition to our previous research.

With the help of a Venn diagram and literature research regarding: organization mission and objectives, marketing tools/applications and strategic and operational marketing planning, we defined the Legacy Marketing concept, from now on referred as LegMk.

Originally, Venn diagrams were proposed as visual tools for representing propositions and reasoning (Venn, 1880). Weisstein (2016) indicate that Venn diagrams can be used to create schematic diagrams, often used in logic theory, in order to depict collections of sets (number series, concepts, statements etc.) and represent their relationships. Moreover, Glassner (2003) and Shin (1994), point out that order-three Venn diagrams are often used in the context of proving simple logical arguments.

Rusky (2006) shows that a traditional three-order Venn diagram is said to be simple if exactly two curves pass through any point of intersection. Using the order-three Venn diagram, for defining the LegMk concept, consists in mutually placing three symmetrically intersecting circles, creating

seven partitions (Fig. 1a).From this point of view, we focus our attention on the reunion and intersections of the 3 collection sets (Fig. 1), each labelled as shown in Table 1.

Table 1. Partitions of the Legacy Marketing Venn diagram

Partitions	Label description (concepts/statements)
A	Organization mission and objectives
B	Marketing tools/applications
C	Strategic and operational marketing planning
A ∪ B ∪ C	Marketing Knowledge
A ∩ B ∩ C	The Legacy Marketing Concept
(C ∩ A) – B	Classic marketing management
(A ∩ B) – C	Change marketing management
(B ∩ C) – A	Modern marketing management

Rositer (2001) attempts to define the marketing knowledge concept by proposing that marketing knowledge can be identified in four forms: marketing concepts, structural frameworks, strategic principles and research principles. Shaw et al. (2001) suggest a systematic methodology that uses data mining and knowledge management techniques is proposed to manage the marketing knowledge and support marketing decisions. Moreover, Rezaee and Jafari (2015) define marketing knowledge as a discipline with the objectives of promoting knowledge growth, knowledge exchange, and marketing knowledge preservation within an organization in order to achieve a better exploitation of this essential resource.

In our case, the collections of sets (A, B, C) and their relationships refer to concepts/statements collected from literature review regarding: organization mission and objectives, marketing tools/applications and strategic and operational marketing planning. As an overview, the reunion of A, B and C, (labelled as A ∪ B ∪ C), consists of literature concepts/statements identified in the field of organization mission and objectives, marketing tools/application and strategic and operational planning (representing the Marketing Knowledge), while the intersection of A, B and C, (labelled as A ∩ B ∩ C), represents the LegMk concept (Fig 1b).

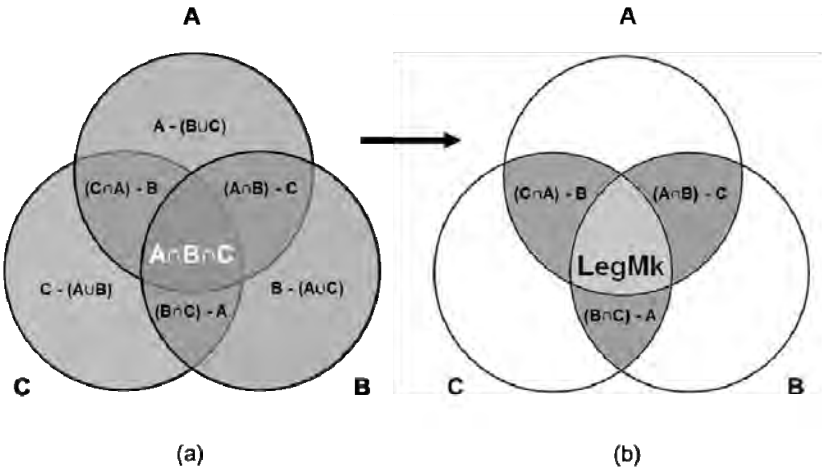

Figure 1. The Venn diagram for defining the LegMk Concept

There is no need of prof for the fact that one of the managers' biggest challenges, during a crisis (economical/financial or otherwise), is to create a high level of adaptability to internal and external environment changes.

Therefore, from our point of view, pertinent marketing activities can help managers to generate appropriate reactions and responses for business environment changes, further on analyzing the first 3 elements (A, B and C) from Table 1.

In a not so broad approach, the process of **setting objectives for the organization's mission (labeled as A)**, represents a set of planned actions by which managers seek not to evade the business environment changes, but to guide the organization's future.

Focusing on what managers have to do in order to set the organizations objectives, rather than on a generic definition, we turn our attention to Hammond (2001), who supports the fact that companies must adhere to a particular strategy, but must find new ways to improve it constantly.

In their research, David, Forest R and David, Fred R (2003), suggest that a well-crafted mission statement can provide advantages or benefits to an organization. On the other hand, Wiig (2004), claims that the business environment is in one continuous development, both in terms of diversity and complexity, and managers need to focus on efficiency and flexibility, both for its external and internal environment.

When relating to **marketing tools/applications (labeled as B)**, we consider that in time of crisis (and not only), managers have to assign the right human and financial resources, to create or use them.

Bronzo et al. (2013), Devenport (2006), Davenport and Haris (2007), show that business analytics tools are more and more used in the market process, related to marketing activities, customer care and sales.

Moreover, Hauser (2007), shows that the research triangle of qualitative, quantitative and data mined information, gathering, analysis and interpretation, can be completed with a more sophisticated research tool, namely marketing analytics.

Davenport et al. (2010), affirm that Business Intelligence Systems contribute to the enterprises success and competitiveness, while Wixom and Watson (2010), present examples of managers interested in introducing new tools in order to manage enterprises.

A research conducted by Bahri et al. (2011), shows that (in time of crisis or not), managers are more and more concerned with performance management, due to growing competitiveness, the need to reduce reaction time and the risk associated with a less loyal customer base.

When referring to **strategic and operational marketing planning (labeled as C)**, we start from the fact that the objective of strategic marketing planning is to identify in a systematic way, the threats and opportunities, which may influence the future of the organization, while operational marketing planning refers to creating marketing action plans.

McDonald (2006) states that strategic marketing planning presents a useful process by which an organization formulates its strategies (correlated to environmental conditions) and also represents the backdrop against which operational decisions are taken.

Therefore, the literature suggests two distinct but related aspects to marketing strategy content: marketing strategy decisions and marketing strategy decision implementation (Neil A. Morgan, 2012).

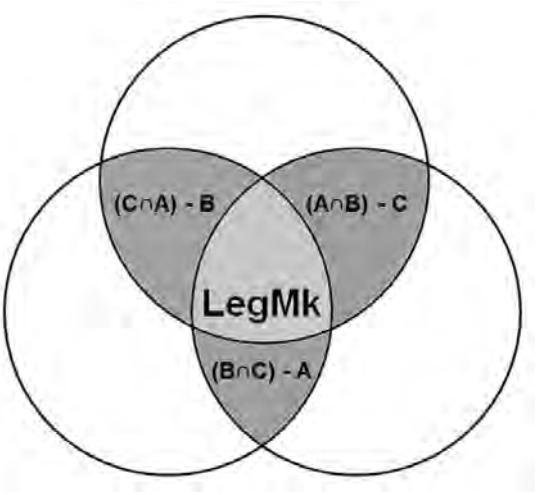

Figure 2. Emphasizing the Legacy Marketing Concept

Further we turn our attention towards the last 3 elements of Table 1 and presented in Figure 2, namely: Classic marketing management, labeled (C ∩ A) – B, Change marketing management, labeled (A ∩ B) – C and Modern marketing management, labeled (B ∩ C) – A. Thus, we consider that:

- **Classic marketing management** – refers to the essential of marketing management, where strategic and operational marketing plans are created starting from the organization's mission and objectives, without using marketing tools and applications;
- **Change marketing management** – refers to marketing management changes, where organizations start to implement and use marketing tools and applications to create key performance indicators (KPI), for future strategic orientations and operational plans;
- **Modern marketing management** – refers to the process in which organizations make use of marketing tools and applications to audit marketing activities and to refocus or to adapt them towards the current business environment background, without using specific best practices from within the organization (their business legacy).

We can define legacy, as anything (material or non-material) handed down as a result that happened in the past or as from an ancestor/predecessor. In terms of marketing, the Legacy Marketing (LegMk) concept refers to past marketing tactics or activities that lead the organization to financial or non-financial success and can be handed down. In this line of reasoning, future marketing efforts benefit from predecessors' successful marketing results.

The Legacy Marketing Conceptual Framework

The SEEDS conceptual framework, represents a proposed model for the Legacy Marketing concept. As the pioneers of agriculture, kept the best samples from their harvest or interbreed different plant species to obtain better seeds for the next year, in the same way managers have to use their business legacy (good practices) in order to generate plans and activities for long term business success in an ever changing business environment.

The acronym SEEDS stands for:

- Search for data in old and new databases;
- Evaluate past marketing activities;
- Expand / ease marketing activities for the new context
- Disseminate the good marketing practices;
- Setup marketing plans for the new context.

The role of the SEEDS conceptual framework (Fig. 3) is to show, in a relative simple manner, how Legacy Marketing (LegMk) works. In essence, LegMk modifies the existing information (from old and new databases) and appeals to common practices (used in the past), transforming data into results that appear as good practices, influencing marketing decisions.

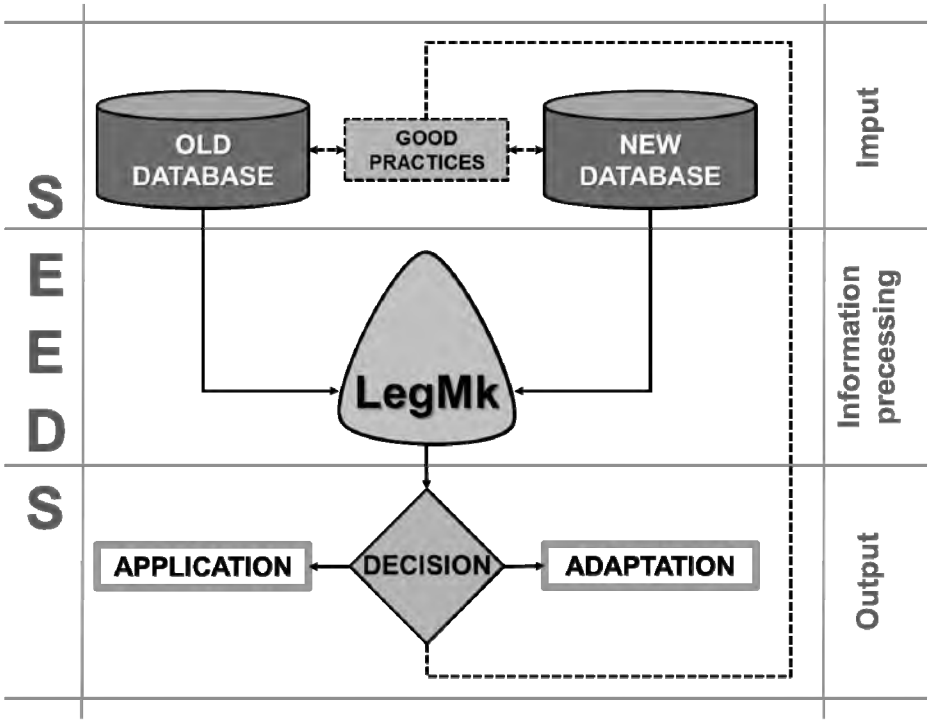

Figure 3. SEEDS – the conceptual framework for the Legacy Marketing concept

The core purpose of Legacy Marketing (LegMk) is to improve the organization's marketing activities development process, through a natural transfer of good practices (from within the organization that leaded to financial success), to current business environment conditions, adapted or applied with the help of flexible and agile processes, in order to obtain long term business success.

Discussion and conclusions

Our research contributes to the theoretical basis of introducing a new marketing concept, that of Legacy Marketing (LegMk), while the proposed framework is focused on how managers can use it to create plans and actions for a profitable business present and future.

Concluding, we can define the **Legacy Marketing Concept (presented in Figure 2) –** ***the process of searching for best practices form (old and new) internal databases, evaluating past marketing activities, easing the use of marketing tools, for the final purpose of setting up plans for the current business environment background, in conditions of financial success.***

However, the limitations of the SEEDS conceptual framework for the Legacy Marketing concept, are due to the fact that future research is required to create a handbook and test it in different sized organizations, in order to improve different steps until the handbook can be considered definitive.

After creating the SEEDS Handbook for the proposed concept of Legacy Marketing (LegMk) and implementing it in several organizations, we will obtain a two-step conclusion. On one hand the willingness of managers to make use of LegMk and improve its handbook, and on the other hand to start creating a lightweight LegMk information system, which can help managers to identify opportunities and advantages for strengthening and further development of organization's success, in the updated business environment context.

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A SUPPLY CHAIN RISK MANAGEMENT STUDY

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Abstract

Purpose *– This research aims to analyze the supply chain risk factors in four companies from Romania and understand how the supply chains are being affected in the case the companies look to respond in a shorter time to customer's demand.*
Methodology/approach *- Empirical study based on four case studies. Data collection was done using face to face interviews.*
Findings *– There are few major supply chain risk factors common for the companies studied but there are also other risk factors specific to each one of them. Different supply chain risks factors have been identified by each department, within the same company.*
Research limitations/implications *– The study focuses only on four companies and only on a "part" of their supply chain. Due to the fact that the method of research chosen is the face to face interview, this requires more time for data collection.*
Practical implications *– Real empirical data on supply chain risk management and the impact this can have on companies' operations.*
Originality/value *– One of the few studies that contributes to the empirical research of the supply chain risk management that considers both upstream and downstream interactions in the supply chain.*
Key words: *supply chain, risk, factors*

Introduction

SCM (Supply Chain Management) involves a number of activities responsible for the movement of materials (tangible and intangible) from the manufacturer to the end consumer. The risk in supply chain occurs when unexpected events disrupt the supply flow.

SCRM (Supply Chain Risk Management) means coordinated efforts of an organization to help identify, monitor, detect and mitigate risks/ threats to supply chain's continuity and profitability.

SCRM and risk arising in the procurement process in recent years gained a growing importance as the vulnerability of these supply chains has increased.

In the last decade, many companies faced extreme challenges in the supply chain both because of natural disasters and because of major economic changes. These challenges have not diminished. If until recently, supply chains were running almost on autopilot, today they face many global and local threats that need to be managed.

Thus, on the uncertain and turbulent markets today, the vulnerability of the supply chain has become a key issue for many companies and the challenge for managers in today's business environment is to manage and mitigate these risks by creating more resilient supply chains.

Growing importance of SCRM

Disruptions in the supply chain have only recently begun to receive significant attention from specialists. One reason for this growing interest is the recent wave of important disruptions given by events such as September 11, 2001, hurricanes Katrina and Rita in 2005, the volcanic eruption in Iceland in 2010, the earthquake in Japan and flooding in Thailand in 2011, Hurricane Sandy in 2012, recent terrorist attacks and political instability in Europe, etc.

Another reason for the increasing interest for the risk assessment and management is the concentration of many firms in recent decades on the "lean" philosophy of supply chains that involve that systems operate continuously and without (or with) fewer interruptions. Although lean supply chains are effective when the environment where they operate is predictable, they are extremely fragile when unforeseen interruptions occur.

A third reason for the growing attention paid to disruptions in the supply chain is that companies are much less vertically integrated than in the past, and their supply chains are becoming more global. Decades ago, many companies were manufacturing products practically from scratch. Instead, companies today tend to assemble final products from increasingly complex components, which are purchased from suppliers. These suppliers are located all over the world, many of them even in regions that are unstable political or economic or facing various natural disasters. Any change that appears in a point of the supply chain (Figure 1), is being propagated further, at even a larger variance to the rest of the segments in the supply chain, this being known in the supply chain literature as the "bullwhip effect" (Figure 2).

Figure 1. Supply chain example

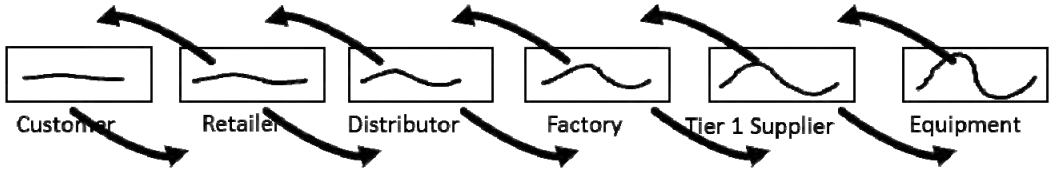

Figure 2. The bullwhip effect in supply chain

A fourth reason that contributes to the importance of SCRM study is the fact that in the competitive environment today, many companies are tensioning more and more their supply chain in order to respond in a faster manner to the customer's needs. This means that companies have to be able to identify, assess, monitor and mitigate the risks in an efficient and effective manner.

In this context, the present research aims to bring a touch of additional knowledge in this dynamic field of supply chain risk management and to extend the researches done previously by others. Till date, this field has generated relatively little empirical research due to the fact that the communication between researchers and practitioners and access to industry data remains still a challenge.

The main research problem is to identify the most frequent and important risk factors that cause disruptions in the supply chain in four major companies in Transylvania, Romania and understand which are the common risks, company specific ones and the prevention and mitigation measures taken against these risks. Going further, the research is looking to develop a mathematical model that helps understand what is the trade-off between time reduction in the supply chain and risk exposure.

Research methods used in SCRM studies

The Supply Chain Risk Management gained more and more attention in the recent years (especially after 2000) and there are more studies that analyzed the existing SCRM literature.

Key elements in building a SCRM strategy are: visualizing and understanding the risks, measuring risk impact and probability of appearance, prioritization and action taking (AMR Research Study " Risk management in the supply chain - a quantitative study", Mark Hillman and Heather Keltz, 2007).

Musa and Tang, 2011 reviewed 138 articles in their work "Identifying Risk Issues and Research Advancements in Supply Chain Risk Management." and concluded that existing studies on SCRM are mainly based on a qualitative approach -78% (conceptual models, overviews and reviews explorers) and only a small portion are based on a quantitative approach - 22% (empirical studies, industrial studies, interviews).

Qualitative methods are used to classify and identify risks (Cavinato, 2004; Chopra and Sodhi, 2004, Christopher and Peck, 2004) and to build the philosophy for SCRM (Christopher and Lee, 2004; Giunipero and Eltantawy, 2004; Zsidisin and colab., 2004).

Quantitative methods are developed and applied on large scale for SCRM. Most of the articles based on quantitative analyze are using individual methods and only a few propose integrated methods.

Empirical methods have attracted much less attention than analytical methods, because it is a challenge for researchers to communicate with practitioners and obtain access to the information in the industry. Therefore, most researches applied qualitative methods for supply chain risk identification.

"Risk management in the supply chain - literature review", William Ho, Tian Zheng, Hakan Yildiz & Srinivas Talluri, 2015 is another study that analyses the specialty literature for SCRM between 2003-2013, all together 224 articles. Most studies so far have focused on two SCRM processes: identifying and assessing risks (Peck 2005; Smith et al 2007, Cheng Kam 2008 Wagner and Bode 2008); identification and mitigation (Christopher and Peck 2004 Oke and Gopalakrishnan 2009); risk assessment and mitigation (Kleindorfer and Saad 2005; BLOME and Schoenherr 2011; Giannakis and Louis 2011; Speier et al . 2011; Hahn and Kuhn 2012; Kumar and Havey 2013). Most studied risk types were supply risks (70 articles), demand risks (39 articles) and production risks (13 articles).

Common disadvantage of the studies made so far is the conceptualization of frames as they were not validated using real data or their implementation was not explicitly described.

Considering all of the above, this study intends to bring a contribution to the less developed empirical studies area on SCRM by using the face to face interviews with the responsible persons from Procurement, Logistics and Production Departments from 4 multi-national companies that are part of the study. Due to limited resources, the research is limited to Transylvania region but not limited to a certain economic sector.

The goal is to make initially empirical studies to gather the necessary data to be used later in developing a mathematical model that could help assess the level of the supply chain risk. Furthermore, the study is looking to use AHP (Analytic Hierarchy Process) method to evaluate

the risk ranks, which means risk quantification by using multi decision criteria analyze. Cobb-Douglas function might be used to identify how the companies' supply chains are being influenced by the identified risk factors.

Main type of risks in the supply chain

Delloite has identified many different risks that both Supply Chain and Logistics Directors must understand for effective supply chain management. However, most risks can be categorized into macro environment risks, extended value chain risks, operational risks, and functional risks. (Figure 3)

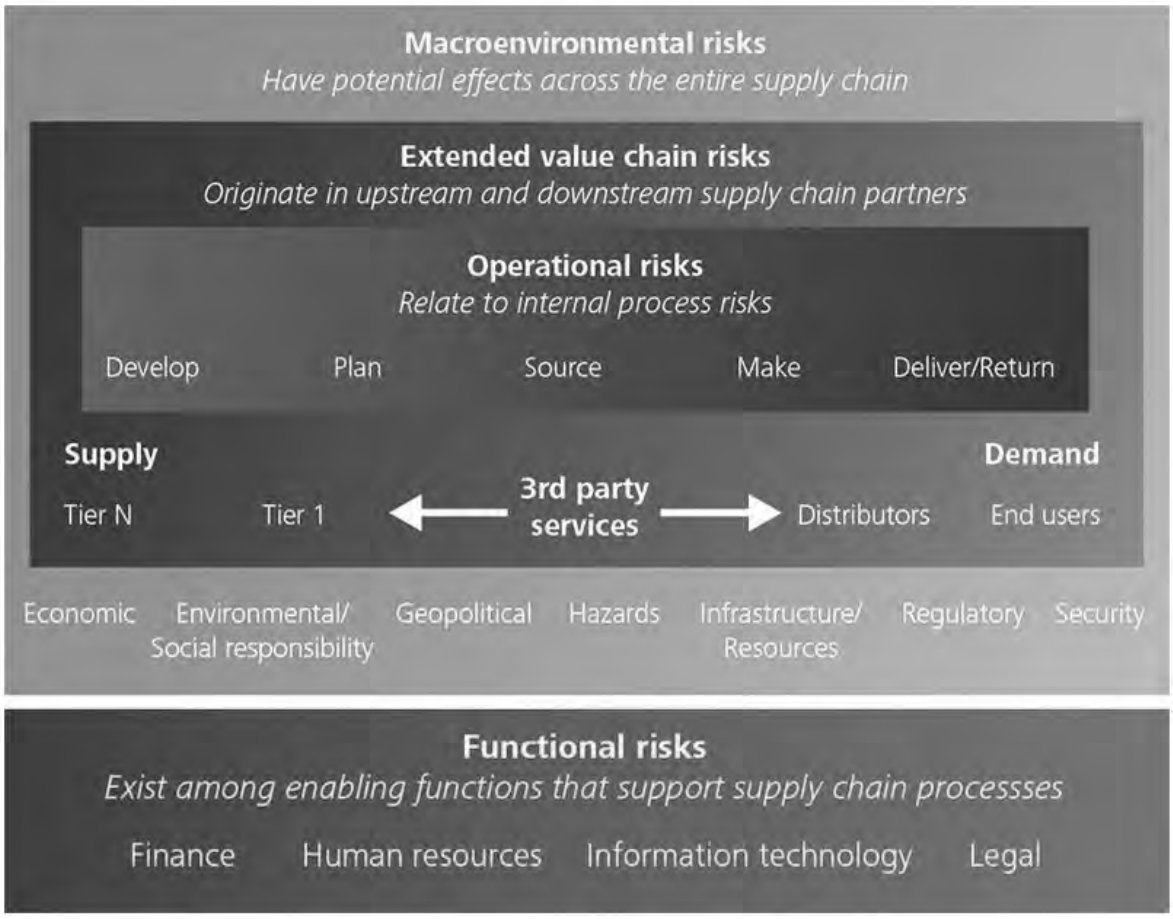

Figure 3. Supply chain risks (Deloitte University Press)

According to Tang and Sodhi, "Managing supply chain risk", there are two fundamentally different types of supply chain risks- delays and disruptions. These correspond to the "normal" risks experienced in supply chain management with the small and somewhat expected fluctuations of matching supply to demand, and to the "abnormal" risks of huge and unexpected mismatch of supply to demand due to a big failure with either the supply or the demand collapsing.

Delays in material flows often occur when a supplier, through overly high utilization or other causes of inflexibility, cannot respond to changes in demand. Other culprits include poor-quality output at supplier plants or at their suppliers' plants, high levels of handling or inspections during border crossings, or changing transportation modes during shipping.

Disruptions to material flows anywhere in the supply-chain are unpredictable and rare, but often quite damaging. Natural disasters, labor strikes, fires and terrorism can all halt the flow of materials.

In the present study there are four companies included and interviews were held with the procurement, logistics and production managers from each company to identify the supply chain risks they consider the company is being exposed at.

Findings highlighted that there are few major supply chain risk factors common for all 4 companies: late deliveries, material quality issues, frequent specifications changes - unclear or incomplete technical specifications, frequent demand changes / inaccurate forecast, materials inventory, single source supplier, arising prices for the materials (Figure 4).

Risk factor	Company A	Company B	Company C	Company D
Late deliveries	✓	✓	✓	✓
Material quality issues	✓	✓	✓	✓
Single source supplier			✓	✓
Arising prices for the materials	✓		✓	
Insufficient contract coverage				✓
Frequent specification changes	✓	✓	✓	
Limited supply alternatives	✓			✓
Frequent demand changes	✓			✓
High materials inventory		✓	✓	
Limited production capacity	✓	✓	✓	✓
High employee turnover	✓	✓	✓	
Inconstant production equipment maintenance				✓

Figure 4. Risks identified in the study

Other study findings:

1. The importance of the risk factors is a bit different from one company to another, due to the business specifics and to the latest disruptions that occurred into their supply chain which dictated the attention and prioritization of the risk mitigation measures.
2. One of the companies studied encountered a supply disruption in March 2016 due to a natural disaster that put on stop the whole production to a key- single sourced supplier. This event had as result a management mitigation measure decision to have all key materials at least double sourced, if not triple sourced to avoid such supply disruption.
3. In the case of another company part of the study, one of the supply risks dictated the development strategy of the company itself. To be more specific, due to limited supply sources for one of the raw materials needed for the production, the company decided to develop vertically and acquire a company that was producing that particular type of material to ensure supply continuity and price control over it.
4. Within the same company, the risks identified and their importance ranking differ from a department to another, in all four companies studied.
5. There are many similarities in the risks identified in the same departments (logistics, procurement, production) but from different companies (A, B, C, D).

The companies studied are operating in different industry areas and, although there is a lot of cross-over on some of the risk factors types, there are also specific problems encountered along the supply chain for each one of them.

Conclusions and future steps

This study deals with a highly debated issue with many implications for the theory and practice of management. The scientific approach is based on the belief that success, performance and competitiveness of companies depend largely on supply chain management and how risk is managed within the supply chain.

The current research findings bring real empirical data about supply chain risk factors, their importance ranking and the impact they have on the companies' operations and the type of mitigation measures that can be taken to overcome them.

As a next step in the study, the AHP (Analytic Hierarchy Process) method will be used to analyze the risk factors and establish a hierarchy based on factors frequency of appearance and impact on the companies' operations. In order to understand what is the trade-off between reducing the supply time and the risk impact that appears in the supply chain due to this time reduction, a mathematical decisional model will be developed.

This is one empirical study that contributes to a better supply chain risk understanding which can be of benefit for both the researchers as well as the practitioners in the supply chain risk management field.

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PUBLIC PROCUREMENT SYSTEM PERFORMANCE INDICATORS. CASE STUDY: ROMANIA

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Abstract

The performance of the public procurement system must refer to the outcome of the contract, it should not be limited to the outcome of the procedure. The article identifies the performance indicators of the public procurement system in Romania, reported by the regulatory and corrective institutions. Through the qualitative analysis of these institutions reports, it was observed an improvement in public procurement system performance evaluation, but there it remained room for better. The article complements the literature by proposing a new set of indicators for assessing the performance of the public procurement system in order to improve it, particularly by taking into consideration the implementation phase of the awarded contract. A more performant public procurement process involves a proper functioning of controls, the system of remedies and redress, the system of prevention of conflict of interest and corruption.
Keywords: *public procurement, indicators, performance, efficiency, contract implementation*

Introduction

A generic definition of the public procurement is the permanent or temporary acquisition by a legal entity, defined as contracting authority of goods, works or services by awarding a public contract (Asapro and Centras, 2014)

The importance of the public procurement system in developing countries is recognized at the international level. According to the World Bank Group (2016), the public procurement is a critical element of the government and it plays an important role in the poverty eradication and the development of the country. Meanwhile, in a public institution, because of the multitude of processes that are carried out and default the related risks attached, the public procurement activities are the most vulnerable to the corruption (Ministry of Public Finance, 2009). In the countries where the government is able to control the corruption from public procurement system, the human and financial resources are used efficiently, attracting more domestic and foreign investment, on average having a faster development (World Bank Group, 2016)

A performant public procurement process involves a proper functioning of controls, the system of remedies and redress, the system of prevention of conflict of interest and corruption. Although the public procurement system in Romania is guided by principles such as transparency, competitiveness and economic efficiency benefit of society, the current organization of monitoring and supervision of the system needs improvements and substantial changes. (Guvern, 2015). The monitoring of the public procurement is done inefficiently, without creating a coherent picture of the public procurement market, it is focused on the activity and not on the performance. The relevant performance indicators of public procurement system are not yet well defined, not broadly accepted / agreed by stakeholders, and include interpretations and different views (Government, 2015).

The term of performance refers to a particulary good result from a certain field.

The result of a public procurement procedure is the actual awarding of a contract according the principles specified by the GEO 34 / 2006 as amended and supplemented (non-discrimination, equal treatment, mutual recognition, transparency, proportionality, effectiveness of public funds, accountability.The outcome of the public contract award represents the completion of the assigned work as far as possible in the initial terms and conditions (quality, duration and value). Consequently, we can say that the public procurement system performance does not refer strictly to contract award, it could be attributed to the final result of the acquisition, namely, the obtained good, the executed work, the service.

Figure 1. The final result of the public procurement procedure

Therefore, it is confirmed at national level the necesity for an improved monitoring tool of the Romania public procurement system, by defining and implementing relevant performance indicators.

Literature review

The public contracts represent a signified quantum both from GDP and public expenditure budget of any country. The imperative objective of the public procurement system of a state is to ensure effectiveness and "value for money" in the use of public funds. The performance evaluation seeks to answer the fundamental question of whether the system of public procurement procedures and ensure the provision according to the main objectives set (OECD, 2011). In the same time, the evaluation should inform managers about what works well and should inspire to act what aspect should be improved to provide the necessary information for correction if something went wrong (Cărăușu, Pipă, Nimigean, 2015).

Through indicators the benchmarking system is performed according to set criteria, and the analysis of the problems causes or deviations from these criteria is made. The main aim of the performance indicators is to improve the evaluated system. According to OECD (2011), the measurement of the public procurement system performance can be done at three levels: national (meta), the contracting authority (macro) and contract management level (micro). Post-contract review of the public contract performance is a comparison of the goods, works, materials and services related to the given criteria specified and agreed. Performance measurement at micro level aims to verify whether the acquisition has provided benefits for which it was originally conceived and identify areas for improvement that can be applied when the future purchases will be made (OECD, 2011)

In general, the public institutions in Romania, except the easily quantifiable area, there are no performance assessment system, respectively no performance measurement indices. Mardale (2015) considers that it is necessary to introduce a performance measurement system in use of public funds by extensive use of clear, tangible and easy to use ratios. This would be a first step of the performance concept towards migration from doctrinal concept, intangible sphere to the real sphere, applied one

On the other hand, other countries, such as Thailand, in the practice of the larger construction projects, the traditional evaluation of performance (time, cost and quality) tends to be replaced by an more complex assessment considering new indicators such as safety, efficiency resource efficiency, stakeholder satisfaction and reducing conflicts (Ogunlana, 2010).

Deloitte (2011) conducted an analysis of performance indicators in public procurement, specific to Romania that are monitored at the EU level. These indicators relate to the total expenditure on works, goods and services, the value of calls for tender published in the Official Journal (TED), the number of calls for tender published in the Official Journal (TED). As a result of the report, an additional set of the performance indicators were recommended to be analyzed and used by the institutions involved, the new National Public Procurement Authority (NPPA) and National Counsel for Solving Complaints (NCSC). The additional performance indicators were classified into five categories: KPI related to the procurement procedures value, KPIs related to the procurement procedures type, KPIs related to notices, KPI related to the procurement procedures participants, KPIs related to the complaints.

Table 1 illustrates the performance indicators recommended by Deloitte to implement in the Romanian institutions, together with the indicators used by the EC to describe the procurement system at European level (EC, 2016) and indicators of EC comparing the performance of public procurement system of the EU member states (EC, 2015)

Table 1. Public procurement system performance indicators

KPI Categories		Indicators calculated by European Comission	Indicators proposed by Deloitte
KPI relating to the procedure value	KPI relating to the initiated procedure value	The estimated value of tenders published in TED (including utilities and defence)	
		The estimated value of tenders published in TED (excluding utilities and defence)	
	KPI relating to the completed procedure value	The estimate of total general government public procurement expenditure on goods, services and works	The total value of the a procedures (in relation to GDP)
		The estimate of total general government public procurement expenditure (in relation to GDP)	The value of procedures, allocated by type of contract (goods, services, works)
		Number of contract notices published in TED (excluding utilities and defence)	The average value of procedures, in accordance with the type of contract (goods, services, works)
		Distribution of contract award notices by size of notice for works (excluding utilities and defence),	
		Percentage of contract award notices below 134 000 euros with nonmissing value (including utilities and defence)	

KPI Categories		Indicators calculated by European Comission	Indicators proposed by Deloitte
Quantitative KPI		Percentage of contract award notices below 134 000 euros with nonmissing value (excluding utilities and defence)	
		Total number of contract award notices published in TED with nonmissing value (including utilities and defence)	
		Total number of contract award notices published in TED with nonmissing value (excluding utilities and defence)	
	KPI related to the notices	Total number of notices published in TED with nonmissing value (excluding utilities and defence)	
	KPI relating to the procedure type	The total number of notices published in TED, excluding utilities and defense	The number of notices on the types of contracts (goods, services and works)
			The value of each type of procedure (open tender, restricted tender, etc.)
		No calls for bid	The frequency of use for each type of procedure by type of contract (goods, services, works)
	KPI relating to the bidders		The average number of bidders participating in procurement procedures by type of contracts awarded (goods, services, works)
		One bidder	The average number of the bidders participating in the types of procedures assigned (open tender, restricted tender, etc.)
		Aggregation	
	KPI relating to the award criteria	Award Criteria	
	KPI related to the duration for the award	Decision Speed	
	KPI relating to the reporting quality	Reporting Quality	
		Publication rate in terms of total expenditure and excluding utilities and defence	
		Publication rate in terms of % of GDP (including utilities and defence)	
		Publication rate in terms of % of GDP (excluding utilities and defence)	

KPI Categories	Indicators calculated by European Comission	Indicators proposed by Deloitte
KPI relating to the complaints		The number of procedures, subject to the complaints
		The total number of the approved complaints of all contested procedures
		The total value of the contested procedures
		The total number of procedures, canceled by the contracting authorities
		The number of the procedures, canceled after the decision of the relevant institutions

At European level, in the comparative study of Member States, the public procurement system performance was measured according to the number of procedures which was submitted, the number of procedure with a single bid, procedure which were conducted without notice, procedure where the bids were submitted in common, according to the criterion of awarding, the procedure duration and the quality of reporting the information regarding the value of tenders (EC, 2015). According to the report, Finland has the most powerful system of procurement and worst-performing acquisition systems is used in Slovakia, followed by Croatia and Romania. The only satisfactory indicators of Romania's performance PP system are the contract awarding speed decision and the quality of information transmission regarding the amount of the winning bid. In Romania, the legal provisions about the value information transmission to al bidders are mandatory, therefore the latter indicator might not have as much relevance for Romania PP system performance. On the other hand, the short-term decision of the contract award does not justify the changing of the legislative rules fencing of the right of appeal, by imposing the guarantee of good conduct. According to the 2015-2020 national strategy on public procurement, following the appearance of the new body NPPA, the monitoring and supervisory functions will witness new dimensions of development. In the next period, to improve the performance of the national public procurement system, in Romania will be monitored some of the indicators proposed by Deloitte (2011), the total value of the public procurement compared to GDP, competition in the procedures and the participation of foreign operators, corruption index, the absorption of european funds and administrative burden.

Metodology

Using the qualitative analysis of the reports of NCSC and NPPA from 2015 it was aimed to identify the performance indicators of the public procurement system reported from these institutions and the evolution way of the public procurement system performane from 2011 until present. The information in the reports were selected avoiding activity indicators, were pooled and compared the information of both institutions, and after that, with the information from Deloitte report.

Results and Conclusions

From the qualitative analysis of the latest reports issued by the NCSC and NPPA I have identified indicators reported by these institutions. In Table. 2 were synthesized only performance indicators of the public procurement system, without taking into account indicators based on activity.

Table 2. Reported performance indicators reported at NCSC and NPPA

KPI Categories	KPI reported by NCSC	KPI reported by NPPA
KPI relating to the procedure value		The total value of initiated / completed by award / canceled procedure
		The value of initiated procedures by type of contract (goods, services, works)
		The value of initiated procedures by type of funding
Quantitative KPI		The number of EU/non EU signers of awarded contracts, The number of awarded EU/non-EU contracts
KPI related to the notices		The total number of initiated/completed notices by publication
		The number of initiated notices by types of contracts (goods, services and works)
KPI relating to the bidders		The average number of bidders participating in procurement procedures by type of contracts awarded (goods, services, works)
		The average number of bidders participating in the types of procedures assigned (open tender, restricted tender, etc.)
		The rejection rate by type of procedure
		The rejection rate by type of contract
KPI related to the duration for the award		The duration between the publication of the contract notice and contract signing for each type of procedure

KPI Categories	KPI reported by NCSC	KPI reported by NPPA
KPI relating to the complaints	The total value of procedures in which NCSC pronounced decisions	
	The value of the procedures in which NCSC ordered remediation/cancellation	
	The total value of EU funded procedures, in which the NCSC ordered the annulment	
	The total number of approved/disapproved complaints of the total number of procedures-subject to complaints	The total number of the approved/disapproved complaints of the total number of procedures-subject of the complaints
	The total number of complaints approved deciding the remedial/cancellation procedure	The total number of the approved complaints, where was decided the remedial/cancellation procedure, by type of the financing
	The total number of appeals annually filed	
	The number of the appeals filed against the documentation assignment/outcome of the procedure	The number of the appeals lodged against the documentation assignment/outcome of the procedure
	The number of the appeals filed in procedures funded by state/local/European budget	
	The number of the appeals filed in procedures by type of contract	
	The ratio of the total estimated value of the procedure published in PPES and the estimated value of the contested procedures	
	The ratio of the total estimated value of the procedure published in PPES and the estimated value of fixed/canceled procedures	The estimated value of the procedures for which they were issued remedial/cancellation decisions
KPI relating to the tender documentation		Percentage of the tender documentation published without rejecting/after 1 rejection/after 2 rejections/after 3 rejections
KPI relating to the control		The total number of finding and sanctioning minutes
		The total amount of fines
KPI relating to the NCSC		NCSC decisions, contested to the Court of Appeal
		NCSC pass/fail decisions rate

KPI Categories	KPI reported by NCSC	KPI reported by NPPA
KPI relating to the irregularities		The share of procedures depending on the degree of risk
		The share of advertisements published over 48 days
		The share of procedures whose value exceeds 10% EV
		The share of procedures with a value <85% EV
		The share of contracts awarded in a single tender

From Table 2, it can be seen that the evaluation of the public procurement system performance has been partly improved. Just 5 of the 13 performance indicators recommended by Deloitte (2011) has been implemented at the NCSC and NPPA level.

Some indicators are reported at the level of both NCSC and NPPA. This denotes a lack of the efficiency in the work of these institusions. And the most important aspect is that no institutions reports any indicator for the contract implementation.

Indicators like the total value of the public procurement, the value of the procedures allocated on different types of contracts (goods, services, works), the value of the procedures allocated by type of funding provide relevant information on market size for public procurement works, goods and services, and can also provide data on the amount or proportion of works, goods and services in the overall volume of public procurement transactions.

Given that in a single public procurement procedure, may be submitted several complaints, it may be more meaningful reporting the number of proceedings initiated in SEAP when illustrates an evolution of the number of complaints submitted, fact sustained by Mialţu and Patras (2014).

A procedure with 2 bidders and 1 appeal is in the same way non-performant as a procedure with 10 bidders and 5 appeals. Thus, can be more relevant the indicators which refer to the number of procedures, subject of the appeals, the total number of canceled procedures by contracting authorities, the total number of canceled procedures by other institutions decisions

The indicators like the value for each type of used procedure (open tender, restricted tender, etc.) and the frequency of use for each type of procedure by type of contract (goods, services, works) are relevant in justifying the risk analyzes for control and monitoring institutions, causing extra type of procedure that should be included explicitly in the control samples.

As long as the final result of a correct public procurement procedure is to achieve a work / providing a service as possible, in the initial conditions (quality, term and value), with funding from the state budget / Europe, we can talk about a public procurement system performance, if the duration or value of awarded contract are exceeded, if the contract has not been fully realized, has not achived the required standards?

The situation in Romania projects, financed with EU funds, to be completed by the end of 2015 and the completion of which could not be achieved by the deadline, there were losses of millions of euros. The money, which must be financed from European funds have been or will be paid

from local funds due to exceeding the time limits, due to the large number of the complaints, design errors, surveys, starting work without permits, etc. Among such projects include modernization Park Camp Road, land of lakes Floreasca and Tei, Square South Passage, Romanescu Park, Craiova Water Park, etc.) Some projects have not even reached the stage of awarding the contract (photovoltaic central, Slatina City Hall). I believe that in order to assess the performance or efficiency of the procurement system must be taken into account indicators such as the number, total amount and percentage of the public contracts for works / services / supply whose value / initial period has been exceeded, depending on the financing type. These indicators provide relevant information on the effectiveness of public procurement contracts.

Obviously, in this regard, it is useful the collaboration between the institutions, in order to implement new KPIs to improve the PP system performance monitoring and evaluation.

Table. 3 Proposed public procurement system performance indicators

KPI Categories	Proposed Indicators
KPI relating to the procedure value	The value of procedures, allocated by type of contract (goods, services, works)
	The average value of procedures, in accordance with the type of contract (goods, services, works)
	The value of procedure allocated by type of financing
KPI relating to the procedure type	The value of each type of procedure (open tender, restricted tender, etc.)
	The frequency of use for each type of procedure by type of contract (goods, services, works)
KPI relating to the bidders	Share of joint tenders
KPI relating to the award criteria	The degree of utilization of each award criterion
KPI relating to the complaints	The number of procedures, subject to the complaints
	The total number of procedures, canceled by the contracting authorities
	The number of the procedures, canceled after the decision of the relevant institutions
KPI relating to the contract implementation	The number, total amount and share of public works contracts / works / supply whose duration has been exceeded, depending on the type of financing
	The number, total amount and percentage of the public contracts for works / services / supply, whose initial value has been exceeded, depending on the type of financing

The work presented the performance indicators of the public procurement system in Romania, reported by the key factors from the public procurement system, the regulatory and corrective institutions, like NPPA and NCSC. New performance indicators were identified and recomended in order to improve the evaluation of the public procurement system, which must refer to the outcome of the contract, it should not be limited to the outcome of the procedure. The proposed indicators focus on the outome of the contract by taking into consideration the implementation phase of the awarded contract. The article complements the literature by proposing a new set of indicators for assessing the performance of the public procurement system in order to improve it. A more efficient procurement process involves a proper functioning of the controls, a more efficient prevention of fraud and corruption, sustaining a competitive market and therefore the country's development.

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ABOUT COMPETITION, COMPETITIVE ADVANTAGE AND CRITICAL SUCCESS FACTORS

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Abstract

Purpose – The concept of *competition* is increasingly more frequently used, in correlation (sometimes, in opposition) with a newer notion, namely, that of the *coopetition*. Searching of the tools that can be used in an integrated approach of the two concepts, and their popularization, becomes a daily concern, in the various types of social systems.
Methodology/approach – Critical analysis of the specialty literature.
Findings – This work contributes to the understanding of two important tools, with which competition can be managed, within of the different social systems; it is about the "competitive advantage" and the "critical success factors".
Research limitations/implications – Limitations are given by the qualitative and subjective aspect of the interpretations.
Practical implications Emphasizing the benefits of competition, the paper provides a possible answer to the question: "What is important to have success in a particular field?"
Originality/value – The innovative approach of some tools, needed to manage the competition, in the business world.
Key words: competitiveness, competitive advantage, critical success factors.

Introduction

Among the maxims traveling often, today, on the Internet, there is one that says "to enter in the competition to have fun, at work and in life couple, it is ideal for those who want to be always tired or to lose what's good in life". Thinking about how much we can give, or no, credence, to such allegations, I wrote this article about "competition" and "competitiveness", but, also, about the elements that make the difference between winners and losers, with particular reference to the world business.

Is it beneficial, or not, competition in within the different social systems?

Most psychologists endorse the concept that competition is a destructive one, especially when we refer to the educational system. The idea of competition kills the appetite for learning and, actively, undermines the quality of learning process, says American psychologist Alfie Kohn (2016). In his view, "the competition is an arrangement in which, some must fail for that others to win", he nevertheless accepting that, there are benefits of such an arrangement, such as the rightness and the spirit of competition. Examining the more hostile side of the competition, the American psychologist believes that "sportsmanship" is an artificial concept, that "only provide a more beautiful face, to a much more unpleasant concept, which split people, and turn each against other (...), a way to move responsibility for the negative consequences, from structure, to

individual." For A. Kohn, the ideal situation would involve not only the elimination of competition that stands in the way of success, but also, a promotion in parallel, of cooperation.

Is it so, really? Can we eliminate the competition on different social markets in which we operate, now, when the international general policy is precisely that to punish anti-competitive practices? Anyway, what advantages would bring this? Trying to answer to those questions, I propose to move our discussion to other social systems and, for starters, let's look a little to the „sports world" where, in our perception, the excellence can be defined only in relation to the competition, and the lack of the spirit of "competition / competitive" (attributes strictly necessary for understanding the nature of competition) equals the mediocrity. Such a perception can not be accused, in any case, as corrupt morally or intellectually; it is one as realistic as possible, for any athlete found, "on his own skin", that without competition, its ability to achieve its maximum performance are significantly diminished. Moreover, it is widely recognized that, we like, through various games (individual or collective), to outrun ourselves, still at an early age, and the introduction of "awarding" in the game, incites and extra encourages sports. We all are egocentric, willing to receive congratulations and, generally, we like to win the competition in which we participate.

Is it „sports world" an extreme case, and one particular? Certainly NOT, and to prove this, I propose we move our attention further, to another area, where, like in sport, the competition has become today, occasionally rough, aggressive, sometimes even violent; it is about the business world[1].

A number of specialists in management (especially the strategic side of it) concern the relationship between strategy and competition by reference to the original meaning and content of the first term, so by reference to some specific military approaches. Thus, the competition appears to be a confrontation between two armies that involves a significant consumption of resources by both parties and which aims to destroy his opponent. She, the competition, is related to sustaining organizational entities interests, interests that may be mainly political or economical. Adapting this perspective to business world, Băcanu (2014) believes that this "original" model of competition has evolved today, to forms involving less exclusion and fewer resources consumed in the „battle" with opponents. "Market structures known as «deadlocked», formal alliances between competitors and so said anticompetitive, competition regulations, «blue ocean strategy» (...) and many other examples are evidence that the logic of confrontation is not strictly necessary for the evolution of a company, even if the existence of the competition in the economy is considered a prerequisite of the modern state" says the cited author, concluding that "there is an inextricable link between strategy and competition" and that it is not mandatory the existence of competition for "the strategy involves the pursuit of interests and in other logic than that of confrontation". However, for Michael Porter (2008), who sees the competition and the strategy as two fundamental concepts of the business world, "the strategy can be likened to creating some lines of defense against the competitive forces, or with the identification within the scope of those positions where such forces act with minimum intensity". Furthermore, this defining of strategy is seen by Porter, as valid not only for companies, but, also, at the level of institutions, city centers, governments or nations.

Starting from a certain present reality of the business world, other authors see the competition as a support of certain forms of cooperation, including under the form of avoiding the opposition of some interests. Logically, for the dynamic of relations between firms today appeared in the management literature and the notion of "coopetition", concept that involves a hybrid behavior, characterized by both competition and co-operation, between various types of business organizations.[2]

[1] Discussion of the significance of the competition can be easily extended to a broader organizational context than strict business world.

[2] Even though scientific research has not gone further beyond defining this term, authors like Brandenburger & Nalebuff (1996), Lado, Boyd & Hanlon (1997) and Gnyawali & Madhavan (2001) are evoked by Dagnino and Padula (2002) as fighting for recognition of this intermediate state between competition and cooperation, so a new competitive system of value creation.

However, I believe that even when we speak about cooperation, it aims ultimately the survival within the competition and competitiveness (collective sports are an undisputed evidence for this). For, competitiveness occurs even when groups of companies that are related and are mutually supporting, compete, cooperate and improve their industry (sector) to which they belong collectively[3]. In this meaning, the concept of "network companies", for example, reflects the reality after 1980 at world level, namely that any organization can become competitive if knows at all times to develop and be within competitive company networks, which requires an appropriate approach, yet from the phase of strategic planning (Fărcaș, 2004)[4]. Only a proper appreciation ex ante of the nature and the form of the competition in which shall participate, an economic organization can properly direct the strategic capabilities available, to achieve the existing critical success factors on the market in which it operates[5]. Moreover, the strategy, as Michael Porter said since 1985, is just the way to get certain types of competitive advantages in the competitive struggle. The principle of natural selection can be adopted and applied here, in the way that, there is competition between different organizational forms, the most powerful form (and which, so, will survive) being the one that dynamically adapts the best to the conditions of the environment in which it operates, reaching the success key factors and holding as many competitive advantages.

Competitive advantage and critical success factors - qualitative indicators of competition

The concept of "competitiveness" generally means the ability of a business system to face competitors in the markets in which it operates. A company has a "competitive advantage" only to the extent that manages to outdo competitors, even though "a little" (no optimizations doing here!) in certain key aspects of the competitive game. For, the *competitive advantage* may occur when, the organization acquires or develops an attribute, or a combination of attributes, such as: a superior position in the market, an easy access to natural resources (minerals of high quality or cheap energy), ease of availability of highly qualified human resources etc., that allow it to overcome its competitors.

When it is capable of resisting to the attempts of imitation of competitors, the company can maintain the competitive advantage it holds. A technological revolution, however, can destroy the competitive advantage of a company, without be subject to attempts of imitation. Thus, the concept of competitive advantage gives to the company only a ephemeral protection, in contrast with a sustainable advantage, which have to be seen as being more solid, the latter being a particular advantage that competitors do not have it and do not have the possibility immediate to obtain it. Sustainable advantage can result from a particularly know-how, from a legal protection (a concession, for instance), a secret manufacturing (nota bene, however: a product can be analyzed and discovered its composition, and the patents, often, offer just an illusory economic protection), from the force of an image developed by the company and accepted by the market (see the IBM), from a highly favorable geographical location. However, even if a sustainable advantage provides a solid protection on a long term, enabling for the company, that it owns, the choice of a more offensive strategic behavior, no such advantage is not definitive and absolute, practice demonstrating that no firm is protected definitively.

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[3] For an industry to be competitive, it needs it to benefit from the existence of local supplier industries to be competitive themselves. When there are a large number of firms in an industry, even if small, this stimulates the emergence and development of upstream and downstream industries.

[4] Three concomitant current phenomena justify with priority the reason of being of a network: the globalization of trade, the emergence of new information technologies and decentralization of decision following the disappearance of traditional boundaries of the firm.

[5] We define the general *capacity* of a firm by the total amount of the *services* it can provide in a given period with the *resources* and *competences* that owns and / or controls. *Strategic capacity* of a company is a true alchemy of "distinctive resources" and "fundamental skills" that, at some point, must ensure the achievement of success key factors in its activity sector, in order to obtain competitive advantage.

Criticized by some authors, as being ambiguous, subjective and artificial[6], the notion of "competitive advantage", however, it has the merit to narrows the performance analysis field of an economic organization, at the study of how the strategic capacities that it possesses, allows it, or not, to reach the existing critical success factors, within "its competitive area". Market leadership position is not a cause, but an effect of the various advantages or disadvantages competitive that the organization has them at one time.

In conclusion, the competitiveness of an enterprise can be assessed through the main advantages or disadvantages resulting from comparing its offer with that of its main competitors; comparison to be carried out not only objectively, but also through actual perceptions of the main partners interested (especially customers and competitors). Must, however, be understood that, a company which is placed successfully (due to, e.g., a high quality or innovation) on a particular segment, where are no other competitors at a time (as being in a situation of quasi-monopoly) is one that it does not necessarily prove competitiveness; but it may, directly or indirectly, generate some synergies, economies of scale and positive externalities that can reinforce a certain strategic position (but) within a competitive system.

A *critical success factors* (CSF) is a strategic variable, that has a decisive action in the act of buying upon the market and which influences, in a sustainable way, the customer's choices between several suppliers. CSFs are the milestones that underpin the competitive advantage for defining possible areas where it can get such an advantage; companies that do not strive to get to know them, or do not have the courage or determination to fully exploit them, are at risk of being "swept away" by the market. Knowing these CSFs does not automatically ensure the success. A strategy will be successful only if company possesses these CSFs intelligently, by converting them into one or more competitive advantages.

All current top firms, without exception, have strengthened their position by applying a strategy based on CSFs. Critical success factors are generally reduced in number from a sector level (approx. 3 to 8), but they fluctuate from one sector to another. Thus, in the extractive sector, the access to rich deposits represents such a CSF, while in the production of elevators, the quality of service can make the difference between existing competitors. On brewers segment, such CSFs can be the high degree of utilization of production capacity (to ensure a low production cost), a strong distribution network (because through the large volume of sales, it can achieve economies of scale) but also an appropriate advertisement. The quality of a website is an CSF for an e-commerce enterprise, while, in the banking sector, such differentiating factors are: the interest rate on loans and deposits, geographical proximity to serving, commissions and taxes of given services, safety and speed of serving.

Also, it has to be presented that CSFs can not be considered the same forever, they evolving according to the phases of the life of the sector analyzed, both under the pressure of technology and market. Technological competence may be a CSF during the launch of a product, while the ability to produce large quantities of products at low costs, could be a mature stage of a CSF. This requires the identification of CSFs in an optical dynamic, for understanding and predicting the changes that they suffer (for, that the new CSFs may occur and would replace those non-functional at a time). Because consumers, generally, give different weight to these factors, the more they (CSFs) are, the more companies may coexist by specialization.

To conclude ... Let us return to the initial dilemma

It is utopian to believe that we can eliminate the competition in the business world. But, we can change the rules of the competitive game, and introducing some new concepts as "enlarged governance", "corporate citizenship", "corporate social responsibility," "corporate social

[6] Could we imagine today the theory of business outside of concepts invented by people and who, even if they are more quantitative and (so) perhaps less subjective, are, alike, intangible and artificial: income, expenses, profits, various types of capital etc.?

performance", "shared value (common)" etc., even if, to someone, they seem abstract or artificial, they are considering just reducing the negative effects of present rudimentary and harsh competition, so it will be accepted, in its "more diluted" version, by a large number of "interested parties". For, related to the new environmental constraints and taking into account the motivations of different participants (integrating here also the expectations of the community), even the method of measurement of performance itself, must become a competitive co-product of a social construction between the company and its stakeholders. Achieving this "new perception business" can profoundly change the nature and the rules of the competition in the business world, allowing, in same time, the recovery by companies of their social legitimacy; but on one condition: she must necessarily be accompanied by radical reform in the way of governance of the company.

However, even when we speak of governance, so about forms of participatory democracy, yet we cannot ignore the idea of competition. American billionaire, Timothy Cook Draper, famous for its investments in technology, said recently (2016), that governments compete in the same manner as companies and that most wasteful industry is this of governance. "The governments of various countries have not understood that they compete with other states and that governments transcend territorial boundaries of the country. If man is not satisfied with the way the country is run, he goes elsewhere. Through an aggressive government strategy to raise capital, Singapore has become a very rich, from a very poor state. When Estonia introduced the electronic voting, young people began to vote massively, when it was introduced digital identity, decreased crime. Nor in the US situation is not good: California, for example, has a lazy government", said Draper.

I believe that any education system, with which we began this article, the competition should not be perceived as a fatality, but as a factor of progress. It would be a mistake not to offer to the students, skills and entrepreneurial spirit, knowing that they are moving towards a highly competitive world. Life itself is a competition, and the young people must be prepared for it. Therefore, by their programs of training, the schools (which are also competing with each other) should provide not only the professional skills required in the labor market, but also transversal skills like "teamwork" (thereby aiming cooperation), or ”entrepreneurial” nature skills (aiming the competitive side of the business world). As a teacher with seniority in the system of higher education, I certify that the performance of my students grew when, within practical works made, I called to forming teams and, in addition, I put these teams to work in a competitive system that allowed obtaining rewards. For, what is really more motivating and enjoyable, than, in the final, to win the competition, whatever the form under the rewards may come (points, grades, diplomas, cups, medals, money, prestige etc.)?

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CRISIS MANAGEMENT FROM THE SPIRITUAL OUTLOOK OF THE THREE MAJOR WORLD RELIGIONS. ARE THERE ANY PRACTICAL LESSONS TO BE LEARNED?

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Abstract

Purpose *– The paper is aiming to identify practical lessons on crisis management from the spiritual outlook of Judaism, Christianity and Islam.*
Methodology/approach *- The present paper is a conceptual study based on a limited set of critical key aspects of the reviewed literature on crisis and crisis management that were put to work in a searching process across the Holy Books of the three major world religions.*
Findings *– Crisis have afflicted both secular and religious establishments in the history of the mankind, and their definition features, underpinning causes, stages and solving approaches prove several similarities, the spiritual-religious element broaden the entire perspective.*
Research limitations/implications *– The research was limited by the speculative aspect of the approach.*
Practical implications *– There are practical lessons on crisis management from the three major world religions that organizations could benefit from.*
Originality/value *– Mirroring secular and spiritual perspectives on crisis and crisis management provides an added value towards a better understanding of the organizational crisis phenomenon and its approaches to manage them.*
Key words: *crisis management, spiritual outlook, world religions*

Introduction

In the recent decades, with the intensification of phenomena generated by humans and nature, which led to the collapse of several organizations and important natural disasters and social convulsions (e.g. the global financial crisis, the recent terrorist attacks beginning with 9/11, the Tsunami or Fukushima disasters, or the ongoing crisis of refugees), an increasing interest on crisis management has emerged, producing a large amount of literature in the field. Viewing closer the subject covered by various textbooks, scholarly papers or books on case studies one begins to question if the past outlook has not slowly reached its limits, prompting researchers to broaden their field of investigation, for example towards an integrated psychological, social-political, and technological-structural perspective [Pearson C., Clair J., (1998)], or from a political-economic, psychological, sociological outlook [Booth S.A. (1993) apud Coman C. (2009)], by emphasizing the stakeholder theory [Thiessen (2013)], of the ethical aspects of crisis [Crandall W., Spillan J. (2013)], or even the more recent notion of workplace spirituality [Mitroff I.I. (2003) apud Schwartz (2013)]. This findings lead us to question if other areas of social life, far less investigated in the topic field, such as the mainstream religions couldn't be a valuable "source of inspiration for management" [Abrudan (2013)], particularly regarding this topic. The argument for this is simple, as all three religions addressed in this paper support a holistic approach to human life and the world in general [Lungu, Lungu (2010)], and in the same time they claim their lifestyle status [Abrudan (2013), Istocescu (2005)], refusing the limited perspective based only upon the doctrine they promote and the "ritualism" they practice. Further, we consider that the mainstream

religious literature is able to provide with an added value and can contribute to a better understanding of the organizations' crisis and crisis management. It is why this paper is aiming to extend the research field on the proposed topic by identifying some practical lessons on crisis management from the spiritual outlook of the three major world religions: Judaism, Christianity and Islam.

A literature review on crises and crisis management

Tracing its origin over centuries from the Greek κρίσης (crisis) and genuine understood either from a legal-political viewpoint (as decision or turning point [Krystek, Mischa (2013)], a medical standpoint (as an action to assess and judge a phenomenon), or a religious perspective (as "interpretation" of the divine signs from birds' flight or song) [Bejin, Morin (1976) ; Brunkhorst (1993); Stern (1976) apud Coman C. (2009)], the term crisis entered in the last decades the public consciousness and the everyday language being used somewhat excessive, from personal health problems to the complex macroeconomic events, and also in various forms, like risk management, incident management, corporate or organizational crisis management, issues management [Chase H. (1977) apud Coman C. (2009)], business continuity management [Elliot D. (2004), apud Lytvyn (2014)], etc.

It is the reason why some authors talk about an inflationary use of the term and the need of its conceptual delimitation, separating crises in its proper meaning (we'll see later) from the associated phenomena and manifestations, e.g.: disasters, damages, conflicts, risks, issues, scandals and organizational burnout [Krystek, Mischa (2013)]. In this respect, some authors are considering crises as being just "those events that seriously threatens the values and proper functioning of an organization" [Coman C. (2009)]. However, a clear demarcation between them is quite difficult due to their overlapping [Krystek, Mischa (2013)], and as "the term crisis is particularly controversial, …, the realities alleged that reflects dimensional or multidimensional events, phenomena or processes are discussed, defined and described in various explanatory models with diverse areas of functionality, with standalone or combined methodologies, generating a multitude of consequences and meanings both at epistemological and methodological level" [***, MCVG, (2012)].

Criticism on the topic argue its simplistic and incomplete level of understanding, the lack of a scientific meaning [Burnett J.J.(1998); J.A. Robinson J.A. (1994) apud Coman C. (2009)], its insufficient covering in academic literature, in comparison with other management fields [Lytvyn (2014)]. So, "crisis management appears to be a dispersed and non-cumulative research field with lack of theorization, ambiguity of definitions, methodological monolithism, and crisis notion misperceptions" [Roux-Dufort (2007), apud Lytvyn (2014)], or even that "crisis management may be simply management under particularly high stakes, but not a qualitatively different phenomenon and that may not deserve a research strategy distinct from the general study of management" [Diermeier D. (2007), apud Lytvyn (2014)].

There are also some authors considering not only the negative effects of crisis, but also the opportunities generated in time of crisis either in terms of the benefits for the organization [Meyers G., apud Coman C. (2009)], or regarding the effective organizational learning. This integrated and ambivalent nature of crisis seems to be one of its defining features [Krystek, Mischa (2013)]. Seen from this perspective, despite its inevitability [Fink (1986), apud ***, MCVG, (2012)], the crisis is disclosing its ambivalent character laying in the binomial field of between risk and opportunity, success and failure.

A closer survey on the literature devoted to the topic identified an amount of circumscribed facets of the phenomenon like its numerous and redundant definitions - differing on the emphasized aspect by the author or its understanding as an event or a process -, its types, features, steps (lifecycles), causes and consequences. The recommended crisis management strategies include crisis planning, setting a crisis management team, the internal and external communication, taking into account the interests of all stakeholders, establishing clear priorities of intervention,

and not the least the lessons to be learned from the past. Crisis communication advices and case studies are abundant.

Methodology and findings

Based upon the reviewed literature, the authors of this paper proceeded to an extensive itemizing process of the above mentioned crisis ingredients, thus resulting a certain set of key aspects of the researched topic: general assertions on crisis/crisis management (not counted), definitions (52), sets of crisis characteristics (23), types (15 classification), lifecycle sets (14) - most of them grouped in five, four or three stage models -, collections of causes (12) and consequences (4), crisis management definitions (10), principles of action, measures, and strategies (15), covering a time period of about a half-century, between 1963 and 2013.

Having this done, we identified a limited set of keywords describing these key aspects, which were then used, after a proper "translation" into a more adequate language and several refinements, for an attentive searching process across the content of the three Holy Books, i.e. the Jewish Bible, the Christian Bible and the Quran1. This approach conducted us finally to the relevant scripture passages of the topic. However, unlike the term of crisis, the found descriptors of the available definitions for crisis management have not led us to conclusive results in terms of identifiable keywords to be put then in relation with scriptural verses and therefore, this track has been abandoned.

Considering the limitations of space, we present at the end of this paper only few examples of the most relevant key aspects of crisis and crisis management. Their selection was made in descending order of the frequency of occurrence among the researched sources. Finally, in order to save space, they were grouped by their definition features, causes and consequences for the crises and by the coping actions, arrangements and strategies, and success/failure factors for crisis management.

Discussion, conclusions and further research

The above "mirroring" of the secular and spiritual perspectives on crisis and crisis management reveal several aspects that deserve to be commented.

The reviewed crisis management literature, even trying to view the topic from different perspectives [Pearson C., Clair J., (1998); Booth S.A. (1993) apud Coman C. (2009)] showed not to include the spiritual facet of the problem. And this, despite an emerging literature in the last decades, both conceptual and empirical, devoted to finding a bridge between spirituality and management, or to integrate spirituality in various management fields: workplace spirituality [Mitroff I. & Denton E. (1999), Ashmos, D.P. & Duchon, D. (2000), Giacalone R. & Jurkiewicz C. (2003), Pawar B.S. (2009), Lungu, Lungu (2012)], spiritual leadership [Sanders J.O. (1974), Sanders J.O. (2007), Fairholm M. R., Fairholm G.W. (2009), Fry W.L. (2003), Fry, L.W. , Matherly, L. L., Whittington, J. L., Winston B. E. (2007), Fry W.L. (2008)], or even considering God (and primarily for the believers) as a possible stakeholder [Schwartz (2006)]. The only mentioning of an alleged intervention from above was found in the statement "hurricanes, floods and other acts of God" [Egelhoff W.G. , Sen F. (1992) apud Coman C. (2009)].

Then, the ethical aspects of modern crisis are, as expected, increasingly addressed in both crisis management literature [Crandall W., Spillan J. (2010); Pearson & Clair (1998); Coombs T. (1999), apud Coman C. (2009)] and the accounts of the sacred books of the three religions.

Finally, the Holy Books of the researched three mainstream religions (Torah for Judaism, the Bible for Christianity, and the Qur'an for Islam) provide a large amount of examples of crisis situations with either successful or failed approaches in overcoming them. However, there are unfortunately few studies devoted to these crises, viewed through the lens of the gained knowledge by the nowadays management science.

What are now the practical lessons to be learned?

Firstly, the spiritual facet of humans cannot be ignored, as “all of man’s problems first take root in the spirit world before manifesting in the material world” [Excel M.E. (2011)] and it is also beneficial in organizational life [Mitroff, apud in Schwartz 2006)].

Secondly, starting from this perspective, we may push the things beyond Schwartz’s prudent stance with pros and cons in considering God as a possible stakeholder [Schwartz (2006)], by reconsidering the accounts of Torah, Gospel and the Noble Qur'an. So, according to these accounts, God is an active pure Spirit Being that rules people and earth [Ps.47:8, 97:1, 99:1, 121:7], He rewards the righteous, good and faithful and hates and punish the evil-doers [Num.14:22-23, Jos. 24:20, Job 5:19, 10:12, Ps. 103: 2-17, Eccl. 2:26, Is., 25:4, 28:29, Jer. 36:31, Ezek. 3:20, Amos 5:14-15, Math. 6:31-32, Rom. 2:9, Qur'an 3:134-159], He is the most profound knowledge-holder of the human being [Ex. 4:11; Heb. 4:12-13]. Not the least, the created spiritual beings take also a certain influence on the whole [Ex. 3:2, Num. 22:4, Judg. 6:11, 2 Sam. 24:16, 2 Kings 19:35, 1 Chr.: 21:27, Ps. 34:7, Zech. 1:19, Lk. 1:11, 1:28-35, Jn. 20:12, Acts 5:19, Apoc. 2:1, 2:8, 2:12, 3:1, 3:7, 3:14; Qur'an: 3:39-45, 4:97, 16:28, 53:26-27].

Finally, if the moral dimension is a key value in understanding what happens in both organizational and personal life, then the business ethics violations, inappropriate and violent expression of the stakeholders’ gripes, the reputational attacks and most of what we call by poor operation of the technique and mismanagement could be eliminated to a great extend from the common causes of crises.

As a conclusion, our research on the scholarly studies in the field of crisis and crisis management revealed that the authors either ignore the spiritual-religious aspect, or stand aloof with prudence from acknowledging the intervention of pure spiritual beings in the daily life of man. On the other hand, we found in the holy books of all three mainstream monotheistic religions a large amount of key aspects circumscribed on crisis phenomenon. Parallels between the two above approaches show that the traditional-secular outlook is anthropocentric, while Judaism, Christianity and Islam integrate the spiritual dimension in their conceptual model, that holds a theocentric stance, in which God and the celestial beings are present as active stakeholders on most identified key aspects of crisis and crisis management. Moreover, all three holy books show a consistent set of relevant cases of effective crisis management, thou not discussed in the present paper.

Having these conclusions done, we think that further research on the topic from the spiritual outlook is needed, by integrating the writings of the historical - doctrinal Tradition literature, known as the “oral Tradition” of the three mainstream religions (Talmud, Christian Tradition and Hadiths), by comparing more profoundly the vast amount of case studies of both laic and religious sources, and not lastly by backing the theoretical ground with relevant empirical research.

Table 1. Crisis key aspects (grouped by their definition features, causes and consequences)

Identified key aspect in the literature	Selected keywords	Scriptural passages identified
1. Definition features		
- event (destructive/ harmful/ hazardous/ unexpected/ unpredictable/ stressful/ major/ threatening/ hurting/ interrupting / creating insecurities); - situation (of low probability/ disruptive/of high-impact conflict/ intense/ unexpected /of ignored risk); - time (of testing/ unstable/ unexpected/ transient/ dangerous / with insecure resolution)	Time of: decay, distress dears, troubles, trial, need, affliction, danger (war), distruction	- in decay (Lev. 25:35, Eccl. 10:18);); day of trouble (Ps. 20:1, 50:5, Nahum 1:7); out of distresses. (Ps. 107, 6:19). time of trouble (Ps. 25:19, 37:39, 41:1); in/from affliction (Ps. 22:24, 107:41, 2 Cor. 6:4) , …, time of war (Eccl. 3:8, Qur'an 2:177); - the six kind of troubles: famine, war, destruction, scourge of the tongue, devastation and attack of beasts (Job 5:21);
2. Crisis types according their causes and consequences		
- natural disasters (earthquakes, fires, floods, explosions, typhoons, hurricanes);	- earth, sea, river, hills, mountains	- God's unique and absolute power over nature (Ps. 8:3, 104, Nahum 1:4-6), and men (Josh. 4:24, Prov. 5:21, Job 12:18, Rom. 14:12, Jn. 15:5);
- business ethics violations (bribery, fraud, cheating, discrimination, unfair employee compensation, extortion, copyright infringement, discharge of toxic substances, conscious incompliance with legal liabilities concerning working conditions and protection equipment);	- steal, defraud, bribe, greed, envy/ covet, cheating, evil and evil-doing, wages, tax	- commandments against theft (Exod. 20:15, Lev. 19:11 , Qur'an 5:38); against fraud (Lev. 19:13); against envy/ jealousy/covet (Exod. 20:15, Qur'an 4:32); against greed (Prov. 15:27 , Qur'an 92:8-10 Abdullah Yusuf Ali ver.); against tax evasion (Rom. 13:6-7); against failure to pay workers on time (Lev. 19:13, Qur'an 23:8); against bribe (Ps. 26:10, Is. 33:15, Qur'an 2:188 www.irfi.org ver.);
- inappropriate/violent expression of the stakeholders' gripes (violence at work, strikes, boycotting products, activist actions, kidnapping, intentional alteration, terrorist acts, unauthorized intrusion into the computer systems, altering/falsifying information, etc.)	- kill/slay, violence	- the cause of afflictions is the iniquity (Job. 36:21); - commandments against murder (Ex. 20:13, Mt. 5:21-22, Qur'an 4:93), against/saving from violence (2 Sam. 22:3, Lk. 3:14);
- reputational attacks (slanders, gossip, pranks, rumors, damaging corporate reputation, altering/falsifying marks on visual identity: logo, corporate colors, etc.)		- six [things] doth the LORD hate: a proud look, a lying tongue, and hands that shed innocent blood, an heart that deviseth wicked imaginations, feet that be swift in running to mischief, a false witness [that] speaketh lies, and he that soweth discord among brethren (Prov. 6:16-19);
- poor operation of the technique and mismanagement (negligence, incompetence, recklessness of the technique, engaging in actions of major risk for the stakeholders);	- talebearer, false testimony, evil (guile) speaking (lips, tongue), a good name/of honest report	- commandments against talebearers (Lev. 19:16,), false testimony (Mt. 5:33, Qur'an 22:30, 25:17), evil speaking (Ps. 34:13, Ps. 12:3, Jas. 4:11); - the value of a good name (Prov. 7:1, 22:1, Ecl.7:1, Acts 6:3);
- accidents caused by human errors and/or malfunctioning of the modern technic.	- a wise trusty (faithful servant)	- responsibility/accountability for trusted goods and values (Mt. 25:14-30, Mk. 4:24, Qur'an 4:5, 23:8);

Table 2. Crisis management (grouped by its coping actions, arrangements and strategies, and success /failure factors)

Crisis management actions	Selected keywords	Scriptural passages identified
1. Crisis coping actions, arrangements and strategies		
Be positive and prepared for a crisis, be proactive and not reactive [Coman C. (2009)], act by deliberation rather than desperation [Nunamaker J. (1989), apud Lytvyn (2014)], see the opportunities [Guth W., Marsh C. (2000), apud Coman C. (2009)]	deliberation, despair, hope, trust, care, courage	- calling the Lord in fear and hope (Ps. 147:11, Qur'an 7:56) - putting trust in God preserves and protect the man (Is. 41:10, Ps. 4:5, 16:1, Mt. 6:33, 1 Pt. 5:7); - trust and respecteth are blessed [Ps. 40:4]; - importance of a courageous stance: (Deut. 31:6, Prov. 18:14);
Setting and training a crisis management team with certain abilities: act as a team, open views, capacity to preserve calm, knowledge of the company and its business, able to make decisions quickly and collectively, listening other opinions, express clearly the decisions taken [Regester L., Larkin J. (2011), Coombs (1999), apud Coman C. (2009)]	counsel, calm (steadfest), doubleminded	- the importance of council in decision-making (Prov. 20:18, 15:22, Lk. 14:31, Qur'an 3:159); - staying calm, patient and steadfest in time of afflictions (Ps. 22:24, 34:18, 94:19, Qur'an 2:177) and not double minded (Jas. 1:8);
Golden Rule in prioritizing the actions: the people first, then the environment, thirdly the propriety and lastly the money [Regester L., Larkin J. (2011)]	man (honoured), earth, stewardship (of goods), propriety	- the high rank of man in the Creation (Gen. 1:26, Ps. 8:5, Jn. 15:15, Gal. 4:7, Qur'an 17:70); - concern for the environment (Gen. 1:26, Qur'an 6:165, 7:56); - responsibility/accountability for trusted goods, values and proprieties (Lk. 16:1-8, Qur'an 2:188, 4:5, 17:34);
Golden Rule in crisis communication: being the first speaking about; telling only the truth; being responsible and compassionate; perceive media as partners and allies, not as competitors or enemies [Regester L., Larkin J. (2011)]	truth/sincerity, honesty (righteousness), compassion/mercy, integrity, friends	- mercy not sacrifice (Os. 6:6, Mt. 9:13); - the cardinal virtues of truth, righteousness, and integrity (Ps. 11:3, Prov. 12:17, Qur'an 17:35, 33:70, 61:3); - the counsel of friends (Prov. 27:9);
2. Success (effectiveness)/ failure factors of crisis management		
Factors of success: planning for crisis management, determining hazards and opportunities, defining the forms of response, controlling the environment, limiting the damage, taking measures to resolve the crisis, defining of steps back to normality [M. Nudell şi N. Antokol (1988) apud Coman C. (2009)]	planning/ forecasting, prudence/wise (wisdom)/diligence	- the necessity of planning the actions (Lk. 14:28); - high value of a prudent behavior (Prov. 13:16, 14:8, 18:15, 22:3, Mt. 25:1-13); - acting wisely (Prov. 3:13, 16:20, 28:26, Ps. 64:9); - behavior with diligence (Prov. 4:23);
Factors of failure in controlling the crisis: ignorance; arrogance; folly; negligence [Ronald Rhody apud Newsom et al. (1993) & Coman C. (2009)]	arrogance/ pride/ (highminded), negligence/ laziness (slothful/ slack hand)	- wrong path of pride and arrogance (Prov. 16:18, 1 Tim. 6:17, Qur'an 8:47, 17:37); - laziness and carelessness leads to loss and damages (Mt. 25:1-13, 14-30) and poverty (Prov. 10:4);

Notes

[1] For the English version of the passages we used several web sites, as follows: http://www.scripture4all.org/OnlineInterlinear/Hebrew_Index.htm for the Hebrew Bible; http://www.kingjamesbibleonline.org/, for the Christian Bible and http://www.aaiil.org/ for the Quran. For citing the scriptural verses with use the APA format.

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THEORETICAL ASPECTS OF USING AHP METHOD IN FORECASTING THE NUMBER OF NEW TECHNOLOGY POTENTIAL ADOPTERS

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Abstract

Purpose *– Communication channels as mass-media, Internet, magazines, radio, television, newspapers and oral communication allow identifying the importance of the technology type for the adopter, innovator or imitator.*
Methodology/approach *- The empirical study presented in this paper is a deductive research that relies on existing theory about Analythic Hierarchy Process (AHP) and how this method can be used in order to forecast the number of new technology potential adopters.*
Findings *– Using AHP method it can be created opportunities for tracking the impact of technology in establishing marketing strategies and for allowing the development of investigating influence of the type of technology on the decision to purchase a product.*
Research limitations/implications *– We considered this research as being highly topical, given the importance of knowing consumer behavior for increasing speed of technology diffusion and for developing appropriate marketing strategies.*
Practical implications *– Dividing the two categories of adopters, innovators and imitators, by applying AHP method, helps to create an image on the importance given to new technologies by consumers based on specific external and internal factors influence in the technology diffusion process.*
Originality/value *– If the marketers know the type of the adopters they have access to consumer personality, which provides them opportunity to know the consumers to whom they addressed.*
Key words: *technology, adopters, marketing management.*

Introduction

When launching a new product on the market, which is different from all competing products by its innovative character, the organizations invest significant resources in the first phase of its evolution on the market, in order to attract the innovators and imitators, as type of new technology adopters. New technologies have a specific route before being brought to market and adopted, being the result of the consumers' needs and values. The new target of marketing is to focus on consumer behavior in the market, on his values and beliefs, on technologies hierarchy according to their importance for prosumers. Technology diffusion, by its definition, uses communication channels to spread information on new technology among consumers.

Within the process of purchasing or designing a new product, the manufacturer and seller is inevitably facing problems apparently without an immediate response. These problems relate to the identification of the best existing technology for a specific product, to the performances required so that the product keeps afloat in terms of technology and to how one can achieve a compromise between the offered technologies, so that the result is a product compatible with the consumers' requirements in the market.

Research problem

The research question is as follows: Could the analysis of the impact on consumer behavior of the technology type actually improve marketing strategies resulting thus in an increasing number of adopters of new technologies?

Starting from the approach of the interferences between technology diffusion and marketing management, through which we have identified the importance of technology to establish marketing strategies, we proceeded to investigate the type of technology influence on the decision to adopt a new technology. In this regard, we used a multi-criteria analysis method which is a useful tool for the decision-maker since it has a large number of decision variants; in this paper we will present the need to use such methods in marketing.

Methodology

This paper uses a descriptive approach, with the aim of increasing knowledge about the AHP method and of making clear how the criteria, in this case, the technologies and their importance to consumers are managed through this method. As research strategy we used a systematic review of the literature because it is the premise for evidence-based practice, to get different answers to the research question and to identify which ones are revealed to be more effective. Before tackling the AHP method, we presented the type of adopter, innovator and imitator, starting with the Bass model. The AHP method is based on the ranking of the technologies incorporated into a product, given the technical and functional product performance for the innovator or imitator type of consumer.

Aspects of the importance of technology for prosumers and marketing

The positive relationship between innovation and marketing was highlighted by Drucker (2004) who believed that the purpose of a business is to create a customer and that a business enterprise has two - and only two - basic functions: marketing and innovation. Fernez-Walch and Romon (2006) defined marketing as having as essential function the capitalization of the product or service resulting from innovation, after having investigated the various possible applications, starting from a specific technology. Lakatos et al. (2016) considered necessary the comparative studies between exploring the relationship between successful and innovative social services and the user involvement in their development and as well between the research of different levels of the organization structure (decision-making, organizational culture, communication strategies, human resources etc.) and their influence in building innovative social services.

Dovleac (2011) argued that rarely a good product is a result of a single technology. According to the amount of technology in the bidding, the organization makes decisions about the marketing strategies that should be adopted. In general, the products are a combination of old and new technology, advanced technology contributing in different proportions to create them. Examples in this context are the automobile, the mobile phone, the camera, product appliances that are created through various types of technology and their production process involves a large number of specialists in science and technology (Dovleac, 2011).

Lobontiu (2008) argued that technology diffusion means all that is involved in promoting and selling a product and that marketing is that specific segment of the diffusion process over which the company has control, such as advertising, promotion and value. Ucenic and Bacali (2007) argued that nowadays it is not very easy to convince consumers to change their purchasing behavior. They face constantly a refined and insistent advertising (Ucenic and Bacali, 2007).

Chiu et al. (2010) believed that technology acceptance is transversal in nature, based on the theoretical work of sociology, cognitive psychology, information management and systems design. Suriñach et al. (2009) stated that not all the consumers are informed about the new technology at the same time. From this point of view, the distinction made by Rogers, in 1995,

may be quite useful. According to the author, two main traits characterize every new technology: software and hardware. The latter is the new tool or machine that will be produced or sold in the market, incorporating technology as a material or physical object. While the first is the effective information. This information can be transmitted through user manuals, but it becomes tacit and only transmitted from person to person. Without good software knowledge, many potential users will not adopt a new technology, even if they know of its existence. To acquire software knowledge, potential users need to be able to communicate directly with the consumers who have accumulated experience, by following a process of diffusion of information "word of mouth". This is why new technologies are not transmitted instantly when potential users know of their existence. Over time, the users' experience led to spreading knowledge about the existence of technology to the non-users, which, in turn, become users (Suriñach et al., 2009).

The degree of innovation and the degree of imitation of a new technology

Sääksjärvi (2003) stated that technological markets innovation is characterized by extensive knowledge, technical and reliable operating independently of new technologies. Hoeffler (2003) addressed the social construction of technology from the perspective of different social groups perceiving differently technological products. Surveys, on this subject, analyzed how technology adoption is affected by the characteristics of the society to which potential users belong. According to these studies, understanding the relationship between the users may be less important than the factors relating to the product itself, which highlights the resistance to technology and is thus a study on "the interaction between technology and social context" (MacVaugh and Schiavone, 2010).

Peres et al. (2010) considered the adoption of innovation by humans as data signals created by groups of people who want to adopt innovation and groups of individuals who are reluctant to new technology, thus rejecting adoption. Bass (1969) found that innovation adopters include two different groups. A group adopting innovation independently of the decisions of other people in a social system, influenced solely by communication through the media (external influence), Bass was defining this adopters group using the term "innovators". The second group of adopters is influenced by social pressure through oral communication (internal influence), it has a strong imitation behavior and was named the "imitators". They are influenced in terms of innovation adoption by the decisions of other members of the social system (Bass, 1969). Figure 1 presents the internal and external factors that influence the decision to adopt, as found in the Bass technology diffusion model. The model attempts to predict how many customers will ultimately adopt new technology and when they will adopt it. The question "when" is important because the answers to this question represent a guide for the company to more efficiently use resources in marketing innovation (Balahrishnan (Sundar), 2010).

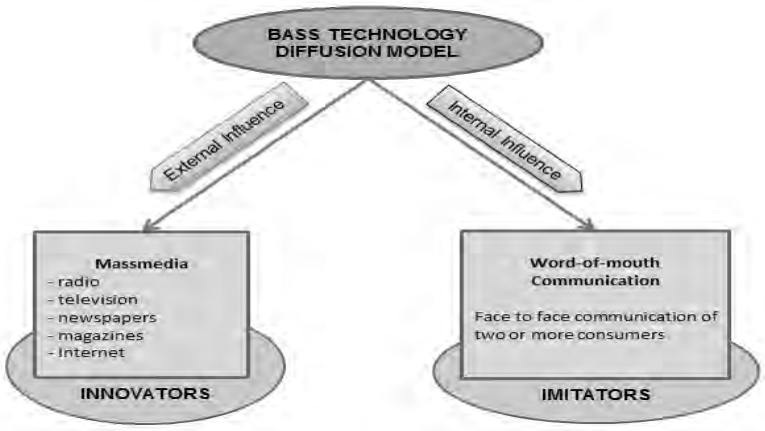

Fig.1 Bass technology diffusion model

Defining innovators and imitators was done before the internet revolution, which as external source of influence is the most flexible means of communicating and transmitting information. Ruff and Grigore (2003), researchers in online public relations, stated that for a new product to be launched on the market it is beneficial a campaign that blends traditional and online advertising, since the risk of failure would be much lower than with using only online advertising. The same authors argued that most advertisers believe that an online-only campaign has no chance of success, as far as "online advertising comes only to complete the marketing mix that underpins a successful promotion". The web page, regardless of its content, is as important as a brochure, primarily intended to inform customers wherefrom they can get product (Ruff and Gregory, 2003).

Using the AHP method to delineate the sources of information on new technologies

The Analytic Hierarchy Process is a method "of measurement through comparing pairs and is based on experts' judgment to get priority scales" (Saaty, 2008). Thomas L. Saaty built this method seeking for a systematic practice to define priorities and to assist the making of complex decisions (Forman and Gass, 2001; Russo and Camanho, 2015). In fact, the hierarchical structure of the AHP method is able to measure and synthesize a variety of factors of a complex process of decision-making in a hierarchical manner, making it easy to combine the parts into a whole (Russo, Camanho, 2015). The three main functions of the AHP method are structured complexity, measurement and synthesis (Forman and Gass, 2001; Russo and Camanho, 2015). This technique allows the decision maker to take the most appropriate decision; the principle of the method is dividing the problem into simpler sub-problems of hierarchy (ordering) that can be analyzed independently of each other. AHP provides a comprehensive and rational framework that allows structuring the decision, the representation and quantification of the pursued qualities, and as well evaluating other possible solutions. The decisional situations which require the use of this method are:

- choosing an alternative when using multiple decisional criteria;
- ordering alternatives, from the best to the least good;
- allocating resources for more alternatives.

The AHP hierarchy involves placing to an upper level the purpose / primary objective, and at intermediate levels, placing the decisional criteria, possibly organized in sub-criteria, if necessary. On the lower level we find the decisional alternatives to be ordered by the decision-maker's preferences.

This is basically an alternative way of modeling the multi-criteria decisional problem under deterministic conditions. A graphical representation of this hierarchy is shown in Figure 2 (Saaty, 1980):

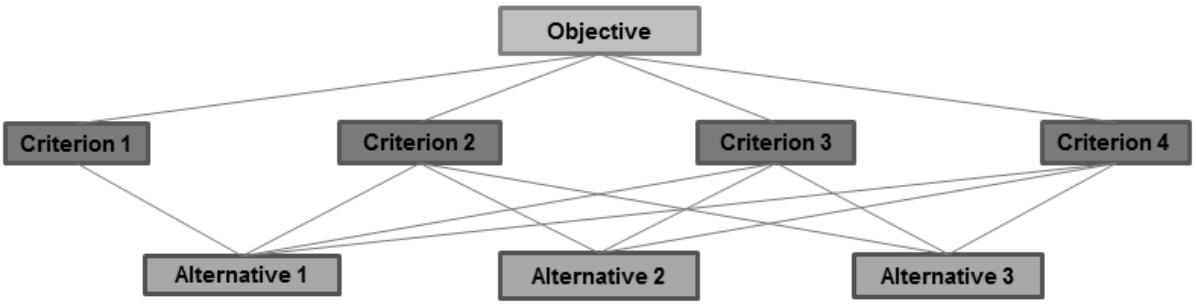

Fig. 2 The AHP model hierarchy (adopted from Saaty, 1980)

Russo and Camanho (2015) presented six phases of applying the AHP method:

- defining the problem and identifying the knowledge within it;
- structuring the decisional hierarchy by identifying the objectives, the decisional criteria and the alternatives;

- designing a decisional matrix by the sequential evaluation of each analysis criterion relative to the other; the result of this assessment is a value that shows how many times a criterion is dominant over the other. Saaty (2008) has developed this scale for measuring the intensity of importance (Table 1). The author argues that the scale is based on psychological experiments and designed specifically to reflect the priorities of the comparisons between two elements (Saaty, 2008).

Table 1. The AHP scale for measuring the intensity of importance (adopted from Saaty, 2008)

Importance intensity	Preference judgments	Explanation
1	Equally important	The two assessed criterions contribute equally to the objective
3	Moderately important	One of the criterion is slightly favored in relation with another defined criterion
5	Strongly important	One of the criterion is strongly favored in relation with another defined criterion
7	Very strong important	Demonstrated great importance of a criterion in relation with another defined criterion
9	Extremely important	Absolute importance of a criterion in relation with another defined criterion
2, 4,6,8	Intermediate values between adjacent scale values	Intermediate values that can be used to represent shades of law in addition to those five basic assessments

- applying the mathematical approach of the AHP method for obtaining the priority vector that establishes the hierarchy of alternatives; Dong and Cooper (2016) considered that a decision is an important issue in management. The authors argued the need for a decision-making group that, in order to take the most appropriate decision, designs a procedure that combines the judgments of individuals in a common opinion on behalf of a whole group (Dong and Cooper, 2016). Saaty (1994) proposed a hierarchy of criteria such as expertise, experience, past performance, persuasive skills, the effort to solve the problem, etc. to determine the priority vector (Dong and Cooper, 2016);
- examining and building a decisional balance, a phase to verify that the results of applying this method are as expected;
- documenting the decision. It is important to justify how and why the decision was taken.

Discussion and conclusions

In the process of technology diffusion, an important part is played by the consumer's attitudes towards the new technologies and information sources, which are factors influencing the decision to adopt the technologies incorporated in the new product. We considered that this research is highly topical given that tracking the type of adopter/individual, in terms of the market diffusion of technology and the product life-cycle, is a topic that has sparked an extensive interest both in academia and in the practitioners, over the last decade. In this regard we consider pointful the approach of the AHP method that could allow the tracing of overall coordinates on the marketing practices required to accelerate the rate of diffusion of new technologies to consumers/individuals, by tracking the influence of the type of technology on the innovator and imitator adopter.

The answer to the research question is that the AHP method can allow testing the impact of new technologies on consumer behavior and clarify that to be innovator or imitator largely depends on the type of technology. Increasing the number of innovators increases the number of those who spread information about the new technology. Marketing strategies can be improved by identifying the tools to promote the most suitable technology, for instance instruments such as the me-

dia, without forgetting the interpersonal relationships that often determine the decision of purchasing a technologically innovative product.

A product that can be perceived as successful, by a group, could be interpreted differently by another group. Following this line of thinking, consumers are susceptible and have varying degrees of distrust in any given population. Marketing studies have focused on how the new technology is perceived by consumers and tested, usually through the behavior and responses of the adopters of new technologies and how they may change over time. A common interest, in this case, is the demographic analysis of users, such as age, sex, education and so on, to predict the adoption of technologies. Similarly, in terms of new product development, more research is needed, in order to discover the steps in the process of technology diffusion or the features of a new product which are most critical to achieving market success and broad adoption.

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GREEN MARKETING - A BASIC COMPONENT OF SUSTAINABLE DEVELOPMENT

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Rezumat

Purpose *– This paper aims to study the ecological importance of marketing as a core component of Sustainable Development.*
Methodology/approach *- The paper is based on the analysis of literature in the field of Marketing and Sustainable Development*
Findings *– The intense exploitation of resources, particularly as a result of the strategies based on the moral depreciation of products, an insufficient focus on the consumer' necessities and customized desires and on the health harming products, encouraging the consumption patterns based on opulence, the inclination for wastage by promoting marketing incentives, differentiation, innovation and advertising fall among the known adverse effects caused by the marketing seeking an increased consumership.*
Research limitations/implications *– Sustainability starts from the idea that human activities are dependent on the environment and resources. Health, safety, and the social and economic stability of society are essential in defining the quality of life. There are many points of view on the studied issue and some of them have been displayed.*
Practical implications *– The paper outlines the interdependence between ecological marketing, sustainable development and human activities.*
Originalitate/valoare: *The importance of ecological marketing from the SD perspective*
Key words: *ecosystem, sustainable development, ecological marketing/green marketing*

Introduction

Sustainable development brings to the fore a new set of values that will guide the future model of economic and social progress, values related especially to man and his present and future needs, to natural environment - its protection and conservation, and as well the mitigation of damage to existing ecosystems. (http://www.anpm.ro/ro/dezvoltare-durabila) As part of the efforts to be done in order to avoid an ecological disaster, a special role may be played by marketing.

The ecological orientation of marketing means addressing many current mentalities and concepts tributary to the present way of life and to the traditional ("gray") marketing.

The intense exploitation of resources, particularly as a result of the strategies based on the moral depreciation of products, an insufficient focus on the consumers' necessities and customized desires and on the health harming products, encouraging the consumption patterns based on opulence, the inclination for wastage by promoting marketing incentives, differentiation, innovation and advertising fall among the known adverse effects caused by the marketing seeking an increased consumership.

Sustainable development

Worldwide there is great concern about how human activity affects the environment and, underlining the problems of pollution, the destruction of resources, the environmental damage, the endangered species of plants and animals, and as well the need to raise the living standards of people and accept the indissoluble link between the quality of life and the quality of the environment for present and future generations. (http://www.anpm.ro/ro/dezvoltare-durabila)

Sustainability starts from the idea that human activities are dependent on the environment and resources. Health, safety, and the social and economic stability of society are essential in defining the quality of life. (Bacali, Luca, 2003)

The concept of sustainable development had as its starting point the global ecological crisis, 1929-1933, and was then developed by incorporating all the socio-economic and human areas, to the point that, nowadays, sustainable development represents a new direction of humanity.

Sustainable development was conceived as a solution to the ecological crisis caused by the intense industrial exploitation of resources and the continuous degradation of the environment, and seeks primarily to preserve environmental quality, promoting the concept of conciliation between the economic and the social progress without endangering the natural balance on the planet. Moreover, sustainable development brings to the fore a new set of values that will guide the future model of economic and social progress, values relating especially to man and his present and future needs, to the natural environment - its protection and conservation, and as well the mitigation of damage to existing ecosystems. (http://www.anpm.ro/ro/dezvoltare-durabila)

The idea behind this concept is to ensure a better quality of life for all the inhabitants of the planet, both for the present generation and for the future ones.

Achieving sustainable development at all levels of government is not possible if there is no integration of the environmental dimension into all other policy areas through the proper implementation of environmental policies, favoring the use of market instruments and by informing the public to spark the necessary behavioral changes (Bacali & Luca 2003)

Everyone, consciously or not, can contribute to sustainable development. In fact, one can speak of a lasting thinking when collecting (depositing) plastic or paper waste in special places.

One of the major challenges of sustainable development is to find ways to encourage environmentally friendly economic activities and discourage those causing damage to the environment (air, water and soil or subsoil). (Zaman & Gherasim, 2006, p. 137) At the industrial level, things moved much faster. Thus, many factories use waste as fuel, and in some places they are trying to implement domestic heating systems based on waste combustion. Some companies have realized the importance of economic (and ecological) recovery and the reuse of waste. (https://ro.wikipedia.org/wiki/Dezvoltare_durabil%C4%83)

Lester R. Brown created in 1974 the "Worldwatch Institute" and is the promoter of a series of studies, evidenced by the annual reports on progress towards structuring a sustainable society: "State of the world" or "Vital Signs". In his "Plan B 2.0", Lester R. Brown emphasizes the conflict between industrial civilization and environment, mentioning related issues such as:

- the gradual exhaustion of natural energy resources, raw materials and food;
- consuming renewable resources faster than their capacity for regeneration;
- physical damage and contamination of vital factors: water, air, soil.

In this context, Brown highlights the importance of waste recycling. (https://ro.wikipedia.org/wiki/Lester_R._Brown)

A sustainable society is a society that shapes its economic and social system so that global natural resources and life support systems are maintained. (https://ro.wikipedia.org/wiki/ Dezvoltare_durabil%C4%83)

Definitions of Sustainable Development

The term itself is very young and has established itself in the summer of 1992, after the Conference on Environment and Development, organized by the United Nations in Rio de Janeiro. [https://ro.wikipedia.org/wiki/Dezvoltare_durabil%C4%83]

The word "sustainable" (supporting) has roots in Latin, "subtenir" meaning "to stem / retain" or "support". A community must be supported by its current and future residents. Some places, by combining specific physical, cultural and spiritual characteristics inspire people to care for their community. These are places where sustainability has the best chance of existence (maintenance) (Muscoe Martin, “A Sustainable Community Profile,” from Places, Winter 1995)

The concept of sustainable development means all the forms and methods of socio-economic development which focuses primarily on ensuring a balance between the social, economic and ecological elements of the natural capital. (green.gov.md/pageview.php?l=ro&idc=30&id... durabila...durabila)

The best known definition of sustainable development is given by the World Commission on Environment and Development (WCED) in the report "Our Common Future", also known as the Brundtland Report:

- “Sustainable development is development that aims to meet the needs of the present without compromising the ability of future generations to meet their own needs".

Other definitions of sustainable development:

- “Therefore, I can say that the earth belongs to each generation during its existence, that it deserves full and in full, and no generation can make debts greater than may be paid during the term of its own existence”- (Jefferson, 1789).
- “Sustainability refers to the ability of a society, ecosystem, or any such ongoing system to continue functioning into an indefinite future without reaching the depletion of the key resources” – (Gilman).
- “Many people find that it is better for such problems to be dealt with by means of cooperative and holistic approaches, because such issues are confusing, multidisciplinary, multiorganizational, with multiple stakes and multisectoral by nature” – (Lachman, 1997).
- “Sustainability is the emergency doctrine through which economic progress and development may take place and maintain over time, within the limits set by ecology in the most general sense - the interdependence of human beings and their jobs, the biosphere and the laws of physics and chemistry it governs ... Which means that environmental protection and economic development are indeed antagonistic processes” – (Ruckelshaus, 1989),

An effort to support community is to adopt long-term, integrated systems of development and achieving viable communities by taking into account the economic, environmental and social issues.

The point of concentration and the size of sustainability efforts depend on local conditions, including resources, political and individual action and the outstanding features of the community. Supporting community efforts were applied to issues concerning urban sprawl, inner-city and the redevelopment of brown land, the development and economic progress, the management (administration) of the ecosystem, agriculture, biodiversity, green buildings, energy conservation, watershed management and pollution prevention.

Many of these problems and many others can not be addressed easily through traditional ways or elements in our society. (https://ro.scribd.com/doc/84349722/sustenabilitate)

Objectives of Sustainable Development

Sustainable development objectives (SDO) are a set of targets related to the international development in the future. They are created by the United Nations and promoted as global objectives for sustainable development. They replaced the Millennium Development Goals which expired at the end of 2015. SDO are active from 2015 until 2030. There are 17 objectives and 169 specific targets for this objectives. (http://www.uis.unesco.org/ScienceTechnology/Documents/unsc-post-2015-draft-indicators.pdf)

In August 2015, 193 countries agreed in respect of the following 17 goals: (http://www.globalgoals.org/The Global Goals For Sustainable Development)

1. **No Poverty:** Putting an end to poverty in all its forms everywhere.
2. **No Famine:** putting an end to hunger, ensuring food security and improved nutrition and promoting sustainable agriculture.
3. **Good Health:** Providing healthy living and promoting health for all age categories.
4. **Quality Education:** Providing quality education and promoting inclusive and equitable learning opportunities throughout life for all
5. **Gender equality:** Achieving gender equality and empowering of all women and girls.
6. Clean water and sanitation: Ensuring the availability and sustainable management of water and sanitation for all.
7. **Renewable and affordable energy** ... Providing access to affordable, reliable, sustainable and modern energy for everyone.
8. **Good jobs and good economy** ... promoting economic growth that is sustainable and inclusive.
9. **Innovation and rich infrastructure** ... Building a resilient infrastructure, promoting inclusive and sustainable industrialization and encouraging innovation.
10. **Reducing inequality** ... Reducing inequality within and among countries.
11. **Sustainable cities and communities:** Providing sustainable cities and human settlements ... inclusive, safe, durable and sustainable.
12. **Responsible use of resources** ... Ensuring sustainable consumption and production patterns.
13. **Controlling climate change** ... Taking urgent actions to control climate change and its impact.
14. **Sustainable oceans** ... conservation and sustainable use of the oceans, seas and marine resources for sustainable development.
15. **The sustainable use of the earth** ... protecting, restoring and promoting a sustainable use of terrestrial ecosystems, sustainable forest management, combating desertification, stopping and reversing land degradation and halting biodiversity loss.
16. **Promoting peace and justice** ... peaceful and inclusive societies for sustainable development, ensuring access to justice for everyone, and building effective institutions, responsible and inclusive at all levels.
17. **Partnership for Sustainable Development** ... Strengthening the means of implementation and revitalizing the global partnership for sustainable development.

Ecological marketing

Since the 1970s, there were a series of large debates on matters of serious unprecedented that the world had to face, namely: resource constraints, ecological crisis, overpopulation, increasing inequalities, or the socio-cultural crisis.

They debated local issues, such as the air, soil, and water pollution, and global issues relating to the depreciation of the ozone layer, and global warming. (https://ro.wikipedia.org/wiki/Poluare)

With the development of the industry, they observed an increased pollution of Earth. Therefore, it is normal for people to be aware of the importance of the environment and not wait for the occurrence of a natural disaster to react for the planet. (https://ibn.idsi.md/sites/default/files/imag_file/Rolul%20si%20influenta%20marketingului%20ecologic%20in%20cadrul%20activitatii%20intreprinderii.pdf)

The organization "Friends of the Earth" incorporated into their slogan the message "Think globally, act locally". Another eloquent example is the flood encountered especially in spring when snow starts melting. The media often speaks about this. Most people begin to understand the reasons for the occurrence of these natural disasters only when they see pictures, videos, stories with these disaster areas or worse, when they become the victims and it is already too late. (https://ibn.idsi.md/ro/vizualizare_articol/33483)

Green marketing is extremely important because it may potentiate effectively the content and the cycle processes based on ecology and information, especially in technologies and applications. It is thus meant to stop environmental damage, improve lives and preserve the nature and the quality of life on Earth.

Environmental marketing promotes an organic product based on environmental improvement. It is responsible for identifying, anticipating and satisfying consumer demands in a sustainable and profitable manner. (https:/iqmk.blogspot.com/2013/01/marketingul-ecologic-si-principiile.html)

Currently, the market has become more receptive to the impact the products have on the environment, and this trend will increase in future. Although this concept has emerged in the late 1980s, today it is not so well implemented in practice, as would be desirable, but most production enterprises understand its importance and begin to develop strategies on environmental marketing, some of them are even segmenting the market according to the criterion of using pure ecological products.

Green marketing has emerged as a result of public awareness on environmental problems, of adapting the products to the demands of environmental protection; improving the economic performance of the enterprise by valorizing the preferences of increasingly large segments of consumers for the use of organic products (https://ibn.idsi.md/sites/default/files/imag_file/Rolul%20si%20influenta%20marketingului%20ecologic%20in%20cadrul%20activitatii%20intreprinderii.pdf)

In the general view, green marketing refers solely to the promotion and advertising of products that have environmentally friendly features. Thus, green marketing encompasses environmental marketing terms such as "Green Marketing", "Environmental Marketing", "Ecological Marketing". (https:/iqmk.blogspot.com/2013/01/marketingul-ecologic-si-principiile.html)

Donald Fuller presents in his book entitled "Sustainable Marketing Managerial- Ecological Issues," five principles, on which environmental marketing should be built upon. These five principles are: 

- In marketing, decision making ecosystems and the ecological balance must be considered key factors - marketing strategies are to be designed, taking into account the impact that they may have on the environment;
- The life cycle of the product should be the new context in decision making (i.e. the physical life; the transition from raw materials to consumer goods and as well as what happens to the waste, and not the life of the product) ;

- Pollution prevention and the recovery of resources are needed to achieve sustainable development and strategies implementation leading to maintaining and improving the functioning of ecosystems;
- It becomes obvious an effect of multiplication - an improvement of environmental quality: from the firm-level (micro) which will be reflected in a wider outcome at the macro level. Every little effort towards a cleaner environment can mean an overall gain ("think globally, act locally"). For example: recycling, the individual effort for the selective collection of waste, will cause the collection of sufficient material to generate an efficient business processing.
- Setting environmental objectives by firms does not mean that they act altruistically, compatibility with ecosystems is not an end in itself, and it is done when customer satisfaction and profit are achieved.

"Green Marketing"

"Green" marketing again incorporates a large range of activities, including changes of products, changes in the production process, changes in packaging, preferably changes in advertising. Yet since defining "green" marketing is not an easy thing, indeed the terminology in this area varied, it includes: "Green" Marketing, Environmental Marketing and Ecological Marketing. While "Green" Marketing emerged in the late 80s and early 90s, it was discussed long before. The American-Marketing Association (AMA) held the first seminar on "Ecological Marketing" in 1975.

The proceedings of the seminar appeared in one of the first books about "green" marketing entitled "Ecological Marketing" [Henion and Kinnear 1976]. Since then, it has been a number of other books on this subject that have been published [Charter 1992 Coddington 1993 Ottman 1993].

The seminar organized by AMA tried to bring together academics, freelancers and managers of public interest to examine the marketing impact on the natural environment.

The concept of "green" not only refers to the simple protection of the environment and nature that surrounds us. Being "green" incorporates the protection of human, social and political rights in the world. Firms can become "green" in three ways:

- The "greening" of the processes that add value (through redesign, modification of existing technology or the introduction of new technologies), in order to reduce the environmental impact on all levels;
- implementing an environmental management system;
- “greening” products.

From a green business perspective issues need to be understood in another way: the consumer must be addressed in another way, the concept of customer satisfaction must be given another meaning, the concepts of ecological life cycle of the product should receive a new approach; it takes a bigger picture thinking global, open to change, the logic is "think globally, act locally", and an intense promotion in terms of reducing consumption of organic products. (www.mim.utcluj.ro/ uploads/pages/13_Antreprenoriat_D2.pdf)

The market is currently more responsive to the environmental impacts of products more than ever before, and this trend will increase in the coming years. (http://biblioteca.regielive.ro/proiecte/ management/eco-etichetarea-managementul-mediului-238325.html)

Many governments around the world have become so concerned with the activities of "green" marketing, that they were trying to regulate them. For example, in the US, The Federal Trade Commission and the National Association of Attorneys have developed extensive documents examining the problems of "green" marketing.

Most people consider that "green" marketing relates only to the promotion or advertising of the products environmental friendly. Terms such as recyclable, reusable, it does not affect the ozone layer and does not affect the environment, are some things that most customers associate with "green" marketing. While these terms are the requirements of "green" marketing, in general, "green" marketing is a much wider concept, one that can be applied to consumer oriented products, industrial products and even services. For example, around the world we may find resources that started to be promoted as "eco-tourism", advantages specialized in experiencing nature or serving in a manner that minimizes their impact on the environment.

Definitions of "green" marketing

At the seminar organized by the AMA, ecological marketing was defined by Henion and Kinnear as "the study of positive and negative aspects of the marketing activities on the polution and decongestion of the non-energy resources". This definition has three key components:

1. It is a subset of marketing in general;
2. It examines both negative and positive activities;
3. A limited set of environmental issues are examined.

While this definition is a useful starting point, to be thorough, "green" marketing should be defined more clearly. It should be specified that no definitions or terminology has been universally accepted. This inconsistency is a big part of the problem, since a problem can not be evaluated if all the researchers have a different perception about what the subject of their research.

Another definition, even more general than those belonging to other researchers and containing all the major components of their definitions is the definition of Polonsky in1994: "Green Marketing" "Environmental Marketing " consists of all of the activities carried out to generate and facilitate any exchanges intended to satisfy the human needs and desires, so that the satisfaction of these needs and wants occurs with a minimally harmful impact on the environment."

This definition incorporates many of the traditional components of the definition of marketing: "All of the activities designed to generate and facilitate any exchanges intended to satisfy human needs and desires" [Staton and Futrell 1987].

The interests of the organization and the consumer’s must be protected and the voluntary exchange should not take place but when both the seller and the buyer become part of a win-win transaction.

For the sake of precision, the products that are "green" should be rather declared as "less harmful for the environment" than "safe for the environment".

Thus, "green" marketing should consider the minimization of the environmental impact and not necessarily its elimination.

The importance of “green” marketing

The question "why" "green"marketing has become increasingly important is quite simple and is based on the basic definition of Economy given by McTaggart, Findlay and Parkin in 1992: "Economics is the study of how people use their limited resources to try and satisfy their unlimited needs".

Green marketing today involves combining several features such as product changes, changing production processes, changes in packaging, but also the reorientation of distribution and advertising. To achieve these objectives it is necessary to create a new ecological concept of production in the companies and of consumption in the consumers.

Mankind has limited resources on Earth that it must use in order to satisfy its own unlimited needs. In the free market societies, where there is "freedom of choice", it is generally accepted that individuals or organizations have the right to try and satisfy their needs.

The companies facing daily with limited natural resources must develop new alternatives to satisfy their endless needs.

Thus, we can say that marketing activities that resort to "green" marketing make a good use of these limited resources, satisfying both the consumers' and the individual's needs, those of industry, reaching at the same time the sales targets of the organization.

Why do companies use “green” marketing?

Within companies, the use of "green" marketing is influenced by several reasons, such as:

1. *Opportunities.* Companies perceive "green" marketing as an opportunity that can be used to achieve its objectives;
2. *Social responsibility.* Companies claim having the moral obligation to be socially responsible;
3. *Authorities' pressure.* Government institutions force companies to become more socially and environmental responsible;
4. *Competitive pressure.* The competitors' activities stress the companies to redirect their marketing activities towards an environmental nature;
5. *Issues of cost and profit.* Cost factors associated with waste disposal or reduction of used material quantity forces companies to change their behavior.

"Green" marketing, within a company, must consider several priority objectives:

1. Developing products whose environmental compatibility is guaranteed. This means that products should have a minimal impact or no effect on the environment and at the same time, they should satisfy the consumers' demands in terms of quality, service, price and usability.
2. Sending an image of high quality to include ambiental sensitivity related to specific products attributes, and in terms of reputation the company should be ecologically compatible.
3. Products distribution, so that over the logistics process the environment is not affected.

All these objectives, as organic components of marketing, must be linked to the ecological objectives and policies of the company. The chances of success of ecological marketing depend on whether this is considered the basis of an integrated conception, strongly grounded in the environmental management of the company. (http://www.proiecte.ro/marketing/marketing-ecologic-66766)

"Green" marketing opportunities

Both individual consumers and industrial users are becoming more concerned and aware of the environment. A series of studies show the change in their behavior, including the behavior to purchase, due to reasons related to the environment. As demands change, many companies see these changes as an opportunity to be exploited.

We may say that the marketing of companies regarding environmental goods has a competitive advantage over the marketing of the companies harmful for the environment. There are many companies that try to become more responsible for the environment in an attempt to better meet consumer's needs.

This does not imply that all the companies with guaranteed environmental marketing really improve their previous behavior. In some cases, the companies mislead in an attempt to earn a

market share. In other cases, companies have turned to the recycling (ecological) sign without considering the accuracy of their behavior, their claims for, or the effectiveness of the products. This lack of consideration of the authentic "greening" of activities can put companies in a position to make or claim a false and erroneous "green" marketing.

Cost and profit in using the “green” marketing

Companies can also use "green" marketing in trying to relate cost or profit to the problems. Featuring harmful environmental products such as polyvinyl biphenyl (PCBs), contaminating oil, are increasingly expensive and sometimes difficult.

As a result, companies that reduce harmful waste can attract substantial cost minimization. When trying to minimize waste, companies are often forced to review their production processes.

In these cases, companies often develop more efficient production processes that not only reduce waste, but also reduce the need for some raw materials. It serves as a double cost saving, while both raw material and waste are reduced.

In other cases, companies are trying to find final solutions instead of minimizing waste. In these situations, the companies are trying to find markets or uses of waste materials where waste becomes the raw material to another company. An example of Australian company that produces acid wastewater as a byproduct and it sells it to a company involved in the neutralization of base materials.

The last manner in which cost or profit could affect the environment marketing activities of companies is that new industries can be developed. This can occur in two ways:

1. a company develops a technology for reducing waste and sells it to other companies;
2. a developed industry in recycling or waste disposal.

For example, companies that cleans oil in huge industrial capacitors increase the life of these capacitors, obviating the need of replacing oil as the need to get rid of waste oil. That reduces the cost of operating those capacitors and generates revenue for those firms that clean oil.

Ecological communication

"Green" marketing seeks the coherent orientation of all the activities of the company to obtain qualitative advantages on the environment and life quality, in order to differentiate from competition. To succeed, companies use the classic marketing tools for market research, in particular the purchase and consumption behavior. The results of these researches support the defining and shaping of a strategic behavior, of ecological nature, and in its turn, it directs the environmental marketing mix. This successive approach must regard that the consumers and the companies are at deficit of trust.

This means, in other words, the fact that the public and consumers are often skeptical towards companies, especially regarding environmental solutions. Given this lack of confidence, it seems that it is not the technical, cost, natural problems the obstacles that stand in the way of green products and green communication, but the ability of companies to convince the customers price sensitive that it is worth opting for green products, the traders less interested in customers that they represent their source of existence and the environmental organizations and consumer protection, which are suspicious and the opportunistic competitors that their initiatives and efforts are worth making.

The purpose of green communication marketing is fulfilled with the help of many forms and tools forming together a promotional mix. The communication mix instruments / ecological promotion are:

1. Publicity

2. Public relations
3. Promoting sales
4. Promoting brands.

1. Ecological advertising

Ecological advertising means proceedings whose purpose is to inform, influence, and persuade the consumers of green products.

The advertising of green products must bring in the foreground their ecological character as a credible argument to persuade customers. Short-term activities are rarely used in environmental marketing, including in the communication and advertising area, because the complexity of environmental issues requests an exhaustive and long-term approach.

The ecological conception on advertising must set up and use credible environmental arguments in a determined proportion and possibly to correlate them with other arguments, especially the concrete product use.

2. Public relations

The company's efforts of ecological communication should also be found in the activities and initiatives oriented to the understanding of the value and the environmental efforts. This role goes to public relations, involving supporting contacts constantly and systematically with influential executives of other companies, institutions and organizations, with the media, the authority representatives, with officials and opinion leaders to gain their understanding, sympathy and support.

The "ecological" public relations represent a form of interactive communication, based on dialogue, creating a two-way information flow both from the company to the market and from the market to the company. The main objective of public relations is to obtain a favorable attitude from the public toward a company ecologically conscious and acting. To get a favorable attitude from the public, the company should address to different environmentally oriented audience. The audience is represented by:

- Shareholders
- Authorities
- Employees
- Opinion leaders
- Intermediaries
- Consumers/ green users.

Public relations activity is centered on the company's objectives as a whole, with its actions on protecting the environment and life.

3. Sales promotion

Sales promotion in ecological communication should offer incentives for green products purchase. It is oriented to concrete results, on a short-term.

Green products sales promotion, addressing ecologically conscious consumers particularly uses:

- Advertising at the point of sale, which includes presentations and product demonstrations in stores, events where they can use materials such as leaflets and posters containing environmental information;
- Samples, distributed free, offer the occasion to use them and be persuaded on the environmental characteristics of products before purchasing them;

- Contests and prizes may play a role in promoting green products, if the prizes are enough incentives and aim at rewarding the buyers' constancy.

A special role in sales promotion may be played by the guarantee of the organic products. The guarantee is a sign of product quality, which must be yet confirmed. It may be considered a condition for extending the life of a product, which is important ecologically. Also, the guarantee can be an additional commitment that the product will protect the environment and the consumers' health.

4. The brand

The brand is a sign, a symbol used to identify the products and values of a bidder and to differentiate them from competitors, as a perception created in the consumer's mind, it helps him probe the values attributed to the product and company.

As the information transmitted by the brand is received, processed and assimilated by consumers the image of the brand is created. The image of an ecological brand ensures a distinct position on the market, depending on the position it has in the customers' minds and preferences. Due to the green image of the products and company, the ecological brand contributes to the enhancement of products and in this way, still plays a special role in facilitating the preference for green products.

Environmental communication strategy

Green communication must be the result of researches and careful analysis. The results must be embedded in communication credible and persuasive strategies. The communication oriented to protect the environment and the quality of life gets the best results when it meets the following requirements:

- The environmental attributes of products are clear, meaningful and legitimate
- The benefits of the products to the environment and the quality of life are tangible and can be communicated in a clear and simple manner;
- The efforts related to the product are supported by substantial progress within the company.

Companies should not appear to be perfect and, at the same time, they should be seen as guiding their effort in a coordinated way, to the same environmental goal. Respect is earned by obtaining progress in achieving valuable goals, a substantial communication, generally with a favorable answer to the consumers' preoccupations and expectations.

Following the Roper Starch Worldwide researches conducted in the US, they noticed that companies and products supported by a cause or ecological organization are among the most reliable types of efforts of the companies in order to protect the environment.

Also, in the sense of increasing credibility, the emblems and green certificates may be used. They are symbols of the inclinations and environmental results of companies, guaranteed by governments or independent organizations.

Ecological symbols offer green companies many advantages, but are not without risks. As advantage they can increase the consumer's confidence in the environmental claims and promises of those who hold them. As consumers tend to prefer products with eco labels and certificates, these symbols represent an ecological inexpensive marketing tool. In addition, they can improve the ecological corporate image.

Packaging, the Internet and companies organizations are excellent sources of information dissemination for green communication. Many consumers want to read the labels to see if the

products are safer for the environment and health and the messages advising packaging recycling.

The future of ecological communication depends on the extent and proper ways in which companies are supported in their efforts to solve the problems of environmental quality and communication. Through this technique they respect the ecological production techniques of organic food, the design of labels and packaging and the related advertising.

By ecological marketing they promote an ecological product based on environment performance or an improvement in this regard. Also, marketing is responsible to identifying, anticipating and satisfying consumers' demands in a profitable and sustainable manner. It is a responsible process that identifies, anticipates and satisfies the needs and does not affect human beings and the natural environment. The market is now receptive to the impact of environmental products and this trend will increase in the coming years.

Conclusions

Quality of life is worse from year to year, and not just economically, considering the standard of living, but by the quality of the products we use every day and are harming our health. From clothing products, cosmetics, and food to medicines, their quality is diminished, and thus they harm consumers. For many years, purchasing authorities did not take into account the environmental value of goods, services or works. However, the global economic and political context has changed, defending the concept of sustainable development - "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" - and the need to take into account the environmental considerations in all other policies (alongside economic and social aspects)

Since its inclusion in the Treaty in 1997, sustainable development is recognized as a fundamental goal of the EU.

Achieving sustainable development at all levels of government is not possible if there is no integration of the environmental dimension into all other policy areas through the proper implementation of environmental policies, favoring the use of market instruments and by informing the public to favor the necessary change of behavior.

Green or ecological marketing has as essential stimulus the increasing of consumers' environmental awareness. He can be seen as the continuation of the adapting the marketing philosophy to the requirements of each marketing era. The green era marketing tries to connect the classic components of marketing and management to the environmental issues.

Green marketing is oriented toward protecting the environment and quality of life. This character requires the transformation of the company's general policy into one eminently ecological. A green policy requires the company to achieve marketing activities that have as effects minimizing resource consumption, focusing on stabilizing the ecosystem and specific consumption, at the expense of creating products that favor wastage and to seek alternatives to terminate their irrational exploitation and to eliminate the harmful effects of the industrial age. Meanwhile, environmental marketing must seek solutions to preserve and improve not only the environment but also the consumers' health.

The characteristic of all these solutions consists of finding alternatives which affect not the individual and collective health, resourcing to products free of "enhancers" which may have harmful long-term effects. However all these mean that companies are forcing the development and input of organic products, minimizing packaging waste, choosing a packaging design free of negative effects on the environment and the development and use of the concept of recycling

"Green" marketing covers more than the marketing problems of a company. While companies must endure many of the responsibilities of environment degradation, it is the consumer who demands goods, and thus provokes environmental issues.

Consumers too try very little to improve their environment and blame on industry and government. Eventually, "green" marketing requires the consumer to wish for a cleaner environment and to want to "pay" for it, possibly through higher prices on goods, changing previous individual ways of life or even government intervention. Until this happens, it will be difficult for companies to rule by themselves the "revolution" of "green" marketing.

We should also not forget the fact that the industrial buyer has the ability to press the suppliers to modify their activities. Although an organization "subdued" to environment will not only produce goods that have a low environmental impact, but it can also put pressure on the suppliers to behave in a manner somewhat more "responsible" regarding the environment. The consumer and the industrial buyer also have the ability to force organizations to include the environment in their culture and thereby to ensure that all the organization minimize the impact of their activities on the environment.

Through this technique, they respect the ecological production techniques of organic food, the labels, packaging and advertising related to those products.

By ecological marketing, they promote an ecological product based on environmental performance or on an improvement in this regard. Also, marketing is responsible for identifying, anticipating and satisfying consumer demands in a profitable and sustainable manner. It is a responsible process which identifies, anticipates, and meets the needs and does not affect human beings and the natural environment.

The market is now receptive to the environmental impact of products and this tendency will grow in the coming years.

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RESEARCH REGARDING THE MEASUREMENT PRACTICES OF DISTRIBUTION PERFORMANCE AS A COMPONENT OF MARKETING PERFORMANCE

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Abstract

Purpose *– This paper aims to explore the practices used by companies with best performance in Romania, according to the Chamber of Commerce and Industry from Romania, for measuring the performance of their distribution activities.*
Methodology/approach *– A marketing research was conducted on the companies included in the National Top of Companies from Romania. The research method used was a survey, based on non-random sampling. The results are based on the responses provided by respondents from 153 companies from the top.*
Findings *– Although distribution performance assessment is important in the majority of the investigated companies, the abilities needed to perform this type of assessment are very weak or weak in approximately one third of the enterprises.*
Research limitations/implications *– The results are representative only for the sample consisting of the 153 respondent companies and cannot be extrapolated, as non-random sampling was used in the research.*
Practical implications *– The set of distribution metrics included in the research can offer managers guidance on what indicators to use for assessing their distribution performance.*
Originality/value *– The paper focuses on the practices and indicators used for assessing companies' distribution performance in the more ample context of marketing performance measurement.*
Key words: *marketing performance measurement.*

Introduction

In the condition of increasing preoccupation of the firms from all over the world for performance achievement, improvement and measurement, each function of the organization must prove its own contribution to increasing organizational performance. No organizational function can evade from the imperative of demonstrating its contribution.

The present paper envisions distribution from a marketing perspective, more specifically as a component of the marketing mix. Together with product, price and promotion, distribution represents one of the four essential components of the marketing mix, its goal being to "ensure that the right product is in the right place at the right moment" (McDonald, 2008, p.138). A company can suffer significant losses if it fails in providing the products to the selling point in time and in quantities that satisfy customers' demand. Moreover, the distribution system represents a key factor within a successful business, as many companies succeeded in converting their own distribution systems into real competitive advantages (Su Chen and Lai, 2010).

The costs implied by the movement of products along the distribution channels, in order to reach the final consumers, represent a significant and increasing share of a company's expenses. For many companies, product manufacturing costs less than the expenses implied by selling the product on the market. Moreover, for some businesses, the distribution costs can represent up to 20% of the product's selling price, a fact that only highlights the importance of the distribution component in the marketing mix context (McDonald, 2008).

Traditionally, the companies hired sales agents, which they used for selling the enterprise's products to retailers or directly to final consumers. Currently there are many channel alternatives a company can use for making its product offer available on the market: sales force, value-added partners, distributors, retail stores, telemarketing and Internet. Each of these channels has to be the subject of an assessment from three distinct criteria: economic, control and adaptation (Kotler and Keller, 2012). According to the economic criterion, each marketing channel generates different sales and costs levels; the control and adaptation criteria refer to the control degree which the manufacturer can exert on the distribution channel, and to the channel's capacity of adapting to changes respectively (Kotler and Keller, 2012).

Given the marketing performance measurement imperative, studies regarding the degree of use of various marketing metrics in companies from different countries on the globe became popular in the marketing literature. In this context, the use and importance of different specific indicators for the performance of firms' distribution activities was also subject of research. For example, a research conducted in Great Britain indicated that 66 percent of 231 surveyed companies use the product distribution / availability indicator, but only 18 percent of the enterprises assign to it the maximum level of importance in the context of marketing performance assessment (Ambler, Kokkinaki and Puntoni, 2004). Another study, carried out in USA, showed that 22 percent of the investigated companies considered that the numeric distribution indicator as being very useful (Farris et al., 2010). Moreover, following a research conducted in Vietnam, its authors (Farley et al., 2008) concluded that 85 percent of the investigated companies used at least one of the following channel indicators: number of new channels or retailers acquired, satisfaction per distribution channel, profit margin per channel and retailer, loyalty (retention rate).

In what concerns companies in Romania, an exploratory research was previously conducted among 100 enterprises, most of them in Cluj County. The research aimed to identify the respondents' perception regarding the indicators used in their companies to measure the performance of each marketing mix component and the importance level they assigned to each of the indicators respectively, in the context of marketing performance measurement (Bodea (Sava) and Bacali, 2011). The results focused only on the distribution component of the marketing mix showed that on time delivery represented an indicator considered to be very important, in the context of the overall performance of the marketing activities, by 79 percent of the surveyed companies, while product availability at point of sale by 58 percent of the firms (Bodea (Sava) and Bacali, 2011).

Research coordinates

This section of the paper presents a part of the results of a more extensive research, which was conducted among best performance companies from Romania, with the goal of investigating the practices used in these enterprises for measuring their own marketing performance. The companies considered to have the best performance were the ones included in the National Top of Companies from Romania, while the investigated marketing performance measurement practices referred to eight different aspects of organizational marketing performance: market performance, brand performance, customer performance, marketing's financial performance and the individual performance of each of the four components of the marketing mix – product, price, place and promotion. Part of the results of this research were previously disseminated – the results concerning the overall marketing performance (Sava and Bacali, 2015), but also the market (Bacali and Sava, 2013; Sava and Bacali, 2013) and product (Bacali and Sava, 2015) dimensions of marketing performance.

Research objectives and methodology

This paper focuses only on the research results regarding distribution performance. Therefore, the specific research objectives established for the distribution component of the marketing performance were the following ones:

- ✓ to determine the importance level assigned by respondents to distribution performance measurement;
- ✓ to determine the respondents' opinion regarding the abilities that exist at their companies' level for measuring distribution performance;
- ✓ to identify the respondents' perception about the current level of distribution performance in their companies;
- ✓ to investigate the degree of use and the importance levels of various indicators of distribution performance measurement within the investigated companies;
- ✓ to determine the frequency of reviewing the distribution performance indicators, as well as the benchmarks used in the surveyed enterprises for reporting the indicators used for measuring distribution performance;
- ✓ to identify if there exists a relationship between the importance level assigned to measuring distribution performance and the importance levels attached to using the various distribution indicators.

The research method used was the survey, targeting the companies included in the National Top of Firms from Romania, the 2010 edition, developed by the Chamber of Commerce and Industry of Romania (2010). This institution is responsible for the annual development of a hierarchy of the best performance firms in Romania, a top that aims to recognize and award the merits of the enterprises that obtain the best results. The top edition that was used for this research included 2143 firms, from all of Romania's development regions, from all classes of firm size (microenterprises, small and medium enterprises, large enterprises and very large enterprises), as well as from various fields of activity (research-development and high tech, industry, agriculture and fishery, building, services, commerce).

The distribution performance indicators that were included in the research were selected based on several proposals from the marketing literature (Ambler, Kokkinaki and Puntoni, 2004; Farley et al., 2008; Kotler and Keller, 2012): product distribution / availability; number of new channels or retailers; achievement of sales targets through each distribution channel; satisfaction per distribution channel; loyalty of distribution channels; distribution costs as percentage of sales; percentage of orders delivered on time.

The research instrument used was a questionnaire. The importance levels of distribution performance measurement, as well as of the distribution indicators from above, were collected using five-point scale questions, anchored by "not at all important" and "very important". The respondents' opinion regarding the abilities existent in their companies for measuring distribution performance, as well as regarding their perception about the current level of distribution performance in their companies, were captured on five-point scales, having "very weak" and "very good" as anchors. The questions regarding the benchmarks used for reporting the distribution performance assessment indicators and the frequency of reviewing the performance indicators of the distribution component were inspired by the work of Ambler, Kokkinaki and Puntoni (2004).

The questionnaire was sent online to all the companies from the top for which email contact was identified. Following the data collection phase, 153 valid questionnaires were used for data analysis and interpretation, using the Statistical Package for Social Sciences (SPSS).

The distribution of the sample consisting of the 153 respondents indicated that the sample is relatively balanced between small enterprises (28.8 percent of the sample), medium enterprises (26.8 percent) and large enterprises (22.9 percent), whereas micro-enterprises and very large enterprises represent smaller shares of the sample (9.8 percent and 11.8 percent respectively); in what concerns the main field of activity, most of the companies belong to industry (40.5 percent) and services (29.4 percent) (Sava and Bacali, 2015).

Research results

The results indicate that the performance assessment of the distribution component of the marketing mix is of little importance or not at all important for 20.9 percent of the investigated enterprises. Other 15.7 percent of the respondents assign an average importance to the distribution assessment. Finally, for 60.8 percent of the respondents is very important or important to assess the indicators of distribution performance. The remaining 2.6 percent of the respondents did not provide an answer to this question.

20.3 percent of the respondents declared a very good ability of assessing the distribution component, while 29.4 percent declared a good ability. Other 18.3 percent of the respondents assigned an average level for this ability. It was also noticed that almost one third of the sample (48 enterprises out of the 153 respondent ones) considered that the ability of assessing the distribution component of the marketing mix was weak (8.5 percent) or very weak (22.9 percent).

From the perspective of the current level of distribution performance, most of the respondents (28.8 percent) believed that the current distribution performance registered in their companies was good, being closely followed by the respondents which indicated an average level of their performance for this marketing mix component (23.5 percent). Only 15 percent of the respondents indicated a very good level for their companies' performance on this dimension. It should also be noted that the share of respondents that considered the distribution performance as being very weak is quite high (22.9 percent) and relatively close to the shares of respondents that indicated a good or an average performance level for this dimension.

In what concerns the importance levels assigned by the respondents to the seven distribution indicators that were taken into account, a first result indicated that for each indicator, at least 30 percent of the respondents stated that the respective indicator was not being used in their companies (see Table 1). The results lead to the conclusion that the most used indicators are percentage of on-time deliveries, which is used in 70.5 percent of the investigated enterprises, and distribution costs as percentage of sales, used in 67.9 percent of the companies. On the other hand, the indicators which the respondents considered to be the most important for assessing distribution performance are percentage of on-time deliveries, considered very important by 30.1 percent of the sample, and product availability (29.4 percent).

Table 1. Importance of distribution performance indicators (%)

Indicator / Importance level	Product distribution / availability	Number of new channels or retailers acquired	Achievement of sales targets through each distribution channel	Satisfaction per distribution channel	Loyalty of distribution channels	Distribution costs as percentage of sales	Percentage of on-time deliveries
Very important	29.4	22.2	24.8	24.2	19.6	20.9	30.1
Important	19.0	18.3	20.3	22.2	24.8	22.9	21.6
Average importance	10.5	13.1	13.1	11.1	12.4	11.8	10.5
Of little importance	5.2	7.8	7.8	5.2	6.5	7.8	5.9
Not at all important	2.6	3.3	1.3	2.0	2.0	4.6	2.6
Do not use indicator	31.4	32.7	30.7	33.3	32.7	30.1	27.5
No answer	2.0	2.6	2.0	2.0	2.0	2.0	2.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

According to the results presented in Table 2, the levels recorded by the indicators in the last year represent the main benchmark at which the distribution performance assessment indicators are reported to, followed by the values established in the marketing / business plan. Two other

benchmarks – specific competitors and existent data at product category level respectively – are used in a smaller number of the investigated enterprises.

Table 2. Benchmarks used for reporting the distribution performance assessment indicators

		Responses		Percent of number of cases
		N	Percent	
Benchmarks used for the distribution indicators	Last year values	46	27.1%	33.1%
	Values established in the marketing / business plan	38	22.4%	27.3%
	Existent data at product category level	21	12.4%	15.1%
	Specific competitors	22	12.9%	15.8%
	Do not know	31	18.2%	22.3%
	Not applicable	12	7.1%	8.6%
Total		170	100.0%	122.3%

In regard to the frequency of reviewing distribution performance indicators, it was noted that a significant share, of 19.6 percent of the investigated enterprises, never performs a review of the assessment indicators of this component. However, the largest share of the sample, representing 43.8 percent, belongs to companies in which indicators from this category are being reviewed with a regular frequency (quarterly / half-yearly / yearly), followed by the share of companies in which distribution performance is assessed more rarely than yearly (20.3 percent). These indicators are reviewed monthly or more often in only 13.7 percent of the firms.

Next it was intended to test if a relationship exists between the importance of assessing the distribution performance and the importance levels assigned to the seven assessment indicators of this component, using in this respect the stepwise multiple linear regression method. The existence of a statistically significant linear relationship was noted between the importance of assessing the distribution component, which was considered the dependent variable, and two predictor variables represented by the importance levels assigned to the indicators "distribution costs as percentage of sales" and "achievement of sales targets through each distribution channel" ($F_{2,82}$=40.19, p<0.001). The value determined for R^2_{adj} was 0.483; this value means that 48.3 percent of the dependent variable's variance is explained by the common influence of the two predictor variables. Because they did not represent significant predictor variables, the importance levels of the other indicators from the category of distribution component's assessment were not included in the model (see Table 3).

Table 3. Stepwise multiple linear regression of the predictors of the importance of distribution performance measurement

Model statistics				
R^2		0.495		
Adjusted R^2		0.483		
F statistics		9.352		
d.f.		1,82		
p value		.003		
Final predictors	**Unstandardized coefficients (B)**	**Standardized coefficients (Beta)**	***t***	***Sig.***
Importance of the „distribution costs as percentage of sales" indicator	0.408	0.491	5.097	0.000
Importance of the „achievement of sales targets through each distribution channel" indicator	0.263	0.294	3.058	0.003

The two forms, standardized and unstandardized, of the multiple linear regression equation between the dependent variable – importance of assessing distribution performance (IADP) and the two predictor variables – importance of the distribution costs as percentage of sales indicator (IDCPSI) and importance of the achievement of sales targets through each distribution channel (IASTDC) - are the following ones:

$$IADP = 1.518 + 0.408 * IDCPSI + 0.263 * IASTDC \quad (1)$$

$$Z_{IADP} = 0.491 * IDCPSI + 0.294 * IASTDC \quad (2)$$

Therefore assigning a higher importance level to the importance of distribution performance measurement is positively associated with higher levels of importance assigned to the two indicators – distribution costs as percentage of sales and achievement of sales targets through each distribution channel.

Discussion and conclusions

This paper focused on the distribution performance measurement aspects of a wider research that explored the practices used for marketing performance measurement in the firms included in the National Top of Companies from Romania.

The research revealed that each of the seven indicators that were taken into consideration for assessing the distribution performance is not being used in at least 30 percent of the surveyed companies. Although more than 60 percent of the respondents rated the assessment of distribution performance as being very important or important, almost one third of the respondents considered that the abilities that exist at their company's level for assessing distribution performance and the current level of their distribution performance are weak or very weak. The benchmarks most used for the distribution indicators are the values registered in the previous year and the values set in the marketing / business plan respectively, while in most of the enterprises (43.8 percent), the indicators used for assessing distribution performance are reviewed on a regular basis, either quarterly, half-yearly or yearly.

Finally, another result revealed that assigning a higher level of importance to the assessment of the distribution performance is positively associated to increasing levels of importance assigned to two indicators, distribution costs as percentage of sales and achievement of sales targets through each distribution channel.

The results presented in this paper pave the way for some future paths of research. The selection of the distribution indicators that were subject of the research represented the authors' personal option, based on the literature review. Therefore, the research could be reiterated, using different sets of indicators. At the same time, other samples of enterprises could be investigated, as well as the influence of some characteristics of the companies (size class, field of activity etc.) upon the indicators used for distribution performance measurement.

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MITIGATING THE RISKS IN CIVIL ENGINEERING PROJECTS USING MULTI-CRITERIA METHODS

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Abstract

Purpose *– The paper presents the conclusions of a study which uses multi-criteria methods for mitigating the risks of the decision-making process in case of construction projects .*
Methodology/approach *– I simulated an offer a company has to deliver to an investor for building a skyscraper (P+20E). I considered four estimations, each of them based on the same criteria: cost, schedule, risks, technology, human resources and profit. Historical data permitted the appraisal by applying two methods of decision-making in certainty conditions.*
Findings *– The research showed the estimations can be ranked by the management team of the construction company according to scaled criteria, even if there is a degree of subjectivity.*
Research limitations/implications *– The research involves companies from the civil engineering sector, which has its own particularities. Further research will be applied to other fields of activity.*
Practical implications *– Companies from the construction area will be able to make decisions in certain conditions for mitigating the risks .*
Originality/value *– The research shows that the management team may use two combined multi-criteria methods: the Analytic Hierarchy Process for rating the criteria and ELECTRE for making the business decision concerning the best strategy.*
Key words: *multi-criteria, risk mitigating.*

Introduction

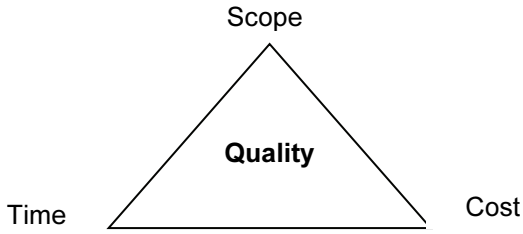
Risks are important aspects on civil engineering projects. They may refer to quantitative items which may affect the organization`s performance (consume of materials, profit, delays, etc.) or qualitative ones (overall quality, safety and security of workers, care for the environment and community). In order to survive, a company will have to improve its strengths and to mitigate the risks in its activities.

In a changing business environment, it`s a hard job for organizations to find new strategies for a competitive advantage. The European Union created a global market in which the actors are all affected when a crisis occur.

A company, no matter what area is performing, has to struggle in this turbulence. Decisions concerning planning or control have to be made often. Therefore, the management has to find ways to reduce the risks for a chosen strategy.

When an opportunity for business is identified, the staff has to find the best option for a win-win action, both for the organization and the potential client.

The key success factors of a project are: scope, cost and time, leading to the overall quality.



$$Q = f(T,S,C)$$

If any of these items suffer some changing from planning, the quality of the project is in jeopardy.

Surveys made among the practitioners revealed the main sources of risks in construction projects (Zou P., Zhang G., Wang J., 2007).

Key Risks in Construction Projects	Rate (%)
Tight project schedule	67
High performance expectations	38
Unsuitable construction project planning	42
Incomplete or inaccurate cost estimate	38
Lack of coordination between project participants	29
Lack of skilled labor	31
Price inflation of construction materials	41

The process of risk management involves more stages: identification of the possible risks of the project, assessing the risks, planning ways to mitigate the risks and finally implementing the strategy.

The management theories highlight several methods for the decision-making process in conditions of certainty, uncertainty or risk. If the company has access to historical data, statistics may guide to kind of certain decisions; but when it comes to a new area, all the risks have to be considered.

This research will be focused on the hypothesis of decision-making by combining two methods, both in certainty conditions: ELECTRE and Analytic Hierarchy Process (AHP), using performance criteria. The decision will be relevant only if minimum five criteria will be analyzed.

Literature Review

The business environment is in continuous change, therefore if a management decision has to be made, one criterion is not enough. The management will have to set as many criteria as is able, with all their alternatives, and then to choose the best option (Keshavarz M. et al., 2016).

Ling Xu and Jian-Bo Yang (2001) analyze the multi-criteria methods in terms of finite criteria, even if the environment provides an infinite number. Each company will be constrained because of the limited resources. These methods combine the alternatives in the decision-making process with the relevant criteria selected at a chosen rate (Saarikosky H., 2013).

The construction products/services are different from other manufacturing goods considering the price, the diversity of inputs, the duration and the technology involved. That`s why the management team has to analyze many criteria when making a certain decision (Dziadosz A., Konczak A., 2016).

The management of construction projects follow the same functions as any other projects, with respect to efficiency in terms of cost, schedule, quality and risk (Monghasemi S. et al., 2015).

Historical data from the company`s files provide elements used as inputs in the decision process. However, in the end, the result will be a compromise due to the limited resources (Ritchie J., Crouch B., 2003).

The decision-making process involves the management team of a company, meaning that each person will have his/hers ranking criteria. Therefore, the projects will encounter risks in evaluating their importance. The most difficult problem is to set the proper criteria which will lead to alternatives (Buchanan J., 2007).

Research Methodology

The present paper is focused on the decision the management team will have to make when they might choose between more variants. This situation occurs when the company finds the opportunity to make an offer to a client and the staff has to identify ways to mitigate the risks if the proposal is successful.

The construction project will be a high building (P+20E), with hard competition in an open bidding. The subject company will have to evaluate its competencies and will make four estimates according to quantitative and qualitative criteria, as follow:

- Total cost of the project (material, manpower, transport, equipment) – "C";
- Time schedule (number of workers, weather conditions) – "S";
- Risks of the project (suppliers, machinery collapse, quality) – "R";
- Technology for implementing the project (prefabs, concrete pump, plastering device) – "T";
- Human resources (specialized workers for the project`s technologies) – "HR";
- Profit – "P".

The distribution of these criteria is not uniform, because of the company`s availability to resources: investment, renting equipment, training the personnel, outsourcing, or others.

The purpose of this research is to find the best option for bidding a construction project. The decision-making process will be developed in two stages, using multi-criteria methods: first, the company`s management will agree on the criteria, identical for all four variants, using the Analytic Hierarchy Process, and they will weigh the criteria importance based on the organization`s capability at the moment when the offer is made. The next stage will use ELECTRE method for assessing the variants, taking in account all the criteria with their weight. After analyzing the ranking of the estimates, the company`s management will be able to make the decision in certainty conditions.

The matrix of the four estimated projects and six criteria (cost, schedule, risks, technology, human resources and profit) is designed as below:

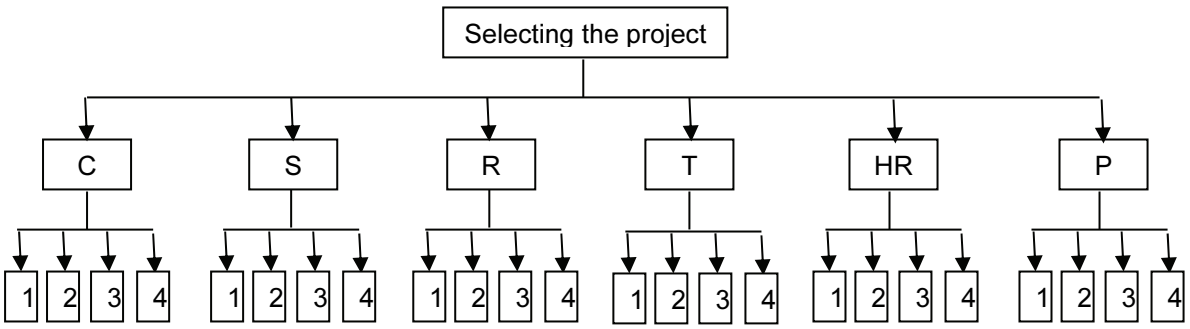
P_j/C_j	C_1 (C) (Euro)	C_2 (S) (weeks)	C_3 (R) (scale)	C_4 (T) (scale)	C_5 (HR) (scale)	C_6 (P) (Euro)
P_1	4.500.000	70	35	50	40	400.000
P_2	4.900.000	45	45	70	70	320.000
P_3	4.000.000	85	30	30	30	380.000
P_4	4.200.000	60	50	50	50	350.000

For the quantitative criteria, C_1 and C_6 are measured in Euro, and C_2 is measured in weeks. For the qualitative ones, we used a scale from 1 to 100, where small figures are for low effect of the criteria in the estimation. The four variants of the estimation are:

- P_1: the total cost of the project will be 4.500.000 Euro, it will be finished in 70 weeks, with rather small risks, using common technology owned by the company, average qualified manpower (owned by the company, minimum training needed) and a profit of 400.000 Euro;
- P_2: the total cost of the project will be 4.900.000 Euro, it will be finished in 45 weeks, with rather medium risks, using high technology (outsourcing), high qualified manpower (outsourcing) and a profit of 320.000 Euro;
- P_3: the total cost of the project will be 4.000.000 Euro, it will be finished in 85 weeks, with small risks, using common technology owned by the company, qualified manpower (owned by the company, no training needed) and a profit of 380.000 Euro;
- P_4: the total cost of the project will be 4.200.000 Euro, it will be finished in 60 weeks, with average risks, using average technology owned by the company, average qualified manpower (owned by the company, minimum training needed) and a profit of 350.000 Euro.

The decision-making process will follow several steps:

Step 1: Hierarchy of the criteria and project estimation
The first action the management takes is to set the criteria for ranking the projects according to the resources available at the moment of the estimation.



Each of the four projects is judged based on cost, schedule, risks, technology, human resources an profit.

Step 2: Pair-wise compare the projects using the scale of importance
The estimation uses quantitative and qualitative criteria. The only way to evaluate the effects of each criteria on the whole project for all variants is to compare pairs of variants.

The scale of importance for pair-wise scoring is:

Scale	Numeric rating	Reciprocal
Extreme importance	9	1/9
Very strong to extreme importance	8	1/8
Very strong importance	7	1/7
Strongly to very strong importance	6	1/6
Strong importance	5	1/5
Moderately to strong importance	4	1/4
Moderate importance	3	1/3
Equal to moderate importance	2	1/2
Equal importance	1	1

By applying the scale of importance to all the criteria, and analyzing the pairs of variants, the matrix of results has the following scores:

	C	S	R	T	HR	P	Σ	Score (%)
C	1	1/3	4	7	7	1	20.33	25
S	3	1	5	7	7	3	26.00	32
R	1/4	1/5	1	3	3	1/4	7.70	10
T	1/7	1/7	1/3	1	1	1/7	2.76	4
HR	1/7	1/7	1/3	1	1	1/7	2.76	4
P	1	1/3	4	7	7	1	20.33	25
Σ	30.28	2.15	14.66	26.00	26.00	5.54	79.88	100

The evaluation shows that each criteria chosen has a certain level of importance, resulting from the subjective opinions of the management team.

Finally, they agreed on adjusting the results using arguments for every decision:

- The costs of the projects will have 25% importance, as it was calculated with the Analytical Hierarchy Method;
- The time schedule of the projects will have 30% importance, because the data collected showed that the investor is very interested in the overall duration of the project ;
- The risks of the projects will have 10% importance, as it was calculated with the Analytical Hierarchy Method;
- The technology of the projects will have 5% importance, because the company owns it or has access to renting in good conditions of costs;
- The human resources of the projects will have 10% importance, because the company owns the manpower or may take them from specialized companies ;
- The profit of the projects will have 20% importance, considering the rate of the time schedule.

Step 3: The matrix of projects-rated criteria

After the final evaluation of the criteria` rates, the managers agree on the matrix which will lead them on the decision of choosing between the four projects:

P_j/C_j	C_1 (C) (Euro)	C_2 (S) (weeks)	C_3 (R) (scale)	C_4 (T) (scale)	C_5 (HR) (scale)	C_6 (P) (Euro)
P_1	4.500.000	70	35	50	40	400.000
P_2	4.900.000	45	45	70	70	320.000
P_3	4.000.000	85	30	30	30	380.000
P_4	4.200.000	60	50	50	50	350.000
k	0.25	0.30	0.10	0.05	0.10	0.20

Criteria C_1, C_2 and C_3 will affect the performance of the projects when they will be minimized; criteria C_4, C_5 and C_6 will give good results if their values are maximized. Consequently, the matrix will look as follow:

P_j/C_j	C_1 (C) (Euro)	C_2 (S) (weeks)	C_3 (R) (scale)	C_4 (T) (scale)	C_5 (HR) (scale)	C_6 (P) (Euro)
P_1	- 4.500.000	- 70	- 35	50	40	400.000
P_2	- 4.900.000	- 45	- 45	70	70	320.000
P_3	- 4.000.000	- 85	- 30	30	30	380.000
P_4	- 4.200.000	- 60	- 50	50	50	350.000
k	0.25	0.30	0.10	0.05	0.10	0.20

Step 4: Designing the utility matrix

Pairs (variant-criterion) are set in order to calculate the utility, meaning to transform different measure units of the criteria in a unit (utility) which is comparable.

Utility is calculated with the formula:

$u_{ij} = \frac{c_{ij} - \min c_{ij}}{\max c_{ij} - \min c_{ij}}$ ϵ (0,1) for maximizing the criteria

$u_{ij} = \frac{\max c_{ij} - c_{ij}}{\max c_{ij} - \min c_{ij}}$ ϵ (0,1) for minimizing the criteria

After computing the utility using the formulas above, the utility matrix is:

P_j/C_j	C_1 (C) (Euro)	C_2 (S) (weeks)	C_3 (R) (scale)	C_4 (T) (scale)	C_5 (HR) (scale)	C_6 (P) (Euro)
P_1	0.55	0.62	0.25	0.50	0.25	1.00
P_2	1.00	0.00	0.75	1.00	1.00	0.00
P_3	0.00	1.00	0.00	0.00	0.00	0.75
P_4	0.22	0.37	1.00	0.25	0.50	0.37
k	0.25	0.30	0.10	0.05	0.10	0.20

Step 5: Designing the concordance/discordance matrix

The concordance/discordance index for pair of alternatives are calculated with formulas:

$C(v_g, v_h) = \frac{\Sigma k_j \{u(v_g) \geq u(v_h)\}}{\Sigma k_m}$

Where Σk_j is the sum of the coefficients of importance for $u(v_g) \geq u(v_h)$;
Σk_m is the sum of the criteria` coefficients of importance = 1

$D(v_g, v_h) = 0$ if $u(v_g) \geq u(v_h)$;

$= \frac{1}{\alpha_{\max}} \{u(v_g) - u(v_h)$, for $u(v_g) \leq u(v_h)$

Where α_{max} is the maximum between minim (0) and maxim (1) values of the utility.

By computing these index, the concordance/discordance matrix is:

	P1		P2		P3		P4	
	Concord	Discord	Concord	Discord	Concord	Discord	Concord	Discord
P1	1.00	0.00	0.50	0.75	0.70	0.75	0.80	0.75
P2	0.50	1.00	1.00	0.00	0.50	1.00	0.50	0.37
P3	0.30	0.55	0.50	1.00	1.00	0.00	0.50	1.00
P4	0.20	0.63	0.60	0.78	0.50	0.63	1.00	0.00

Step 6: Choosing the best project

The concordance/discordance index help finding the variant that accomplish most of the criteria involved in the evaluation.

If comparing the difference between the concordance and discordance, score 1 is given for the biggest and score 0 for the smallest.

The final matrix is:

	Project 1	Project 1	Project 1	Project 1	TOTAL
Project 1	-	1	1	1	**3**
Project 2	0	-	1	0	**1**
Project 3	0	1	-	0	**1**
Project 4	0	1	1	-	**2**

By analyzing the results, the conclusion is that Project 1 fits all the criteria, respecting their weights. Even if the schedule is the most important criterion in this particular case, the company is not prepared to take the risk of failing. If they chose Project 2 (45 weeks for completion), they will have to outsource the activities which involve technology they don`t possess and have to rent workers from specialized companies. They might lose control of the overall project.

In order to mitigate the risks, the management team will choose Project 1 which has an accelerated schedule, but is based on the company`s resources: own workers who will be trained for using the technology they will have to rent.

Conclusions

The sustainable management of an organization is based on its capacity to survive in the business environment. When crisis occur in a specific area, the competition is harder than ever. Usually, the effect is less attention on the risks involved when accepting a contract.

The construction field in Romania faced many crisis in the past 40 years. Since it`s a complex domain, with expensive resources and technology, the companies have difficulties in finding clients willing to pay for the projects.

The most common situation for a civil engineering firm is to make an offer in an open bidding procedure. The estimated value of the project will have important data, both for the client and the organization: the final price, the total duration of the project and the expected quality. These are the key factors for a successful project. Of course, all the participants in the bidding are willing to win, but the client will have the decision according to the advantages of the best proposal.

The estimation process is a complicated one, because the management team will have to choose between more variants, each one with its pros and cons, and with their risks concerning money invested, profit, human resources or technology.

The decision-making belongs to managers, who will have to use some criteria to mitigate the risks of a future project. The available data come from the historical performances of the company, like best practices, learned lessons, personnel`s skills, or others.

The theories of management prove that a decision can be made in conditions of certainty using multi-criteria analysis, but in order to be effective, at least five criteria must be taken into account.

This research demonstrates that, using two combined methods, the Analytic Hierarchy Process and ELECTRE, the decedents may adopt the best variant of an offer for an investor. The first method (AHP) was applied for calculating the weight of each criteria on all the possible variants of projects. The second method (ELECTRE) iterated the historical data and computed a pair wise analyze in order to find the best variant of estimation using available resources in the moment of bidding.

As it can be seen in this example, the profit is not the only indicator that matters; on a long-term strategy, the overall profit depends on the number of contracts per year, therefore the duration of the project might be a stronger indicator. Moreover, the success of a project depends on the

personnel skills and the modern technology involved, which are sources of superior quality. And last but not least, the risks of the project have to be mitigated at a controllable rate.

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E-LEARNING – A mETHOD TO REDUCE THE IMPACT OF CRISIS IN HIGHER EDUCATION

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Abstract

Purpose *– The paper presents the conclusions of a study which measures the impact of E-learning on the effectiveness of the Higher Education system for two entities: mentors and debutants.*
Methodology/approach *– We designed a model which shows the impact of satisfaction in work on the individual and organization performances. The subjects are the tutors (PhD Professors) who guide the debutants (Assistants) to conceive and write courses and seminaries for a specific syllabus.*
Findings *– The research shows that the transfer of knowledge is effective using E-learning. All information is shared between the members of the group, improving the content of the courses and seminaries.*
Research limitations/implications *– The research involves teachers from the Civil Engineering Faculty. Further research will be applied to all of the faculties of the Technical University of Cluj-Napoca.*
Practical implications *– Tutors and mentors will have a group to communicate in a specific discipline. All processed information will be spread in real time.*
Originality/value *– Professors and assistants are sharing information. Synergy will develop qualitative effects on teaching the students, both on courses and seminaries. A real plus in the cooperation is the team spirit.*
Key words: *E-learning, effectiveness, synergy.*

Introduction

E-learning is one of the modern methods of teaching and learning. This system is based on the transition of information via Internet, through platforms, without the face-to-face presence of those implicated.

Like the 7 Ps in Marketing, researchers found a similarity in studying the E-learning approach, based on the 5Ds theory: in order to be effective for an organization, this type of learning begins with **D**efining the need for the employees training, in terms of skills and competencies for specific specializations. Then the management will **D**esign the training plans for team or individual purposes, and **D**evelop the resources for the activities involved in the programs. They will be **D**elivered to the target groups and after completing, the management will **D**etermine the impact of the new skills and competencies on the organization outcomes.

E-learning is a source of competitive advantage for universities if it`s used properly. The courses or seminaries are delivered in sequences, easy to be processed by students, who can apply their own style in understanding the notions. Informal communication (forum, e-mail, messages) help them clearing the items without face-to-face meetings. However, there is a big problem in approaching this new learning style: unless the teachers find ways to strongly motivate the students, the drop-out rate is high (more than 50%). It seems that people who share personal knowledge, or feelings (good or bad), are most likely to act as teams and the spirit of belonging to a group is a strong motivating factor. Another aspect which can harm the results of the E-learning

process is the fact that the subjects cannot learn from others' experiences, since they share only filtered information from the participants.

Literature Review

Even if it`s a rather new domain, there are some books or articles that explain this concept, with its pros and cons. Emre Alptekin and Ertugrul Karsak argued about the combined methods when the E-learning methods are used, stating that students need computing support for eliminating space and time constrains (Alptekin E., Karsak E., pp. 1).

George Veletsianos analyses the responsibility of using E-learning by replacing the traditional one, by developing competencies which can provide knowledge in connected fields (Veletsianos G., pp. 47).

Patrick Lowenthal and Co. (2012) states that the teachers must approach flexible methods for E-learning: "The preparation of highly qualified special education teachers who can accomplish the missions of public education in today`s world is a complex challenge. It requires a creative approach to teacher preparation in a scientifically sound, rigorous, and results in qualified teachers who have knowledge, skills, attitudes, and dispositions to provide instructional programs to all students.

The E-learning method brings also the need the skills to form and teach virtual classes: "Skilled classroom trainers may not like to admit that they feel like fish out of water when presenting online. The communication methods they`ve long relied on suddenly fail them. They can no longer observe body language, nor react instinctively to inquisitive looks. When online, voice communication trend to be either severely limited or overly congested. And sometimes participants accidentally log off and disappear". (Hyder K et al, 2007)

Wang, Sun, Li and Xuejun (2008) studied the gap that exists between the graduates and the business environment. They emphasis the idea that the universities which use traditional methods of teaching provide poor skills and competencies for their students, and employers are not satisfied with their performances on work jobs. This situation leads to overhead costs for training employees to acquire knowledge based on the specific area of activity. The results of the studies showed that E-learning is a choice in developing students` skills for using new technologies on the workplace".

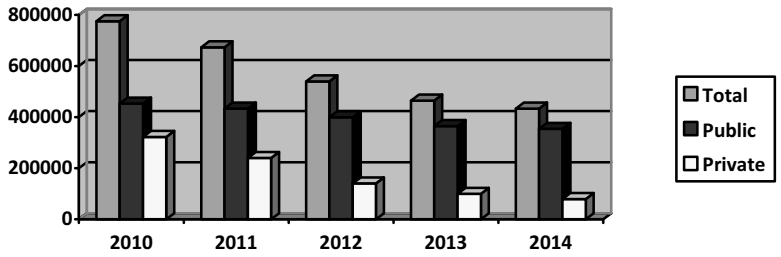
Research Methodology

Previous concerns of the researchers were focused in optimizing the message from teachers to students. However, little concern was on the content of the information. Usually, professors perform the courses and set the subjects for the applications, without continuous guiding the assistants for the seminaries. Therefore, there is a gap between theoretical and practical items.

The educational process aims to deliver up-to-date knowledge which will help the graduates in finding jobs according to their specializations. The market will select the best candidates, with best results on their exams and Bachelor Thesis. The employers also seek persons qualified in such a way that they will put less effort in training them. This makes a hard work for the universities to deliver modern data, since technology is changing rapidly.

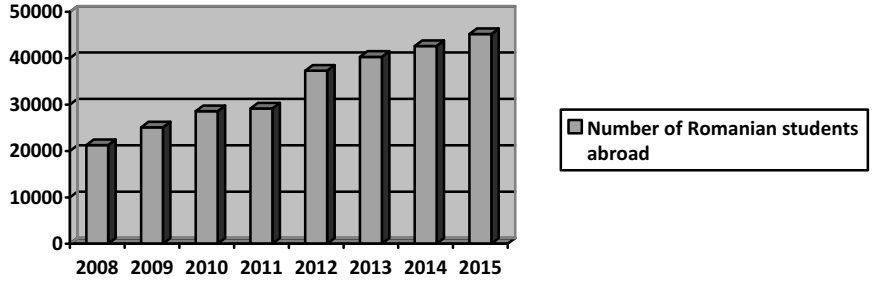
The Higher Education System in Romania faces the strongest crisis since 1990. The number of students decreases dramatically because of the low natality: in 1990, 315.000 children were born, but in 2013 just 180.000. Moreover, money is a priority for the young generation: they want to have them fast and easy, without studying if possible.

Statistics show that the rate of graduating the college is lower each year in Romania. According to National Institute of Statistics, in 2002, 86.71% of the pupils passed the High School Graduating exam. In 2007, the rate was 82.08, and in 2016 only 66.70% graduated. Obvious, this low rate affects the number of students who will apply in a certain year.
Speaking about the number of students, the evolution is as follow:



According to the National Institute of Statistics (figure above), the number of people registered in the first year of study decreased from 775.319 in 2010 to 433.234 in 2014 (almost 48%) and the trend is descending. That brings hard times for universities, which must find ways to attract students.

Another major concern is the offer that foreign universities make for students from abroad. The advantage they provide is high rate of employment after graduation. Therefore, in 2008 there were 21.267 Romanian students enrolled in UE universities and in 2015 more than 45.000 Romanian graduates from college applied for universities abroad.



Source: EUROSTAT

E-learning is a process that involves individuals, in this case teachers and students. The effectiveness of this method is estimated by the way the participants receive and deliver information. The quality of data is a strategically one, for it has a future impact on the target people.

E-learning results are based on flow experience concept, developed by Mihaly Csikszentmihalyi (Csikszentmihalyi M, 1991), who argues that flow is focused on motivation that generates joy when completing a task. The positive effect of the flow is satisfaction due to understanding the phenomena and willing to repeat the behavior.

An important issue is the individual`s perception that he/she came to the result of the study with only a little guidance of a tutor, but most of the research is done by himself/herself. Moreover, if the study is done without restrictions, the limits are the time, the level of intelligence, the degree of interest and the availability to select the information.

The teachers who deliver knowledge and skills to students must be well prepared in a specific field. Moreover, the passion for studying and sharing information will be the main motor in the way the students will receive the message and understand it. They will even want to perform in an area they are comfortable. Statistics show that the teacher`s talent in guiding the students in a domain is one of the reasons they choose further specialization.

We began this research by studying some models concerning the way the individuals` Interest in a domain will have consequences in the outputs of the organization they perform. For this reason we adapted the IS Measurement Model to measure the impact of the E-learning system on the effectiveness of the participants` behaviors.

The adapted model is based on same principles, but it refers to the Higher Education system. Using the E-learning method, in terms of immediate and future impact, the degree of satisfaction

in work depends on the person and the quality of the information. These items create new capabilities that will be better developed in practice. At the end of the model, the individual gets more satisfaction in his job, as he/she can fulfill more tasks with increased accuracy.

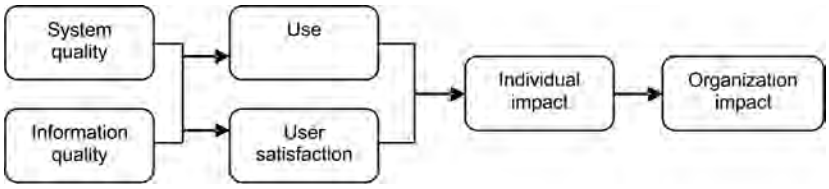


Fig. no. 2: DeLone and McLean IS Success Model (DeLone W., McLean E, 1992)

This research is focused on the teachers who deliver information to students. The quality of the data provided by the teachers has a direct effect on the students, who are the final link on the communication process. If they are satisfied with the content and the packaging of the message, they will understand better, consequently they will like the subject and will be motivated to repeat the behavior.

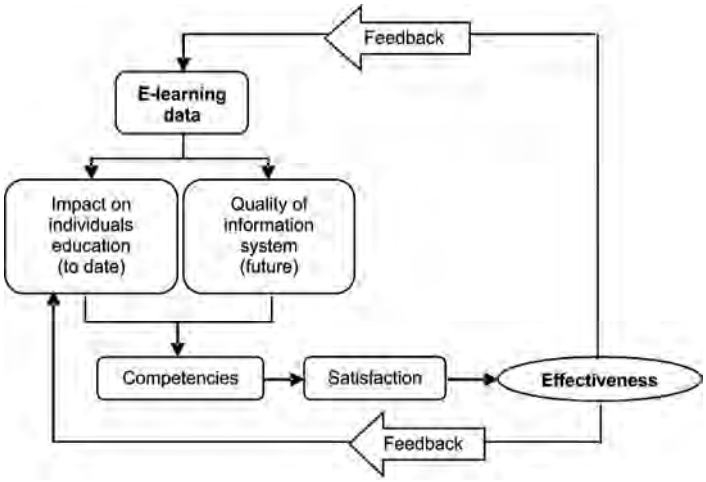


Fig. no. 3 The adapted IS measurement model

This study targets two categories:

a. mentors, in this case PhD Professors of the Faculty of Constructions. They are specialized in disciplines connected to management;
b. debutants, in this case assistants who are in the process of obtaining the PhD diploma.

As it can be seen in the model above, the mentors are the source of the data. Information is available via Internet or Intranet. The courses and applications are delivered on a platform belonging to the university and is accessible 24/7.

The debutants receive the message and they filter it according to their current level of education and the quality of the information. During the E-learning process, which is an interactive and interdisciplinary one, they acquire competencies; their level depends on the personal features of the subject.

The next step is putting the competencies into practice, meaning delivering knowledge to the students, also on the existing platform. The effectiveness of the model stands in the way the students rank the quality of the developed courses. If the evaluations are good, and/or the information received by the debutants is positive and friendly, they will provide satisfaction in work, which will lead to effectiveness in the teaching process.

The last, but maybe most important stage of the model is the feedback. Its effects target two aspects:

- The impact on the individual education: if the change in behavior is positive and significant, it`s expected that the subject will repeat the behavior;
- The data offered through the E-learning method: mentors will evaluate the debutants and will find the progress (or regress) in competencies (knowledge, teaching skills, interdisciplinary items) and will adjust the data accordingly.

Based on the proposed model, we conducted a research, using qualitative and quantitative methods that aimed to improve the teaching performances in the higher education systems. This is a medium and long term approach, as it is based on the learning process before it is put in practice.

According to the Bologna regulations, the assistants (named debutants in this paper) may teach courses only after having the PhD title. Meanwhile, they must be prepared to attend courses for students. They need tutors to guide them during this phase.

Four debutants were assigned to each mentor. At the beginning, the debutants conceived courses for particular curricula, under the mentors` supervision. The courses were uploaded on a dedicated platform, accessible to several technical universities. The information could be accessed by all registrated mentors and debutants.

After the communication process via Internet, the debutants were able to modify the courses according to the posted suggestions.

We conducted a questionnaire delivered to 12 mentors and 48 debutants of the Faculty of Constructions from the Technical University of Cluj-Napoca Romania.

Referring to the participants: 51% of the mentors were female, 49% male; as for the debutants, 31% were under 30, 36% between 30-40, 33% over 40 years old, 48% were female and 52% male.

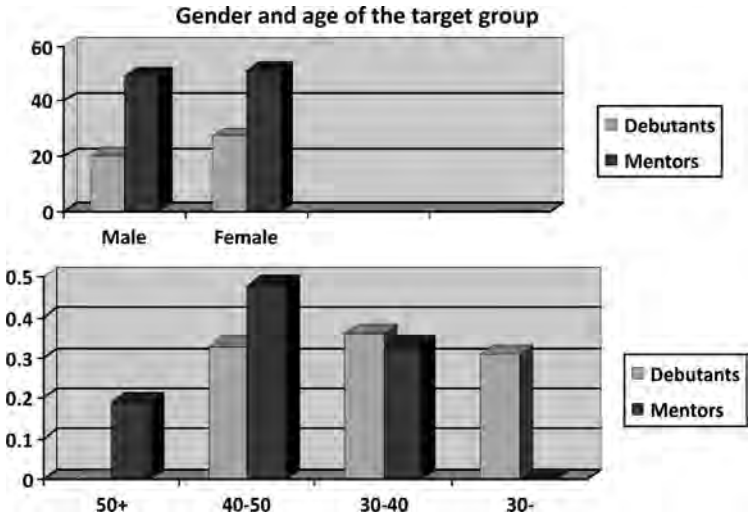


Fig. no. 4 Features of the target group

The questionnaire included 15 questions, 11 closed and 4 opened ones. The questions were focused on the effectiveness in the teaching-learning act. We wanted to analyze items related to the degree of satisfaction using modern methods of teaching. Moreover, it was important if they have improved the teaching style after this experiment.

The subjects were questioned about aspects as:

Table no. 1 The content of the questionnaire

Question types		Question content
Closed questions	01.	Have you used E-learning before this experiment?
	02.	Did you improve your computer skills after this experiment?
	03.	Did you improve your teaching method by using E-learning?
	04.	Did you improve your communication skills by using E-learning?
	05.	Are you comfortable with this type of E-learning?
	06.	Did you use the information uploaded by other participants?
	07.	Did you provide feedback to the members of your team (debutants if you are debutant, mentors if you are mentor)?
	08.	Did you provide feedback to the members of the other team (mentors if you are debutant and debutants if you are mentor)?
	09.	Did you apply interactive methods for your on-line courses after this experiment?
	10.	Did you use information from other platforms/sources?
	11.	Did you access other themes than the one you are specialized?
Opened questions	12.	How do you think you can improve the cooperation with your team members?
	13.	How can you increase the number of users of the platform?
	14.	Name 5 items which made you feel unmotivated to continue the E-learning process.
	15.	Name 5 items that improved your effectiveness in the teaching process after using E-learning.

Research results

We analyzed the results of the questionnaire and we gave rates to the answers in order to have accurate interpretation. The target group have answered to all the questions, so we were able to use all the data of the experiment.

We could rate only 11 questions (closed ones), but the opened questions offered information regarding the degree of satisfaction in work after using the E-learning method.

The answers regarding the questions above revealed the following statistics:

Table no. 2 The results of the questionnaire

Item	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
01.	2%	6%	0%	32%	60%
02.	21%	52%	8%	15%	4%
03.	16%	49%	11%	15%	9%
04.	12%	39%	22%	12%	15%
05.	17%	23%	25%	14%	21%
06.	9%	31%	17%	11%	32%
07.	26%	27%	0%	22%	25%
08.	7%	14%	0%	38%	41%
09.	32%	23%	7%	10%	28%
10.	3%	7%	11%	41%	38%
11.	24%	29%	6%	23%	18%

All the subjects have answered to all the questions. They showed interest in this type of teaching-learning method, mentors and debutants as well.

Even if the questionnaire was addressed to the two entities, apparently different in terms of age, level of training, level of knowledge, years of practice, E-learning is a challenge for each of them.

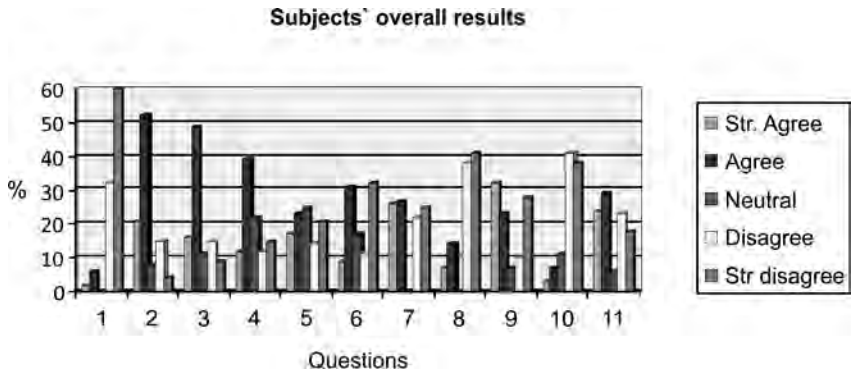


Fig. no. 5 Interpretation of results

After interpreting the data of the questionnaire, the results showed the following aspects regarding the attractiveness of E-learning among subjects:

- Women mentors between 30 and 40 years old are the most interested in improving the teaching and communication skills in teaching;
- Women debutants under 30 are the most interested in improving the communication skills in teaching;
- Men mentors between 30 and 40 years old are the most interested in improving the computer skills in teaching;
- Men debutants under 30 years old are the most interested in learning other subjects than the ones they are specialized;
- Almost all of the subjects used for the first time an E-learning platform;

The opened questions provided suggestions for further research: proactive competitiveness, friendly design of the platform, structured courses, including the study cases and best practices in the curricula.

Conclusions

In order to be competitive in a changing area, such as higher education, organizations have to adapt to consumers` desires, in this case students as future employers or employees, in public or private companies.

Internet is an infinite source of information which becomes data when they are filtered and processed in a personal manner.

E-learning is a relatively new method in the Higher Education system in Romania. Practically, it breaks the patterns used by students and teachers as well.

Any change is met with resistance from the persons involved. There will always be a core of individuals willing to try, but the majority will want to keep the old habits.

Effectiveness is the capability to produce a designed result. Peter Drucker said that “effectiveness can and must be learned”.

Effectiveness is a measurable item, using SMART objectives. E-learning can be seen as a strategically method to improve the Higher Education system. And as the Human Resources are the most valuable asset of companies, such as universities, plans must be set to develop their performances.
This paper aims to prove that the effectiveness of the human resources, in this study the mentors (PhD professors) and debutants (assistants who are in course of obtaining their PhD diploma) can be improved by using this type of teaching-learning method.

E-learning is a long term process, based on taking information from platforms via Internet. The teachers upload the courses and seminaries so that the students may access them anytime they

want. They have on-line communication with the teachers and the other students from the group, discussing the problems they met during the learning process.

The feedback is a continuous source of data for teachers, who can adapt the courses to the students` style. They also have access to other courses uploaded by the universities connected to the platform.

Universities are an important part of the community. They confront crisis, because future students come from the society. Their number is severely decreasing, therefore, even if the sector of industry for which they prepare graduates is strong, the number of students is lower each year.

The teachers have to provide information in such a way that the message will be received by the students properly, clearly and friendly. Most important, they have to use modern methods of teaching, in order to be understood by all participants.

Effectiveness has an effect on permanent increase of quality in delivering the message along with the capacity of updating the courses` content.

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